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THE
PHYSIO-MEDICAL DISPENSATORY:
A TREATISE ON
THERAPEUTICS, MATERIA MEDICA, AND PHARMACY,
IN
ACCORDANCE WITH THE PRINCIPLES
OF
PHYSIOLOGICAL MEDICATION.
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PREFACE

THE present time is unusually prolific of means proposed for the treatment of disease, and the volume here offered to the public would not have been written, had it been designed only to increase the list of remedies. Nor is there any deficiency in the claims to unfailing curative powers set up for each agent; and this book would have been a hopeless undertaking, had its purpose been to multiply the assurances of infallibility attached to every leading remedy.

But, in the midst of such abundant means and such glowing commendations, there is a general distrust of the prominent agencies employed. Prof. John Hughes Bennett, of the Edinburgh University, gravely says: "All those who have acquainted themselves with what is known of the structure and composition of the tissues, the laws of nutrition, and the pathological changes which occur in organs during disease, must feel astonished at the unfounded assumptions, want of evidence, and even unreasonableness, which characterize writings on the action of medicines." And the late Sir John Forbes, after an active professional life of more than half a century, openly declares of the prevailing system of practice: "Our estimate of this kind of treatment must be entirely of a damnatory character; the slight amount of good ever derived from it being counterbalanced by a huge sum of evil."

Remarks of the above tenor are quite common among the ablest teachers in the Allopathic or so-called "regular" profession. While this school has always deemed it heretical to question even its most unreasonable assertions, it has ever been employed in putting aside one set of measures and experimenting with another. Only by years of sad failure would its practitioners learn to free themselves from the blind confidence instilled into them during their college reading on therapeutics; and those failures, alas! too often meant untimely graves for unconscious patients. Three centuries ago, such articles as skulls, claws, newts, frogs, lizards, bed-bugs, and other vermin, were among the prominent remedies of that profession. These gradually gave place to blood-letting, antimony, calomel, the mercurials, arsenic, and similar means. At the present time, these latter agencies, which have

been the pride of Allopathy for one and two hundred years, are being pushed aside to make room for opium, aconite, veratrum, bromine, bismuth, woorara, prussic acid, and strychnine. The past were found unavailing against disease, and received the condemnation of mankind; though the profession tenaciously clung to them as long as the people would consent to employ them. The present have been adopted out of necessity; and though they are as loudly praised as the past once were, they are equally repugnant to the commonsense of the world. Extravagance in laudation can not long sustain any course of treatment that proves lacking in curative efficiency; and the failures of Allopathy have been so numerous and so constant, as to challenge a rigid examination of every thing it may offer. When such a body of men so continually change from one untenable position to another one equally untenable, their vacillations furnish conclusive proof that vital and radical errors enter into their belief. And when, through so many generations of a monopoly in medical facilities, they fail to develop a *Materia Medica* upon which they can themselves place any reliance, they are in no position to lay claim to the public confidence. Such is the status of the Allopathic school of physicians this day; and their confessions of their own uncertainties and their own failures, show that they have established nothing reliable in therapeutics, but are adrift upon the sea of experiment, with a list of poisons for sheet-anchors.

Remedies are to the physician what tools are to the mechanic; and while all known agencies are free to every man alike, the possession of a larger or a smaller Supply Table does not establish the skill of any practitioner nor the wisdom of any medical sect. The department of *Materia Medica* does not constitute a system of medicine, but is only the hand-maiden of Pathology. No deception can be more shallow, either to the medical man or to the public whose patronage he seeks, than for one to claim superiority on the ground of an acquaintance with the medicines used by all the others. For, while the study and the employment of all medicines can not be denied to any man, they can not all be used alike under the widely different doctrines in pathology and therapeutics that separate the several schools. Some medical men there are who would thus engulf all others in their own absorbing folds; and who pride themselves on being qualified to select any agent, or to pursue any system of practice, that may suit the patient. Such vaunting claimants confess themselves to be without opinions; admit their readiness to accept every thing that each new comer tells them; and proclaim their willingness to be without scientific principles, providing such abnegation of

manhood will bring them gain. The true physician will study, and select, and apply his means, according to the stand-point from which he views disease and its requirements; and any medical man who deserves to be considered above the pettifogger, settles his mind upon some definite views of pathology, and fashions his practice according to the convictions he has adopted.

When the cause of the failures of Allopathy are sought for, they are found in its false and untenable pathology. The central idea around which its fabric has revolved for the past two thousand years, is found in this expression of Prof. M. Paine: "*The substitution of one pathological condition for another, is the only contribution that Nature receives from Art.*" In other words, the Allopathic rule in treatment seeks the removal of one disease by making another disease in its place. This, as Prof. R. Dunglison says, "is the ordinary medical practice;" and this doctrine permeates every thing that comes from Allopathy. Out of this springs its other proposition, *Ubi virus, ibi virtus* — where there is poison, there is virtue. If disease is to be made, poisons must be used for the purpose; and it is only on this ground that calomel, antimony, arsenic, blisters, iodine, opium, veratrum, gelseminum, strychnine, and other destructive agents, were introduced as remedies. Every change in the Allopathic Materia Medica has been from one baneful list to another; its agencies are extolled on the ground of their being able to "make disease;" and most of its new and boasted remedies are more potent for mischief than many of the old ones which have been rejected. And to such an extent do these doctrines prevail in that fraternity, that it fails to understand the true nature of harmless remedies; and entirely mistakes the time and place of their application, because such a pathology can not make use of a sanative Materia Medica.

So long as such doctrines prevail, it would be impossible to make any radical improvement in the treatment of disease; for an attempt to do so would be too open a censure on all that Allopathy had ever done. Hence, while that school has made much progress in Anatomy, Physiology, Symptomatology, Diagnosis, and kindred topics, it has steadily conformed its Materia Medica to the rule of using poisons; and

its entire numbers and influence have ever been used to oppose every suggestion in practice that did not accord with its primeval pathology, and to crash out every such proposition with the most bitter persecution. Thus it has ever been a strange fact that the improvements in practice that the world has witnessed within the last thousand years, have all met with the most violent opposition from the self-styled "regular" profession; and have been accepted by them only when they could no longer resist the popular clamor, and then only just so fast as they could smuggle the improvements into their own ranks without giving proper credit to the discoverer — who, perhaps, had already been hunted to his grave by Allopathic malignity. Those who taught the circulation of the blood, the use of Peruvian bark, vaccination, and nearly all similar useful medical knowledge, were in turn defamed and reduced to beggary by that profession; which has in the same manner persecuted the discoverer of lobelia, and all those who aim to benefit mankind by making a radical change in medical practice.

The school of Physio-Medicalism, in whose interests this volume has been written, adopts a pathological and therapeutical basis entirely different from the above. It teaches that disease can be cured only by the use of such agencies as conform to the laws of Life and assist the powers of Nature. It rejects poisons of all kinds, and refuses a place in its Materia Medica to any article that tends to cause disease. It denies that the skill of man can impart a curative power to an agent that God has stamped with a power to destroy. It does not reject the old merely because it is old, nor accept the new because of its being new; but reads the open Book of Nature as the one grand source of earthly wisdom, and weighs every thing in the balances of Nature's truth. This volume is designed to elucidate the doctrines of therapeutics held by this school, and to give an account of the "many remedies that harmonize with its pathology. The introduction of a few remedies constitutes but a meager portion of this system; for its remedies are so numerous, and are possessed of such desirable and unequalled curative powers, that a correct description of them is a labor of no inconsiderable importance.

The design of this volume has led to a free discussion of the tenets of other systems. While we may not assail upright men because of differences of opinion, all public teachings are legitimate objects of fair criticism. It has thus become necessary to show that Homeopathy is no improvement upon the doctrines of Allopathy, though it directs a superior hygiene; for it

uses all the Allopathic poisons in conformity to the idea of making one disease to cure another — only stipulating that the new disease shall resemble the original one, and that the poisons shall be given in small doses and in palatable forms. It has also been a duty to expose the pretenses of Eclecticism; a school which offers no principles of its own in either pathology or therapeutics, which uses the most virulent Allopathic poisons with a recklessness unknown even to Allopathy, and which prides itself on always stepping in to appropriate as its own the laborious discoveries and hard-earned honors of others — a sect without a tenet in science, and claiming a merit for the number and boldness of its conflicting plagiarisms. The little good it contains, lies in the few remedies it has surreptitiously taken from Physio-Medicalism. The remainder of Eclecticism is Allopathic doctrines and practice; and the same poisons will work the same disasters, no matter by whom administered.

This volume has been written in the midst of active college, editorial, and professional duties; therefore some indulgence is asked for the literary defects which the eye of criticism will readily detect. But however limited its polish, it is hoped that its facts and teachings will be of use to the profession, and of value to mankind. When the humane principles of this system prevail — as in the nature of truth they eventually must — they will revolutionize the sciences of pathology and therapeutics, place medicine in harmony with the other sciences, and confer such a healing blessing upon the human race as has not been equaled by the whole medical researches of the Christian era. It will be a sufficient honor to know that this volume has been of any material value in hastening that happy triumph of a purely sanative medication.

William H Cook

Cincinnati

February 25, 1869

THERAPEUTICS

DEVELOPMENT OF SCIENCE

1. SCIENCE literally means, *accurate knowledge*. The word is used to distinguish true and reliable information, from all forms of mere speculative or perverted statements which either are not true at all, or true only in very small part. In its most common usage, this term embraces the idea of accurate and positive knowledge arranged in an orderly manner; and specifically includes an acquaintance with the powers which produce various phenomena, and the laws or modes according to which those powers act. ART is an application of the facts and principles of science, for the procurement of some desired end.

2. In itself, science makes no laws; but merely studies and organizes the facts and laws that are presented in Nature. In many of the affairs of life, men devise certain plans which either facilitate their labors or gratify their tastes; and when these plans are widely accepted they pass under the name of SCIENCE. Thus, architecture is classed among the sciences; because men have agreed to follow certain general styles of building, which present graceful and pleasing outlines to the eye. The rules of Parliamentary and Congressional debate are called science, because they aid in securing harmony and justice in the conduct of legislative bodies. But the rules of architecture are not established in Nature, being merely the devices of man for his own enjoyment, and therefore they are arbitrary, and may be varied or entirely laid aside, at pleasure. Congressional rules of order are also but human conveniences, and may be change or abrogated at will. All such laws as these, are merely *artificial sciences*; and should be very carefully distinguished from *Natural Sciences*, which are established by God in the very constitution of the creation. Man may use artificial sciences at his pleasure; but he must himself submit to the influences and powers which make up the Natural Sciences.

3. It is important that this distinction between natural and artificial sciences should be clearly defined. It is quite too common for men to confound them; and to look upon the arbitrary regulations of man, as of equal weight with the

establishments of God. From such confusion it soon follows that, as the roles of man may be disregarded at will, so the laws ingrafted on creation may be disobeyed with impunity. By carefully distinguishing between the work of man and that of the Almighty, the mind will at once comprehend that there is all the difference of an infinity between a violation of the one and an attempt to disregard the other.

4. In obtaining an insight into a Natural Science, it is first necessary to observe facts, and then from these facts reach an understanding of the established laws of that particular science. The facts do not make the laws, but merely illustrate them; and all research is thus based upon the conviction that the laws of Nature are definite and unchangeable. Each fact is the same as a definite result of some fixed cause; and as the repetition of any one phenomenon is found always to proceed from the same cause, the influences and modes which determine the phenomenon become the text of one of Nature's unvarying laws. Taking a stand at any point upon the earth, it is observed that the sun rises there at a given moment; but that this moment changes from day to day, yet is the same on any stated day any succeeding number of years — allowing for the fractions of time. These observations point toward a law of motion in the universe; and as the phenomenon of a rising sun occurs with such exact regularity, the power or law which produces its rising can not be other than an absolute and unchanging law. From the known regularity of this law, the precise moment the sun's rising can be calculated for any locality, for any number of coming years or centuries.

5. All science, then, is knowledge obtained through observation. As it can not be called science till it has been made accurate, or till the knowledge itself is complete and true without any admixture with error, it becomes necessary to observe the reputed facts with scrupulous exactness. And it can not be expected that any law of Nature will be established by a few observations, however judicious they may be; but that a large number of separate facts shall be associated in the elucidation of the law. Thus, observations need to be multiplied greatly, and generally to be made from very different standpoints, and each to be confirmed by the concurrent testimony of others, before a single law can be pronounced to be known or proven. This course is slow and toilsome, but is the only one upon which reliance can be placed. Astronomy is one of the most exact of the sciences; yet it required thousands of studious observers, in different quarters of the earth, devoting their entire lives through many successive

centuries, to establish its laws and demonstrate its phenomena on principles.

6. Facts and observations must not only be numerous; they must also be made with great exactness. True science, in nearly all its departments, has always been retarded and injured by men. coming to large conclusions from a limited number of observations, or from facts and observations incorrectly recorded. And the more complex and extensive the science, the more tendency does there seem to be to forego patient labor in its development, and to reach conclusions on very meager premises. Too generally is it the case that certain opinions are first adopted, and then all observations are thrown aside except such as can be forcibly manipulated to sustain those opinions. In this way, the most common facts are deformed and discolored till they could not be recognized, or would not even recognize themselves. All such distortions are but so many forms of falsehood; for science, like the law, requires not only the *truth*, but the *whole truth*, and *nothing but the truth*. It admits of no concealments, and allows no additions. It requires that each fact shall be sifted and tried, till it stand isolated, freed from all extraneous associations, and pure in its own naked verity. Such a fact is a treasure to the seeker after science; but all others are dross and rubbish and corrupting waste, and do immense mischief to the world. And yet there is such a fascination in being the author of some new and ingenious idea, that too many hasten to seize upon such crude observations as suit their purposes; and from these as data, go on to the propounding of whole systems of what they are pleased to call science. The several parts of their scheme may harmonize, and its details may seem to fit into each other snugly enough; but the data being incorrect, the conclusions must be false; and soon these conclusions will be found unstable under the test of other observations, the world of other facts will prove them to be untrue, and they and their promulgator will be swept out of sight by the storm of derision that will arise to confound them. Had the ingenious speculator been as faithful in adding to the common stock of knowledge, as he was in trying to sustain his own ill-founded fancies, he might have been an ornament among men, instead of delaying science and making himself a laughing-stock.

7. The ill consequences of crudity or insufficiency in observation, are seen in every walk of knowledge. Less than three hundred years ago, chemists spent their days and their fortunes in researches after the “philosopher’s stone,” which was supposed to be a mysterious substance that would turn into gold every thing it touched. Chemical changes are very numerous, and many simples become of great value from admixture with other simples; but the schoolboy of today knows that the philosopher’s stone was a whimsical impossibility, and the ancient chemists might have learned the same truth, had they be more accurate in their observations. Those same old chemists also spent fortunes in trying to find the Elixir of Life — a supposed something which would prolong existence forever, despite laws of God and the experience of ages. It was for a long time the belief that the world was a flat surface, and rested on t back of some monster; and even later was it the belief that the earth stood still and the sun revolved around it. Now we know by the light of more advanced knowledge, that those old opinions were foolish; yet the arguments by which they were sustained, seemed to be facts. We laugh at the absurdity of such old-time notions, and can readily see that they were entertained merely on the authority of limited observations which were asserted to be facts, but which wider observations proved were not facts. It would be entirely premature, however, to suppose that the ancients alone were thus misled by inaccurate statements. It only a few years since a learned English physician was astounded, during a popular discourse on Physiology, by a gentleman rising in the audience and saying he knew of a woman giving birth to a child, one-half of which was entirely black. Not wishing to seem ignorant of an explanation, for even such a monstrous phenomenon, the lecturer proceeded to state the laws according to which it probably occurred; when the same gentleman in the audience arose and said he had forgotten to state that the other half of the child was black also! It was noticed, in the early part of the present century, that the gatherers of sponge and kelp on the Scottish coasts did not suffer with goiter. Iodine was the principal ingredient for which those substances were gathered, so it was concluded that iodine kept away the goiter. Next it was presumed that this was done by iodine acting as a stimulant to the absorbents; and from this grew the practice of employing this article as a promoter of absorption under nearly all circumstances — a practice that started in a wild supposition, that did not grow out of the observation of a single well-attested fact, and which to this day has nothing beyond supposition for its support. (See *N. Y. Med. Rep.*, Jan., 1868.)

8. The investigation of science, therefore, demands that every fact should be observed in all its parts, and upon all its sides; it nothing should be added to it, nor ought taken from it; that it should be stated in company with all its connections, and its results implicitly abided by. And facts should be verified by experience — which is but another class of facts. This experience, also, should be scrutinized with the same care as the facts themselves; for there is everywhere a remarkably strong tendency to misconceive the purport of one's experience. And this experience, to be of any value, must be positive, and not negative. If a large number of men, of reliable character and careful statement, acting quite independently of each other, concur in recording a unanimous experience on any question, the greatest weight is due to their testimony. That is *positive* evidence; and is not to be controverted by any one or any number of men saying they have not had the same experience. The latter is *negative* evidence; and results from either overlooking, withholding, or concealing, some of the conditions connected with the observations of the others. And yet there is an almost universal tendency among men either to reach conclusions through an experience that is utterly exaggerated, and which can not be verified by the simplest tests; or to uphold some preconceived opinion of their own by refusing to accept the accumulated experience of others on the plea that *they* have never seen it. This latter course is on a parallel with the King of Siam who threatened to imprison the British officers as common liars, when they told him that water would sometimes become a strong solid in their country. He had never seen such a thing; and hastened to take his limited experience as a standard for the whole world. Many medical men act as absurdly as the presumptuous king, by contending that opium and other poisonous agents are not hurtful, because *they* have not seen them produce death — thus, by their trifling negative experience, attempting to set aside the positive testimony of thousands of men in all parts of the world. Such a course betrays the narrow insincerity of a charlatan, and is a hindrance to the progress of all real science. (§29.)

9. Nothing is more thoroughly established in science, than that Nature never suffers any variations either in facts or principles. All her

operations are harmonious; and when a phenomenon is observed to occur under certain definite conditions, the same thing will always occur when the same conditions are repeated. It is because these rules of action are thus definite and fixed, that knowledge is prized; for if the operations of Nature were subject to change, no value could be attached to her laws, and her processes would be mere questions of accident. But in no department of science is such confusion found to exist; for a law once clearly demonstrated by exact observations, is found to be always the same, and always capable of the same exact application. The laws of mechanics having once been elucidated, maintain their exactness throughout the world; and scholars everywhere can calculate their application to the closest fraction. The laws of optics being unraveled, suffer no shadow of change; but are precisely alike through all age and in all climes. The laws of gravitation being once known suffer no variableness — whether studied in their relations to a falling feather, or in their applications to the motions of heavenly bodies through the inconceivable immensities of space. And thus on every hand, the same positiveness in science prevails; and gives the stamp of eternal truthfulness to Him “with whom there is no variableness, neither shadow of turning.” His laws are the same “yesterday, today, and forever;” for whether those laws were discovered by man recently or long ago, they were established by His hand at the Creation, and will unquestionably remain unchanged while time shall last.

10. In the applications of Science to the purposes of Art, success depends entirely upon the clearness with which those laws are understood, and the closeness with which they are obeyed. All God's laws will yield their several appropriate triumphs or failures, according as they are followed or disregarded — the moral laws in the moral world, and the physical laws with equal positiveness in the physical world. To violate any of them, will insure defeat in all the ends therein aimed at; but humble and minutely scrupulous obedience, will reap a certain and most honorable reward. The mechanic does not hope to raise blocks, move steamboats, drive locomotives, or perform any other mechanical labor, except by strictly conforming to mechanical laws. The optician does not hope for success in preparing spectacles for the eyes, or in making telescopes with which to penetrate the heavens, unless he closely follows the laws of optics. The chemist does not expect to produce the simplest combinations of matter — not even to prepare so coarse an article as soap — except by obeying the laws of chemical science. To disregard these several classes of scientific principles, is to reap nothing but failure;

while the most noble achievements are made possible by submission to them. Submission, in fact, is the highest evidence of true knowledge; for there can be few greater displays of ignorance than for one to know so little of natural laws as to imagine that he can act independently of them, or that he can lay any of them aside as not having an absolutely binding force.

11. In the course of scientific research, it not unfrequently occurs that new facts are met, which seem utterly to contradict all previous knowledge. Thus, it is a current fact that water will extinguish flame; yet phosphorus may be ignited under water; and sugar may be prepared so as to burn freely, though submerged. Again, water falls by gravity; yet a little of it dropped on a level surface of red-hot iron, will be suspended a short distance above the surface. Mercury remains fluid and untarnished in the air; but the application of a moderate heat will cause it to pass into a bright-red powder, and then the application of a much higher heat will cause this powder to volatilize, when the mercury may be condensed in its original fluid and metallic form. Similar peculiarities are abundant throughout Nature. When new ones are met, there is an inclination among many to deny them altogether, merely because they can not yet be explained; or to accept them with simple credulity and at once lay aside every previous acquirement of fact and principle, because they seem to conflict with the more recent discoveries. Both these courses are extremely unwise, and can result in nothing but the confusion of such facile philosophers. Were every new and strange observation to overthrow all past researches, then the acquirement of knowledge were vain. It is only when past opinions are founded on glittering speculations rather than upon solid facts, that advances in discovery will unsettle what has been relied upon as scientific; for never yet has true progress overturned a fact or principle that has one been demonstrated. Full confidence in one's previous knowledge and in the unchangeableness of true science, will preserve on from foolish haste in forsaking old laws to run after novelties. If the new developments can not at once be explained, that merely suggests that they may point to some law as yet not understood. Let them be tested, and let them be verified (if possible) by additional and

exact observations; and in due time their meaning will be unraveled and the law of their production elucidated. It will then be found that the laws do not conflict with each other; but that one law, having a number of conditions supplied in its favor, manifests its power, while the other and less favored law lies dormant but not destroyed. The two can not operate at the same time. The ripened seed lying upon the floor, exhibits no vitality; but when supplied with the several conditions of air, light, warmth, and moisture, it soon manifest its power of germination. By patiently investigating strange facts, the beautiful harmony in all Nature's processes will be only the more thoroughly exemplified; and the wisdom of implicit reliance upon her laws be the more forcibly enjoined.

12. While the above remarks apply to the study of all sciences, they are in some respects particularly applicable to the science of medicine. This department of knowledge is too often studied as if it were without laws — a mere assemblage of confused and ill-sorted observations, which have no meaning except such as each man sees fit to attach to them for himself. Often its statements are too crude to be of the least consequence, and too exaggerated to deserve the least reliance. It is generally dealt with as if it were a mere bundle of speculations, from which nothing definite or reliable need be expected. Its so-called "principles" are supposed capable of being changed from year to year — old ones being discarded as new ones are promulgated. Such a shifting scheme could not be a *Science*; and if this subject is to be made or considered a science, it must be cut loose from all such unworthy surroundings, and established by the same methods as are necessary to the establishment of other sciences. Its facts must be shorn of all fanciful additions, and presented in their rigid simplicity. Its observations must be made with impartial exactness, and recorded with the sternest reference to nothing but the truth. The laws developed through these means, will be simple but far-reaching; and will be found in harmony with all the laws in all other departments of Nature. And they will be found as definite, as exact, and as unchangeable, as all other laws. They will also be as capable of application to the purposes of Art; and can be relied upon to produce fixed and certain results, whenever the conditions necessary to their operation are supplied. And above all will it be found that these laws are as absolutely binding upon the physician, as are mechanical laws upon the mechanic and chemical laws upon the chemist. When the practitioner thus learns and humbly obeys the rules and principles which God has ordained in connection with medical science, he will reap that success which always

accompanies submission to Heaven's laws, and will hasten the day when his calling will fully deserve to be entitled the "Divine Art of Healing."

RELATIONS OF MATTER AND MOTIVE POWERS

13. In making a general classification of Nature, the simplest form of division would at once make two general series: 1st. Material substances, cognizable to one or more of the senses, and possessing the common properties of Matter. 2d. Unseen motor powers or forces, which act upon the substances and thus produce the various phenomena of Nature. It will next be observed that each and every material, or substance, bears certain definite relations to all the other substances; as, for instance, that sugar will dissolve in water, that salt will dissolve in water but not in alcohol, that alcohol will dissolve resin but water will not, that iron will rust and lead tarnish in a damp atmosphere, but that gold and platinum will not thus rust or tarnish. These relations are not only thus definite, as concerns each separate substance; but they are also fixed and unchangeable. (§9.) In like manner each substance holds a definite relation to each of the natural powers or forces. Water readily flows down an inclined plane, and passes into vapor at an elevated temperature, and becomes solid at a certain reduced temperature. Mercury also flows readily, but require a much higher temperature than water to vaporize it, and a much lower one to solidify it. Alcohol flows more readily than either, is vaporized at a decidedly lower heat than even water, but can not be solidified by any known degree of cold. Here then, are three distinct fluids, bearing differing relations to the forces of gravity and caloric. In like manner they will found to hold different relations to the forces of cohesion, electricity, light, and the other motor powers; or, what amounts the same thing, that the several powers act upon each of these substances differently. In this manner all other portions of matter in the universe are found to have their own individual and peculiar relations to those powers; and these relations are always the same under the same circumstances — as that perfectly pure water, at the level of the sea, will boil at 212° of Fahrenheit's thermometer, in all parts of the globe.

14. The several relations between substances and powers being thus definite and positive, these relations remain precisely the same with

the most varying quantities of matter. A fluid drachm of perfectly pure water, has the same chemical composition, the same sensible qualities, the same (proportional) solvent and other physical properties, as would pertain to a barrel or to an ocean of equally pure water. And the small quantity would flow with the same readiness, and boil at the same temperature, as the larger quantity. A grain of salt has the same taste, color, gravity, solubility, preservative properties, and chemical composition, as would a barrel of salt, or all the salt of the oceans if it could be gathered in a mass. When two chemical substances unite, they do so in certain definite proportions; and these proportions never vary to the smallest fraction in a compound thus produced, whether the resultant mixture weigh a grain or ten thousand tuns. An ounce of copperas dissolved in four ounces of water, at once yields a deep blue precipitate when a solution of red prussiate of potash is added to it. If ten grains of copperas are dissolved in another four ounces of water, the same solution will produce the same kind of precipitate. If the tenth part of a grain is dissolved the same amount of water, the potash solution will again and instantly yield the same color. And thus through all the domain of Nature, the relations of substances to each other, and the action of any or all of the motor powers on those substances, remain exactly the same in *kind*, without the least reference to the *quantity* in action. The *amount* of the change or the influence will vary according to the amounts used; but the *character, quality, or kind*, of the change or influence, never varies by the increase or diminution of the quantity. Were it otherwise, there would be no such thing as law or rule or principle in Nature. The proposition would seem to need no proof, and it really requires none at the hands of men truly scientific; but a number of medical men have been led astray by the absurd proposition that the quantity of a substance alters its relations and actions; hence it is necessary to make it plain, beyond a peradventure, that such a thought has not the least shadow of a fact to support it in any department of science.

15. But while the relations between matter and forces are thus fixed, the action of substances upon each other, and the action of powers upon substances, are more or less dependent upon circumstances. Gravity acts upon bodies without regard to space; but chemical power can not act on them except as they are brought into the closest contact. Wood and coal remain unburnt at all ordinary temperatures; but when their temperature is raised to 800° or upward, they bum readily — providing they are at the same time supplied with enough fresh air. Dry substances many times remain unchanged, though mixed ever so intimately;

but enter into chemical combination quickly, on the addition of water. These several influences of circumstance, are parts of the law of action connected with each particular case. By supplying the necessary conditions, man can hasten the changes; and by withholding the conditions, he can retard the changes, or even prevent them altogether. This is a very important prerogative enjoyed by man; and contributes largely to his happiness. All the operations of Art depend upon the use he makes of this privilege which his Maker has granted. But, while the supplying or withholding of certain conditions may thus advance or retard the operation of natural laws, they can not destroy these laws. These remain the same in power, however dormant they may appear; and while adverse circumstances may delay the assertion of their sway, the moment that the favorable requirements present themselves, (whether with or against the wishes of man,) they will assert their full force.

16. Turning, now, from viewing the merely physical portion of the world, and it will be found that these same principles extend themselves to the human frame. It also holds its relationship to each and every substance in Nature. As the living body is held in life and action by a living force unlike, and superior to, all other forces, it by virtue of that force has a given capacity to act upon other substances and forces. And man can never be viewed correctly in his wide relationships, unless his material and immaterial components are considered together. To take cognizance only of his material portion, would be to deal with him as if he were a mere dead animal. To be concerned only with his Vital Force, would be to study him as if he were a spirit. (§24.) It is this fine adjustment of vitality with matter, that raises man above all other earthly creations; and any attempt to study his position in the universe without continuously recognizing his composite nature, we utterly fail in all the ends desired by investigation.

17. Substances and powers act upon the human body in several general ways. 1st. *Physically*; as in pressure, the contractile influence of cold, the mechanical violence of blows, etc. 2d. *Chemically*; as in the corrosions of acids and of alkalies. 3d. *Supportively*; as in

the vivifying influence of air and light, and the nourishing relation of food.

18. The body, by virtue of its life power, reacts upon the above several influences, according to their separate kinds, and always for the welfare of the frame. 1st. It resists pressure, endures cold, and withstands blows. Could not the body thus act, its fluids would congeal long before the thermometer reached zero; and the child would be destroyed by the numerous falls and bruises it is sure to receive. 2d. It overcomes the power of chemical laws, which are always at work to resolve the tissues and fluids of organic beings into other and simpler compounds. Every structure in the frame of man is made of ordinary elements, arranged into forms utterly unlike those that would harmonize with chemical action, and hence formed and maintained in positive opposition to chemical laws. When the vital power leaves the frame, chemical affinities begin assert their rule; and the decomposition that then takes place, illustrates the character and magnitude of the changes to which vitality had so long opposed its superior force. 3d. It appropriates food, drink, and other suitable materials and influences; using them to maintain the general strength and integrity.

19. But the capacity of the vital power in these and other directions, has a determinate limit. It will successfully resist ordinary blows and falls, and preserve the organs intact under common accidents; but it can not maintain the soundness of the organism against every degree of violence, and hence the flesh and bones will surely be torn and broken by certain degrees of mechanical force. Mild alkalies and acids and other chemical corrosives, may be successfully withstood; but there are escharotics of such strength that the frame can not endure them, but will surely break down before their destructive action. In like manner, it can digest certain amounts of food; but is utterly unable to continue the process of digestion all day long, and will refuse to pour out gastric juice continuously. And not only are these facts true as relates to the body at large, but each organ has its own particular limits, which may be relatively greater or less than that of other organs. The mucous membrane of the mouth is more easily lacerated or corroded than the skin would be; and an escharotic that might be unable to make any impression on the tough palm, might be capable of at once destroying the delicate lining of the throat or stomach. Skin, in turn, is less resistive than tendon, and tendon than bone; the nerves of smell are more acute than those of touch, and the sensitiveness of the eye is far greater than that of the hand. The same

comparisons might be continued through all the organs and tissues.

20. This law of limitation in regard to the living frame, is a fact of the greatest importance, and one that should never be allowed to escape the attention. It serves to keep clear the bounds that are set to the control of vitality over the mere elements of matter; and to impress the mind with the conviction that, while the operations and capacities of life are many and wonderful, the other forces of Nature may impair these operations and sunder the connections between the material and immaterial. The physician, especially, has the greatest need of remembering this inevitable law; for his daily duties call for repeated references to it. For instance, the same life power that resists violence, and proves superior to certain chemical actions, and digests food; also appropriates the nourishment to the wants of the various tissues, and opposes the causes of disease, and struggles for the restoration of health in case of sickness. And in these latter cases, as well as in the former, it has a limitation. It can not appropriate superlative amounts of nutriment, it can not resist disease-producing influences indefinitely, it can not restore health under all circumstances. Its capacities in these respects also vary in different persons, and in the same person at different times. It is readily seen that one has a stronger constitution than another; and it is equally plain that the strong man will resist a degree of cold to which the invalid would at once succumb, that the vigorous will digest a quantity of food which would be impossible to one just rising from a bed of sickness, that the hearty will rally from a shock of injury which would prove instantly fatal to the enfeebled. The duties of the medical man call him to make perpetual estimates of the vital capacity of his patients — their capacity to resist the accidents and bad influences to which they are subject, their capacity to rally from the prostrations they may have suffered. Such estimates are a constant recognition of the law of vital limitation — the reason for which law man is unable to comprehend, but to which he makes submission because it is so clearly established by the Almighty.

HEALTH — DISEASE — THERAPEUTICS.

21. In studying the phenomena of life, we observe that the Vital Principle appropriates food, resists injuries, and performs all the operations of the frame, by means of the animal organization. The force itself can be studied only in connection with the organism; for the moment the two are separated, the body begins to molder under the influence of chemical laws, and the life principle passes beyond the comprehension of man. A great temptation in the pursuit of medical inquiries, is to disjoint the force from the frame, and attempt to study them as if they bore no mutual relations. This can not be done with success; for it is a fundamental condition to the inquiry, that the phenomena exhibited by the power and the body in connection, are the very things with which the physician is concerned.

22. *Health.* — Where the hold of the Life Power upon every organ and tissue of the body is complete, that is a condition of real health. Every structure then performs its own offices with ease and comfort; there is no lack and no excess in any part; there is no infringement of the ill-performed labors of one part upon another; there is no loss or increase of sensibility, no accumulation of morbid material, no jarring or discord to cause suffering or work decay. (§50.)

23. *Disease.* — When the Life Power loses its complete control over any part, that part is to a corresponding degree unable to perform its duties. If it lose all control, that part is dead; but where the loss is merely partial, the portion deprived of a small share of its vitality begins to manifest less capacity to appropriate nourishment, to resist injurious impressions, etc. The larger the number of organs thus made deficient, the less capable is the frame to carry on the operations of life; the more derangement and discomfort will there be; the more irregularly and inharmoniously will the functions be performed; and the nearer will the body be to passing wholly from under the control of vitality. All such departures from the standard of Health, constitute Disease; of which the varieties and degrees may be almost indefinite. (§51.)

24. These propositions are self-evident, by the simplest light of Physiology. Arising directly from them, is the further very important proposition, that the action of all material substances and motor powers, as they improve or impair the condition of health, do so by the impressions they make upon the living animal tissues. The study of this topic is to be limited directly to this proposition; for if it be attempted to consider the action of substances and powers upon the Vital Force, the inquiry would at once enter the immaterial world, and leave the presence or absence of man's body wholly out of the question. (§16.) All things influence the living organs either favorably or unfavorably; and they increase or diminish the chances of life, according as they put the tissues in a condition more or less completely usable by the Life Power. It is not the *quantity* of this power itself, that is influenced; for if heat, cold, poisons and injuries, were capable of doing that, it would follow that such accidents of time and place could annihilate one of the grandest of all the immaterial forces. And if these could *annihilate* a force, they could of course *create* a force — and man could then be made to live indefinitely, by sustaining his artificial heat, etc., which is an absurdity. Insignificant as the proposition may at first sight appear, it is nevertheless as wide in its influences as the entire domain of life itself; and the physician can not be too careful in recognizing the fact, that this science calls him to the study of the impressions that all material and immaterial creations exert upon the *tissues* of the living frame.

25. It has already been seen (§17) that man is continually subject to a variety of influences, which are unfavorable to him. These influences constantly tend to disturb the nice adjustment of the organism, and to place the structures in such a state that the vital force can not use them properly. The frame is compelled to be ever on the alert to resist these influences — to prevent the destruction that would otherwise arise from violence, from changes of temperature, from the action of chemical laws, etc. Existence is thus a continual struggle; and is also an hourly illustration of the superiority which the life power enjoys over all other powers. (§16.) But the adverse influences may be so favored by circumstances, (§15, 10,) that they will prove stronger than the resistive capacity of the frame. They then exert such an impression upon the tissues, as to compel these to depart from the normal standard of health. At this juncture, the life power loses a portion of its control of such tissues; and now to restore them to the full control of this power, other impressions require to be made upon them. The latter or favorable impressions must, as a rule, be the opposite in kind to

the former or unfavorable impressions. Thus, if the body have been deprived of warmth, and thereby reduced to a temperature that benumbs and impedes it, safety requires that a suitable degree of warmth shall be supplied. If there have been a lack of nourishment, in consequence of which the organism has begun to suffer deterioration, it will be necessary to furnish good nutriment in proper quantities. If any circumstances have conspired to render some or many of the tissues too rigid — as in lockjaw or spasm — health is to be sought in bringing to bear those influences which will relieve the rigidity of the muscular condition. In like manner is such an analysis of improper conditions, and of the substances and influences which will aid in restoring the organs to their normal states, to be continued through all the varied and complex forms of disease to which the human frame is liable.

26. *Diagnosis.* — To learn what organs are diseased, and the particular direction in which they have departed from the healthy standard, constitutes the art of *Diagnosis*. From the remarks in the last section, it will be seen that this study requires very great care; as upon the accuracy with which the abnormal *conditions* are defined, depends the success of all efforts at cure. It does not attach much importance to the arbitrary and indefinite names of disease; but *the actual state of the structures* is the grand object for its consideration. (§164, 166.)

27. *Therapeutics.* — To decide upon the measures most suitable for restoring the normal condition, and the best modes for applying them, constitute the science of *Therapeutics*. This science thus really embraces the entire field of practical medicine. It is the purpose of the present volume to confine the Therapeutical inquiries to their more general fields, under two principal heads: 1st. The establishment of rules by which truly beneficial articles may be determined with positiveness, and distinguished from all substances that have a tendency to produce disease. 2d. The laws of curative action, according to which remedies must be used in order to accomplish definite objects.

THE RELATIONS OF AGENTS

28. Ever bearing in mind, then, that the impression of all agents which influence the human frame, is made directly upon its tissues (§24,) it will become plain that their actions on the tissues must always be fixed and definite. (§14, 16.) It would be an anomaly in Nature for any agent ever to change the mode or quality of its action; and if it were possible for lobelia to act in one way to-day and in another way to-morrow, for opium to exert one influence at this time but a different influence at another time, for capsicum to manifest a certain power this week in this country but a contrary power next week in some other country, then would creation be a mass of contradictions and human research would be labor wasted. But, as has already been seen, (§9, 12,) Nature is not thus vacillating and whimsical in her laws; and as laws are but the expression of a multitude of facts, it is equally plain that Nature is not unstable in her medical facts. In all other departments of knowledge, it is evident that all relations between substances are definite and established; and the relations between each substance and the living frame must be equally definite and established. The influence of a given article upon the organism having once been ascertained, its influence will be found ever to remain the same in kind. And as this influence is exerted upon the tissues, it will not be necessary to attempt the inquiry as to the unseen *how* or *why* of the action. Such an investigation is beyond the comprehension of man; as much so as are studies into the manner of mental actions, or the occupations of angels. The points within man's scope are, *first*, that agents do influence the structures of the body; and *second*, that the vital power in turn acts upon the agents. Having learned the definite impression made by a given agent, and the manner or end of the vital reaction in response to that impression, man can go no farther. But within these limits, the knowledge acquired may become absolute; for the character of the impression made by a given substance will always be of the same kind, and its application to or in the body will always tend to the same results; while the recognition taken of it by the living organism will always be the same, and that organism will always act upon the agent either for its appropriation or rejection — according as the article itself is qualified to

make a favorable or unfavorable impression on the structures. (§24, 25.)

29. The relations that an article bears to the frame, are to be learned by observations. And such observations need to be made with the greatest correctness, and with the most scrupulous care. (§6.) Probably in no field of investigation is there so much proneness to loose observation, and exaggerated statement, as in that of medicine. The study is made complex by the fact of two forces there always operating in connection — the direct force (property) of the agents, and the responsive action of the life power. And the many organs used by the life power, and the diverse manners in which it may act through each one of these organs, greatly increase the intricacy of such a study. The physician is in continuous temptation either to attribute all action to the agent, and thus throw out the important part enacted by the life power; or else, noticing the wonderful influences and works of this power, to connect all the results with it, and allow nothing whatever to the agents. (§59, 62.) Either method is an error; and is of such common occurrence, that large classes of physicians are in the habit of adopting one or the other. A great majority of the Allopathists attach so much importance to their agents, that they practically overlook the natural operations of the system, and attribute all benefits to their poisons; while a very small number of them, and the mass of Hydropathists, refer all action to the living principle, and deny any substantial benefit to the agents. Of the two extremes, the latter is immeasurably the safer, (§45, 47;) but the true student of Nature will not fall into either untenable ground, but will give to each the credit to which it is entitled. The very intricacy of the questions involved, only demands the more rigid examination of every point; and calls for the exercise of the nicest discrimination, in order to distinguish between what is due to the agents and what to the life principle. Crude "experience" is often very deceiving in this particular, and nothing is more humiliating in this connection, than to see the pomposity with which some persons appeal to their individual "experience," when it is palpable that such experience is at direct variance with the current experience of all the remainder of mankind. (§8.)

30. In making observations concerning the action of agents, it is needful that each article should be examined by itself. No matter how close may be the resemblances, or even the relationships, between different articles, no one can possibly be judged of by another. In Botany, the entire mint family has volatile properties, and the several members are more nearly

allied than those of any other Natural Order; yet even here, the differences are very marked, as any one will perceive on comparing catnip with peppermint, or spearmint with hoarhound, or summer savory with skullcap, or pennyroyal with sage, or any one of these with the others. In other botanical Orders, the differences are truly enormous — as for instance between the pod of the red pepper, and the fruit of the tomato, and the ball of the common potato, and the capsule of the jimson weed, and the seed-vessel of the tobacco, though all of these plants belong to the one botanical family of Nightshade. One would scarcely use the pepper pod for tomatoes, or tobacco pods for red pepper; for though the botanical alliances and physical appearances of these are peculiarly close, yet even a child knows how wide are the differences, and understands that each must be judged of by itself and not from its connection with the others. Mushrooms are a rich food, toadstools a rank poison, though of the same botanical Order. Such facts pertain throughout Botany; no where in the entire world can there be found an instance in which two plants of different genera, though of the same order, possess the same properties; and those of the same genus often differ as widely. But although this fact is universal, it is quite common to hear physicians of some eminence teaching just the contrary; and no argument has been more persistently urged to support the assertion that lobelia is a poison, than the equally wild assertion that it must be like tobacco because it belongs to the same botanical family as tobacco. Any one with the least botanical knowledge, knows that lobelia does not belong to the tobacco family; nor to any family resembling the tobacco. But even if it had such a family connection, it would be the greatest absurdity to suppose that *therefore* it would act as tobacco will — quite as absurd as to say tomatoes and red pepper, and tomato seed and jimson seed, will all act the same, because they one and all belong to the same family. Relationships of this kind have not a shade of bearing upon the properties of an article; but each agent must be judged of entirely separate from all others, and then stand or fall according to its own merits. (§67.)

31. And the same necessity for isolating agents, holds with even more force in Chemistry. It is an opinion deeply rooted in the public mind, that the qualities and action of a chemical

compound can be decided from a knowledge of its constituents. It is true that some elements maintain certain properties with great pertinacity, in whatever varied chemical relationships they may be placed. For instance, mercury acts with something like the same general properties in all its combinations; and the compounds of cyanogen, throughout, retain a certain similitude. But nevertheless it is well known that calomel differs from the turpeth mineral in its action on the frame, as well as in its color; corrosive sublimate has different physical and also different poisonous properties from either; iodide of mercury is unlike any of these three in appearance, and also has its own peculiar form of the mercurial poisoning power. In like manner might the cyanogen compounds be compared one with another; and each would be found to have an action of its own, however certain shades of action might prove common to all. But even these two bases of chemical substances are peculiar in Chemistry; for other elements do not possess even this limited degree of similarity in their various combinations. The great changes wrought in the density, form, color, taste, solubility, and other physical properties of an agent, by the various chemical associations, are of themselves enough to satisfy the mind that its relations to the human frame could not remain uniform through such wide transformations. This question, however, is not dependent on analogy for settlement, but upon the most definite and uncomplicated facts. Take, for instance, the common table-salt — chloride of sodium. This is a compound body containing, *first*, hydrochloric (muriatic) acid — which is a harsh, suffocating, intensely corrosive liquid; *second*, sodium — which is a light, soft metal, that will decompose water with such avidity as fairly to take fire when wetted. The acid alone would speedily inflame and corrode the tissues; and the metal alone would char them into a crisp; yet a combination of the two gives a salt of great relish, and one which we use daily with impunity. Again, bicarbonate of soda (cooking soda) is a compound of, *first*, carbonic acid gas — which is a very poisonous and stupefying article; and, *second*, the oxide of sodium — which is a caustic nearly equal to caustic potash. Either agent, alone, would prove highly deleterious; but when combined, the product is recognized as a useful article in cookery — the acid being disengaged from the soda by another acid, (buttermilk or cream of tartar,) and puffing up the housewife's dough as the heat of the oven drives it up and off. In the same manner, Chemistry is a continuous series of evidences to the effect that each new compound has properties of its own; and that no shadow of an estimate of the nature of a compound, can safely be predicated upon the most intimate acquaintance with the elements that form it —

even as the above-named poisonous carbonic acid gas is itself a product of harmless charcoal (carbon) and the very element of the atmosphere (oxygen) upon which all forms of animal life are hourly dependent.

32. Such facts and illustrations as the above, should forever set at rest all efforts to form opinions of the relations that an article bears to the frame, by an analysis of the article. But this idea has taken such a deep hold upon the professional mind, and makes such a pleasant foundation on which to rest an argument without any expenditure of thought, that it has assumed the form of a profound infatuation. It presents itself at almost every step; and seeks for support in that mystery which attaches to Chemistry among those who do not understand this science, or who know merely enough of it to feel confused by its formula, and to be convinced by any array of its symbols which they are too proud to confess that they do not comprehend. The most reprehensible form which this infatuation assumes, is that of attempting to pass judgment on the qualities of an organic agent from a so-called chemical analysis of it. The bicarbonates of soda and of potassa are alkalies; and chemical analysis says that opium and Peruvian bark yield alkaline substances in the forms of morphine and quinine. But of course no one pretends that the alkaloids thus obtained, in any sense resemble the common alkalies; or that morphine and quinine and strychnine can be put to any of the common uses of the potassa and soda alkalies, such as forming soap and making light bread. If they can not be put to the ordinary uses of alkalies, then the fact that manipulation has procured such alkaloids from the vegetables, tells nothing of either the nature of the vegetables or of the products obtained from them. Each will need to be tested for itself, ere its relation to the human system can be known. A prominent instance of this kind, is found in the fact that chemical fermentation, carried on in a certain manner, will yield an alcoholic product from corn; or carried on in a certain other manner, will yield sugar materials; or carried on in still another manner, will give a vinegar product. But no man of the first grains of intelligence, will pretend that either one of these three products existed *as such* in the unfermented corn; as otherwise the meal of this grain might be used

indiscriminately to preserve pickles, to sweeten coffee, or to get drunk upon. This proposition is of course an absurdity; and by it can at once be seen the fact that the alcohol, sugar, and vinegar, are obtained only by decomposing and rearranging the original elements of the grain — destroying its vitality, discharging portions of its constituents, taking additional elements from the atmosphere, and forcing the whole to adopt new forms. After such changes, the resultant products in no sense represent the original corn — as can be known at once by the inability of such products to sustain any form of animal life. One such instance illustrates the whole ground of the attempt to make chemical products stand sponsor for the organic articles from which they were obtained. In the case above used, the absurdity of such a proposition is palpable; and it is equally absurd to condemn cherry bark and peach kernels, on the ground of Prussic acid having been obtained from them; for this acid is never obtained except as a consequence of certain forms of decomposition, and is no more a component of the bark and the kernels, than alcohol is an original constituent of corn.

33. Sometimes the attempt is made to carry the analysis still farther, and to resolve the organic substance into its simple elements — as carbon, nitrogen, hydrogen, etc. Much wise-looking talk has been made in this direction; and some famous men have undertaken to tell to a nicety how many atoms of certain of these elements are needed by the body, and what kinds of food are most fitted to supply these several atoms. The absurdity of this fanciful speculation is to be found in the fact, that this attempt to make man a chemical laboratory, would decide that the very best possible diet for him would be a composition of two parts beans, one part cheese, and one-and-a-half parts wood ashes! To such a pass of ridiculousness does this false chemistry (for *true* chemistry it is not) reduce its votaries. And yet, not at all checked in their wild progress of speculation, they enter upon the chemical analysis of organic agents; and offer to tell their remedial and other virtues by determining their original constitution. Let a single example suffice to show the wonderful lack of common sense which here finds votaries under the supposed mysteriousness of “philosophy.” The following table presents a thorough analysis of this kind that has been made of some of the oils:

Several similar lists might be given, but this one illustrates the whole fallacy. It shows that Chemistry can do no more than reveal that these six oils contain exactly the same elements and in exactly the same proportions. It may speculate that the atoms are of

different sizes, and are arranged in different manners, in the several cases; but it does not know this, and can not carry its inquiries one step farther than is shown in this table. But the taste of a child will instantly tell that these oils are different; that each has an action of its own upon the body; that turpentine is not the same to the human frame as pepper, nor pepper as bergamot. The senses at once and forever settle the question that, while Chemistry has a wide domain, and a remarkably important one, it can only tell the *chemical* relations that certain agents and compounds will bear to other *chemical* compounds; but that it can give no insight whatever into the relations held toward the frame of man by either a chemical compound or an organic substance. These latter relations can be determined only by the observation of the senses; and each and every substance, or product of a substance, or compound obtained from substances, must inevitably be examined and tested for and by itself.

CLASSIFICATION — FOOD

34. In attempting to classify substances in their relations to the human frame, according to the principles laid down in the last few sections, it will readily be found that all articles arrange themselves under one of three general heads:

First. — Some agents are necessary to the existence of the body, and can not be dispensed with; and these are classed as FOOD, inclusive of necessary *drink*.

Second. — Some agents are not necessary to daily life; yet make upon the structures such favorable impressions as tend, under circumstances of disease, to restore the tissues more fully to the control of the life power, (§25,) and thus aid in prolonging life. Articles of this class are called REMEDIES.

Third. — Some agents make upon the frame impressions that always carry the tissues away from their healthy standard, and remove them more or less from under the control of the life power. Such articles are classed as POISONS, and include all material *causes of disease*. (§66.)

35. The *motor powers* can not be embraced in such a classification. When the life principle has its rightful control over the organism, it is capable of using — and does hourly use — all the other motor powers in subservience to its wishes. Thus the life power takes the simple elements, and molds them into forms and fashions of its own, making a most facile instrument of chemical substances and laws. It likewise employs the forces of gravitation, heat, light, and electricity, in manners to suit itself — employing or rejecting, or completely overcoming, these immense powers, according to the wants of the system. But the control of the vital force over the organism has a limit, (§19;) and, though it overrides all other forces within that limit, a variety of circumstances (§15) may concur in favoring the fullest manifestation of some one or more of the other forces. In such cases, it will be found that the other forces contribute to the support of life only so long as they are held in subjection to the superior life power; but that when the latter power loses its supremacy, no one, nor any number, of the other forces can apply its place,

(§146,) but the others at once conspire to destroy what the life principle had so elaborately erected. For instance, by a great fall, the frame may be so jarred as to have its integrity overcome — it is broken, and the life principle can retain its hold upon it no longer. Gravity having thus obtained in advantage over vitality, chemistry (previously a servant of vitality) at once attacks the tissues and commences to tear them down by decomposition, and to resolve them into forms to suit herself. Heat (formerly so dear a friend of vitality, that ;he two seemed inseparable,) now aids the work of chemistry — an increased temperature hastening every step in the decomposing process. And light (that genial companion of life) lends all the influence she has to this foul work of disruption — which proceeds more rapidly in light than in darkness. And thus must it ever be considered the law of Nature, that, when the life power reigns supreme, it uses all the other forces in forms and degrees calculated to do the body good; but when the other forces gain control, their unvarying tendencies are to overcome the life power, and to resolve the tissues into forms of dead matter.

36. *Food.* — Articles of this class, as has just been mentioned, are necessary to existence, and can not be dispensed with. The term includes whatever can be appropriated to the nourishment of the body. To effect such nourishment, the article must be brought under the complete control of the vital force, without any reference whatever to its own chemical composition, or to what chemical or other forces would do with it. (§33, 35.) In order to be brought under absolute subjection to vitality, it must be, 1. Digested, 2. Absorbed, 3. Vitalized, 4. Deposited, and thereby used to sustain waste and repair injury. Any article that lacks either one of these properties — that can not be acted upon by the life power of a healthy person in any one of these several manners — is not food.

37. It would seem that the above definition of food is sufficiently plain and accurate to prevent all misapprehension. It is in strict accordance with the best understood facts in Physiology. And yet many persons profess to be unable to distinguish foods accurately; and, making a wonderfully broad use of an old saying, that “what is one man’s food is another man’s poison,” they claim that no exact distinctions can be made, and revert to the fact that much and serious disease is caused by overeating. Such assertions are mere sophisms; and grow out of that habit of insufficient and loose observation alluded to in sections 6, 7, and 8. The apparent intricacies surrounding the question, will be made plain by a few physiological facts.

38. In the first place, each portion of the human frame has its own especial and individual limitation, as has also the system in general. (§19.) The stomach, in each person, has a general capacity for secreting gastric juice, the liver of secreting bile, the lacteals of absorbing, the mesenteries of performing the first steps in vitalization, the lungs of purifying, etc. These several capacities are not defined to a minute fraction; for Nature has made such grand provisions for the safety of the frame, as allow and endure some latitude. And yet the fact stands patent, that the average limits can not be persistently transcended without the part feeling a corresponding degree of exhaustion — as when the muscles are overworked, or the lungs and vocal organs wearied by too much talking. All such exhaustions are so many forms of feebleness, and require time and rest to be recovered from; or they may be pushed to such a degree as to make it scarcely possible for them fully to regain; their original vigor. And each person, according to his or her original constitution, has this line of limitation placed at different degrees; and, according to a present state of sickness or health, its degree varies in the same person. With such fixed capacities in regard to the digestive and assimilative powers of the frame, it is at once evident that the quantity of food used must bear a close ratio to the capacity. If more is taken into the stomach than the system requires or than can be digested, it will fatigue the organism, it will not be passed fully under the control of vitality, it must then fall more or less under the power of chemical laws, and it has already been seen (§35) that the frame must suffer when any thing within it comes within the grasp of the chemical force.

39. To make this question plain in all its details, let us analyze the several steps of the process by which food becomes injurious. And, *first*, the quantity used may be more than the stomach can fully digest. For a few times, this organ seems to suffer no inconvenience, and the surplus food is passed through the pylorus and ejected from the body with only a passing sense of uneasiness. But by repetition, the power of the stomach is reduced. Indigestion then commences; and the food, not being completely dissolved by gastric juice, does not pass completely under vital control. Chemical changes now commence; and the very moisture,

warmth, and movements of the stomach, which were designed to facilitate the vital acts, are now directed to hastening the chemical processes. Fermentation is set up; gas accumulates, and causes suffering by mechanical distension; the process may reach the acetous stage, and intense irritation be caused by the acid product; or it may pass (in rare cases) to the putrefactive stage, and cause serious typhoid depression. Fermentation is a purely chemical process; and is precisely the same when it takes place in the stomach, as when it has occurred out of the stomach. Bread, or meat, or vegetables in a state of chemical decay, are no longer food; and no man would expect to take them into his stomach in the hope that they could answer the purposes of food, or with the expectancy that such rotted materials would sustain and replenish his system. He knows that even a partial decay of such substances renders them injurious; and understands that an introduction of them into his body will be attended with inconvenience, perhaps with sickness, and possibly with death. Now the case is not altered if the pure food were first introduced into the body, and then underwent the chemical changes. So long as it remained food, even in the stomach, it caused no harm; but the misery and the mischief commenced so soon as the chemical processes were set up. These processes having been established, the product is no longer food, does not bear to the system any of the relations of food, and can be judged of only as experience teaches us to judge of decayed food not yet taken into the stomach. Being now a new compound, its nature must be considered, and its effects recorded, without any reference to what it was before, (§33;) and the suffering caused by it is not to be accounted for by that ridiculous proposition that “quantity alters quality,” but by the correct statement that, the natural digestive capacity of the stomach having been transcended, the surplus food passed into a state of chemical fermentation and thereby became injurious.

40. In the *second* place, the stomach may so nearly perform its offices, as to pass the food into the duodenum, yet not in the state of perfected chyme. As a consequence, the functions of chylification can be performed only by an extra secretion of bile and pancreatic juice. This extra amount of secretion requires an extra exertion of these organs; and by thus repeatedly transcending the bounds that Nature has set for them, they weary and flag, and the numerous and depressing symptoms of a torpid liver supervene.

41. Again, the food may be so nearly chylified, as to be taken up by the lacteals. Yet it is not in that perfected state which is required by the mesenteries, and proves

to them a rough and burdensome mass. These delicate organs can not endow it all with that form of vitality which is the first grand step toward the food becoming true aliment to the system. As a consequence, the mesenteries either reject it wholly, and thereby waste the frame with a watery diarrhea; or they pass it into the blood in a state of insufficient vitalization. Should the latter effort be made, the frame may suffer from that peculiar state in which the atoms of nutriment are almost, yet not quite, up to the status of a sound vitality, and which constitutes scrofula; or the circulating fluid will be contaminated with impurities from the very outset, and insidiously lay the foundation for some grave malady.

42. Throughout these multiplied dangers which may follow the use of too large a quantity of food, it will be noticed that no difficulty arose till the food began to undergo chemical changes; or till the system failed to bring so large a mass under the vital control, and therefore left more or less of its particles at the mercy of laws not vital. So long as the substances remained food, they caused no detriment; and their relations to the human frame remained unchanged, while they themselves were unchanged. The moment any change in the aliment is effected, no matter how trifling its extent may seem to be, it is no longer the original food. It is now to be judged of, in its relations to the human system, by its own conduct as a new mass, and not at all by the nature or relations of the substances from which it was derived. (§30-32.) If injury is found to result from this new mass, no matter at what stage or in what form the change has taken place, these consequences can not be laid at the door of the food itself. To assume this latter position, would be to declare that any new compound was a true representative of the original elements or compound from which it was derived; and this has already been demonstrated an absurdity, and untenable on even the crudest principles of general science. The truth, therefore, does not for a moment admit the assertion that food may be beneficial or harmful, according to the *quantity* used. That statement has only the *appearance* of correctness; for an ordinary acquaintance with the laws of Physiology at once shows, that the baneful results are due to nothing but the fact that the established limitations of the digestive and assimilative organs did not admit of the

surplus food being brought under vital guidance, and therefore it proceeded to work the mischief consequent upon all forms of chemical decay.

43. This law of limitation in the capacities of the living system, overturns many a plausible theory; and therefore men are too often found laboring to disbelieve it, or to controvert its force by skeptically questioning *why* such a limitation was established. It is neither in my power nor my disposition, to attempt an answer to this latter question. Such an inquiry is entirely beyond the province of man. He must content himself with studying the natural laws as he finds them; and not commit himself to certain failure by ignoring the laws, and attempt to override them, because his feeble powers are unable to grasp the immense idea of why the Creator fixed them. By carefully studying and applying a law in all its simple integrity, it will open up new fields of thought, and explain facts that before had seen mysteries, and unveil truths that had remained profound puzzles; and a theory that can not endure the most rigid application of such a law, must sooner or later crumble away. Now it is well known that the limitations of the human frame are decided; and though certain margins are apparently allowed, and the living power will endure and rectify many encroachments upon it, yet all trespasses entail trouble, and their repetition in even moderate degree will not long go unpunished. By the light of this law, it is easy to understand how it comes that an excess of food may (through the chemical changes that ensue) produce injury.

44. And it is also well known that the vital capacity of persons is different; and that any person may vary widely at different times. (§20, 38.) When, either by original constitution or as a consequence of disease, the power of the system has been reduced, the quantity of nourishment must be lessened, or otherwise it will suffer partial decomposition the more speedily. And the more nearly this reduction in vital strength is connected with the first class of vegetative organs, the more rapidly and seriously will an excess of aliment undergo changes and work injury. For instance, in a typhoid case, the great depression of the stomach unfits it for the digestion of any but almost insignificant quantities of food; and how many times has the physician seen a few extra ounces pass into the putrefactive state almost with lightning rapidity, and bear the patient to the grave in the very hour when hope had fairly rested upon the sufferer. There may also be some peculiarity of the constitution, by which an individual may be unable to digest and appropriate certain articles of food. Nearly every neighborhood will

afford instances of persons who can not use honey, or cheese, or cabbage, or turnips. I have known some who were at once sickened by light bread; and others who would be thrown into erysipelas by eating a single peach or a few strawberries. Such idiosyncrasies may not be fathomable; but they actually exist, and this fact must be recognized. These persons can not employ certain alimentary substances, because of some unusual limitation in the capacity of their system. That limitation is almost invariably in either the constitutional endowment or present condition of the stomach. With them, therefore, the indigestible articles pass into a state of decomposition very quickly, and work their mischief in a short time. But such isolated facts can not be allowed to overturn a general rule; and the world could not be made to believe that turnips, or strawberries, or peaches, are poisonous, because Mr. A., or B., or C., is in such a condition that he can not digest them. By the vast aggregate of observations it is proven what articles are capable of nourishing the human frame. All such articles are correctly classed under the head of FOOD. By the light of the above facts, the source of mischief from excess is easily understood, and the nature of personal idiosyncrasies readily explained; and there is no occasion for being undecided whether a given article is a food or a poison, and no wisdom in resorting to simple exceptions to sustain the absurdity that “ even our very food may be poisonous.” This naked assertion is used quite too commonly; and is turned to with such tenacity that, were it for a moment admitted to be true, it would utterly overturn all possibility of there being any SCIENCE.

HYGIENE

45. While food is provided for the purposes of supplying natural wastes and furnishing materials for reparation, articles of this class will not serve all the requirements of the system. It was seen, in the last section, that conditions may arise under which the frame can neither digest nor appropriate nutriment. whatever form such conditions may present themselves, they constitute disease, (§23;) and the inability of the organism, at such times, to carry on its functions of assimilation, is too well known to require more than a reference to the fact. In such a state of the frame, something besides food is required; and though a class of good men will be found contending that nature never admits kindly the use of any thing beyond food and suitable hygienic measures, that is but a partial exhibit of the facts, and can hold good in only a limited number of maladies. A very large number of the multiple forms of disease, present to the physician patients in conditions where it is impossible for them to endure the common handling of what for other cases would be good hygiene; and so far from being able to make the legitimate uses of food, all forms of nutriment rapidly decay in their stomachs and cause serious mischief. Speculation, and a course of forcing built only upon such speculation, will not answer under such circumstances. Impressions different in character from any that can be made by food, will now be required; articles of a different nature must be sought for; and the common-sense, as well as the experience, of the entire human race — from the earliest periods of barbarism down to the present hour — concur in testifying that there is a large class of articles designed for and serviceable in just such conditions. This class of articles are known simply as *remedies*.

46. But while thus stating that food and hygiene will not meet all the varied conditions of life, let it also be stated that remedies can not take the place of food and hygiene. Health is the natural state, and disease is the accidental one; and so food and hygiene are the hourly requirements; but remedies are only occasional necessities. It is too often the case that both physicians and people attempt to maintain health by medicines, under circumstances where no medicines are called for; and belabor the

system with drugs, where only proper food, or sufficient sunshine, or pure air, is needed. This mistake is far more common than is generally supposed, even among medical men; and physicians too frequently continue to urge remedies into the stomach, when a careful study into the conditions would show that there was no state which could be corrected by any medicine whatever. How well is it known that habitual costiveness may be overcome by a diet of fruits and succulent vegetables; that the same class of foods is best fitted for excitable persons and those of sedentary habits, while the sanguine temperaments and out-door workers need more concentrated food; that the headache of hunger is best relieved by a light meal, and the scrofulous tendencies growing out of a salt diet best overcome by a persistent vegetable (and mild acid) course. So well known are these and a hundred similar facts, that an unprofessional man of good intelligence could quickly tell the physician that no physic should be used till a proper diet, and regularity of going to stool, had first been thoroughly employed against costiveness; that no nervines were comparable to some bread and butter for headache growing out of too long a delay in a meal; and that alteratives were worthless against scrofula so long as the patient was using regularly of salted pork, hot bread, coffee, and tobacco.

47. But it is not alone in chronic cases, that such observations as the above are applicable. There comes a point, in the course of every acute malady, when the use of remedies should almost or entirely cease. And even in the full height of most febrile difficulties, it is at times of vital importance to withhold all medication for the last few hours of the night, that the stomach may have a fair opportunity to act upon a suitable quantity of food in the early hours of the morning. And if the frame is not thus provided for, but is denied good sustenance at proper times, there will, in the majority of acute cases, gradually develop a nervous, restless, excited, and yet prostrated condition, almost akin to the incipient agitations of starvation. How futile would it be to attempt the relief of such nervousness by increased vigor in the exhibition of drugs. Nature is loudly demanding food; and it would be injudicious for the physician, intent only upon his remedies, to dose her with selections from his *Materia Medica*. In like manner, some patients suffer and sink because their bedroom is too close, and the anxiety to “keep off the draught” leads to a system of shutting up windows and doors till the atmosphere becomes poisonous. Others, again, may be wearied by too much conversation around them; or fatigued by too much bustle and light in their own or an adjoining room; or made nervous by

too much bed-clothing being heaped on to keep them from "catching cold;" or overcome by too much lifting and handling, (particularly liable to be done to small children;) or exhausted with the profuse sweat maintained by too warm a room and too much diaphoretic medicine. (§187.) In all such cases, the symptoms growing out of such unnatural conditions can not possibly be relieved by increased vigor of medication. On the contrary, medication will then often need to be curtailed, or even laid aside altogether, till steps have been taken to surround the patient with the hygienic requirements whose withdrawal has provoked the additional trouble. This done, the physician will be better able to distinguish between the symptoms actually caused by the disease, and which require medical treatment; and those which arise merely from impure air and general bad surroundings, and which can be benefitted only by suitable hygiene. The discrimination between the two classes of requirements, is often a point calling for the utmost nicety of judgment. . But to make such a discrimination, is a duty of great imperativeness; and no physician should attempt to assume the responsibilities of the sickroom, till he has prepared himself for the exact discharge of this requirement. One of the temptations incident to professional life, is to place all good in the remedies and forget all the benefits of healthful circumstances. As above remarked, hygienic influences are at all times the *very first* thing to be provided; and remedial measures should never be instituted except as auxiliaries to the former. It is, therefore, of great importance for the physician to realize that no remedies (not even the superior ones known to Physio-Medicalism) can possibly take the place of food, drink, light, air, quietness, and similar appliances; any more than these appliances can supply the place of remedies. Each class has its own capacities, and its own sphere of actions; and the judicious physician will give to each one exactly the field that belongs to it, and never attempt to use either for the purposes that can be filled only by the other. The many excellent cures which justice compels us to recognize under the hands of Homeopathy, are due to the recuperative efforts of Nature, assisted by the scrupulous minuteness with which that school regulates the hygiene of every patient; for the articles it uses as medicines are too often poisons of a dire kind. From this fact,

Physio-Medicalism should learn not to ignore hygiene as much as is now done by our physicians; but to bring all possible influences to bear in favor of the patient, by combining the most rigid sanitary regulations with the superlatively excellent remedies that this school possesses. The consideration of such, appliances, belongs to the departments of Physiology and Practice; and so in this volume they can receive only this passing, notice, while we turn at once to the field belonging to remedies.

REMEDIES

48. A definition of the term *remedies* was given in section 34. They may briefly be designated as: Agents whose natural tendency is to restore diseased tissues to their normal conditions, so that these tissues can again be used fully and freely by the vital force. Thus the class is limited to articles which, on the one hand, do not furnish nutriment to the system; and on the other hand to articles whose legitimate action has no tendency to disturb any tissue, to derange any organ, to create any lesion or structure, or to leave behind any condition that will afterward prove a source of discomfort or will require further treatment for its removal.

49. When it is suggested to use remedies for restoring the tissues to such conditions that they "can again be used fully and freely by the vital force," the idea is at once conveyed that the action of a true remedy cooperates or harmonizes with the action of Nature. It at once becomes interesting to know the manner in which the vital force acts upon the tissues in a state of health. These, as taught by Physiology, may be reduced to three general modes, namely: 1st. By *contracting* the tissues; or causing a shortening of their fibers, and greater consolidation and compactness in the substance of an organ. The simplest form of this action is seen in the contraction of the voluntary muscles as made in walking, lifting, speaking, swallowing, or any other motion. Precisely the same action takes place among the involuntary muscles, as in the systole of the heart, the peristaltic movements of the bowels, etc. Organs not possessed of motor fibers are also subject to natural increase of compactness, as witnessed in the various conditions of the mucous membranes, the hepatic changes that take place every twenty-four hours, the contractile changes in the skin, etc. 2d. By *relaxing* the tissues. This is directly the opposite of the former action; and is familiar in the readiness with which the motor muscles may be relaxed at will, in the diastole of the heart, in the periodic cessations of the peristaltic movements of the bowels, in the daily flaccidity of the liver, and in similar well-known variations occurring in the healthy frame. 3d. By *stimulating* the structures. This action, the term representing it, mainly refers to the nerves of sense; but is equally applicable to the entire

nervous system, and to the circulatory and lymphatic vessels. In point of fact, it includes alternated contraction and relaxation; in consequence of which the sensibilities of a part are exalted and its motions hurried. This is manifested in the increased frequency of the circulation under the influence of either physical or mental exertion; in the alternating contractions and distensions of the stomach, by which the food is revolved in that organ, and the gastric juice mixed through it with mechanical completeness; in the rapid narrowing and dilatation of the pupil of the eye under the varying degrees of light and shade; and in many other cases where the function of a part is aroused to a pleasant and healthful increase. The term stimulation is, therefore, not applied to some new action or state; but is used for its correctness in expressing an exaltation of natural sensibility and consequent hurry in the first two modes of action.

50. The three modes of action above named, belong to the state of perfect health. When the vital force is possessed of its full control over the structures, it uses them with perfect freedom in these several ways, according as one or the other is requisite. At pleasure can the voluntary muscles be relaxed or contracted, and that with great rapidity; and full health enables the life power to contract one set while relaxing the other, and to reverse these actions upon the two sets, entirely at its pleasure and according to its necessities. In like manner it relaxes and contracts the heart and arteries with marvelous regularity; and hastens these actions when occasion demands. And throughout the entire frame, every organ, every tissue, and the most complex arrangement of tissues in organs, are used by the life power in these three ways. And the tissues respond to the influence of that power readily, yielding prompt obedience, changing their conditions rapidly or slowly in subservience to its dictations, and performing all these movements without a jar or a discord. (§22.)

51. Seeing, therefore, the manners in which the vital power moves the tissues in a state of health, it can the more readily be understood what variations or discords in these movements constitute the state of disease. It has already been stated (§23) that disease consists in a loss of complete control over a part, in consequence of which that part to a corresponding degree becomes incapable of performing its duties. This partial loss of control may be in either one of three general directions, as is self-evident from the above analysis of healthy actions. 1st. The vital power may not be able to *relax* the tissues at will, they being in a state of too great rigidity. This is seen in the fixity of lockjaw, the tension of wry-neck, the wiriness of the pulse, etc. 2d. It may

not be able to *contract* the structures at will, they being too loose and flaccid. Instances of this condition are seen in colliquative perspiration and diarrhea, the general laxity incident to anaemia, the lack of nervous and consequently of muscular sensibility in paralysis, and many other cases. 3d. It may not exercise full control over the *nerve structures*, these tissues suffering extremes of prostration and excitability under slight provocations, and apparently without any restraining power being exerted by the vital force. It is not the purpose here to inquire what direct or remote causes may provoke or induce these states of the tissues. This inquiry belongs to another department; and the present discussion in Therapeutics merely calls for a statement of these classes of conditions in which the tissues may wander from the state of health.

52. *Application and Misapplication of Remedies.*

— In section 25 it was stated that, when the frame had been unfavorably impressed, and thereby forced to depart from the healthy standard in any particular direction, a restoration to health was to be sought by bringing to bear upon it such harmless influences as would impress the structures in a manner opposite to the disease-producing impressions. Now making use of this proposition in connection with the facts contained in the last two sections, and it will become apparent that *remedies* are naturally divisible into three general classes, each class having its own sphere of action, and therefore its own line of applicability. These classes and their individual relations are as follows:

1st. *Relaxants.* — Agents of this class are required when any one or more of the tissues have become too rigid and contracted — whether such tissues are found in the blood-vessels, nerves, bowels, liver, gall-ducts, skin, or any other organ. The condition of the tissues being determined as that of too great contractility, they can be restored to the full use of the vital power only by such influences as will induce their healthful relaxation. Tepid water, lobelia, and asclepias, are good representatives of this class.

2d. *Astringents.* — In this class are included all agents that will induce greater density and firmness of the structures. It common to apply

the term to articles that will induce dryness of mucous membranes; but it is equally applicable to those which tend to consolidate muscular, arterial, nerve, or other tissues; and includes many of the tonics and nervines. Such agents are applicable to conditions of laxity, feebleness, and general loss of tone. Oak bark and geranium root are in is class.

3d. *Stimulants.* — This term is applied to whatever arouses nervous sensibility, and through it maintains a better circulation, and consequently a better functional action. As already stated, (§49,) the natural stimulation of the vital force usually consists in a rapid alternation of relaxation and contraction, with a tendency to make contraction paramount; and in like manner remedial stimulants exert a combination of relaxing and astringing influences, usually leaving the tissues in a state distinctly firmer than they were before. Agents of this class are called for in all cases where the nervous sensibility is diminished, where arterial action is feeble and unsteady, and where functional action of any kind is at fault from too great weakness and torpor of the fibers. Capsicum is a standard article in this class. Let it be further added, that the stimulants spoken of in this volume never include whisky, brandy, alcohol, nor any other form of spirituous liquor.

It not unfrequently happens, in disease, that one part of the organism needs one kind of remedial influence, while another part needs a different kind; and that any one part may require two kinds of influence — as of relaxation to secure openness to emunctories, and stimulus to aid in ejecting the secretions from the conduits. Indeed, the cases are few in which one kind of influence will fill all the requirements, and the great mass of agents possess some combination of the above properties. These points will be more fully elucidated hereafter; but they are so nearly universal as to demand recognition at the outset.

53. When discussing the nature and relations of food, it was apparent that aliment cooperates with the life power in sustaining existence. Although of itself it has no choice of conduct, no election of the uses to which it shall be put, yet it is a friendly instrument provided to the hands of the life power; and only by the due supply of which is it possible for the vital principle to sustain the activities of the human frame. And it was also noticed there, (a fact which every one knows,) that food of different classes will make different kinds of impressions upon the tissues — cranberries, and pie-plant, and beef, and many other things being stimulating; and turnips, and peaches, and sweet

apples, and similar articles being relaxing; while fine flour, and boiled milk, and arrowroot, and others, are more or less astringing. By influencing the tissues in such several ways, it was noticed that different classes of food might become highly serviceable in various forms of disease — lending their influence so directly in concert with the wants and wishes of the vital force, as to be fairly deserving of the title of friends of health. Now it is in similar manners that true remedies cooperate with the vital force. These agents, as well as foods, act in harmony with the life power by making upon the tissues the very kind of impressions that this power wishes to have made, and thereby restoring the tissues to the full control of the vital principle. The remedies do not take the place of the vital force, any more than food takes its place; but are merely instruments in the hands of that force, and make impressions that aid said force in continuing human existence. And their impressions are, as a consequence, wholesome in kind, healthful in results, and not calculated to create any disorganization. It is important to remember this point distinctly, as almost the entire Homeopathic doctrine rests upon the assertion that every impression of a remedy is a disease of the tissues; and hence it is necessary to keep before the mind the fact that these impressions are no more diseases than are the stimulation, relaxation, and astringency, caused by different classes of food. An article whose impressions are not thus innocuous, does not belong to the class of remedies, but is a poison.

54. But though remedies act thus directly in aid of the recuperative efforts made by the vital force, they, as well as food, can be misapplied. The immense mischiefs that may ensue in the use of more food than can properly be digested or assimilated, are due to the chemical deterioration that must take place in the surplus portions, and not to the food as food. (§39 *et seq.*) In like manner may remedies be used in quantities beyond what are needed, or of a character inappropriate to the case in hand. Under such misapplications, the agent itself not likely to suffer chemical change and thereby become poisonous; but it may place the tissues in such a condition that, *for the time being*, the vital force can use them even less effectually than it was doing before; and thus, though the article will cause neither corrosion nor paralysis, its

measurable retardation of a function may lead to the retention of some secretion or the absorption of some morbid material; and the substances thus delayed within the system may undergo changes that will prove detrimental. It is a prime necessity, therefore, in the practice of medicine, that the agents used should be appropriate to the requirements of Nature — quite as much so as it is necessary to give drink and not crackers to one who is perishing with thirst, or to give food and not more air to one who is faint with starvation.

55. *Misapplication of Relaxants.* — Relaxants being useful for states of undue tension, it is a misapplication to exhibit them when the tissues are unnaturally lax. Thus, when the skin is loose and open, asclepias would open it still more, and so lead to an excess of perspiration that might prove exhaustive by greatly disturbing the balance between waste and supply. When the muscles are relaxed and feeble, lobelia would keep them in state of relaxation which would interfere with that full nutrition which is necessary to their return to strength. When the stomach is weak and flaccid, repeated small draughts of tepid water would keep it flaccid, and thereby stand in the way of that natural return to the firm state which is necessary to the secretion of gastric juice and the digestion of food. When the liver or bowels are so unduly relaxed as not to be able to eject the bile and excrement, a further relaxation of them by leptandra would render the performance of these functions still less probable, and the frame might suffer greatly from the retained materials. When the pulse is soft and insufficient, any article that will relax the arterial structures will evidently be thrust upon Nature against her manifested wishes; and if a powerful relaxant of this kind were given till the enfeebled heart were itself still further softened, the power to distribute a life-sustaining supply of blood might be unpleasantly interfered with. (§162.) When mortification has taken place at any point, and all the frame is feeling the depressing load, (the increased agitation of the heart manifesting how feeble is the power of the system to overcome the poison of decomposition,) the use of relaxants would so open the structures as to leave the vital force dispossessed of the means for building up a line of demarcation by which to shut the decaying substances out of the frame; and the relaxants at the same time opening the absorbents, the poison of the putrefying parts might thereby find its way into the general circulation. These last two instances of the misapplication of remedies, is by no means uncommon; and candor compels the admission that, in extreme cases, injurious consequences may hence ensue; and yet the relaxants themselves do not impair

the integrity of a single fiber, nor leave one in a state from which the vital force could not subsequently revive it; but all the detriment suffered is from an insufficient flow of blood in one case, and an absorption of animal viri in the other.

56. *Misapplication of Astringents.* — Astringents being required in states of undue flaccidity of structures, it is a misapplication to employ them where tissues are already too much contracted. Thus, when costiveness resulted from dryness of the mucous membranes, oak bark would increase the dryness, and so aggravate the costiveness. When occlusion of the pores caused a retention of morbid material which irritated the surface, an astringent application would still further contract the skin, and cause retention of perspiration and elevation of temperature. When general failure in elimination resulted from undue tension or an utter lack of acting power of the structures, any astringent would close up the emunctories, and thereby increase the morbid accumulations and exalt the arterial excitement. (§163.) All such retentions are highly injurious — the uneliminated materials rapidly deteriorating, and acting as poisons. The use of astringents in dysentery, while local excitement is high and before the foul collections in the bowels and liver have been removed; and the use of quinine in intermittents, before the insidious accumulations of deleterious substances have been broken up; are familiar examples of the misuse of agents of this class. The articles themselves may be harmless, and may not withdraw any tissue from the control of the vital principle; but the impressions they make are of a kind the opposite to that required by the frame under the circumstances, and hence there is fastened into the body a mass of excrementitious materials which of necessity (not being vitalized substances) will proceed to decay and thereby prove mischievous.

57. *Misapplication of Stimulants.* — Stimulants being required when the tissues either lack sensibility or have not a sufficiency of acting power, they would be misapplied if given when the excitement was considerable and the activity above normal. Thus, in acute inflammation, while the circulation in and through a part is full, capsicum would but add

to the excitement, without opening the structures for the ejection of the offending substances; and would be entirely out of place, without regard to the fact that it might be useful when partial congestion ensued, or even indispensable when gangrene threatened to supervene. (See my P.-M. Surgery, articles *Congestion* and *Mortification*.) When the pulse is large and hard and hurried, as in synochial fever, the same agent would but increase the hardness and excitement; whereas the acting power of the heart and blood vessels is already great enough, and Nature demands relaxation to insure greater equilibrium; and hence the capsicum would be out of place in all such conditions, though it might prove invaluable when a small pulse (even though wiry and excited) indicated a lack of heart-capacity to throw off accumulating poisons and to sustain capillary circulation — as in typhoid conditions. Used under the inappropriate circumstances named, this article, or any similar stimulant, would weary the organs by urging them to a persistent activity that will not allow of that period of repose which Nature institutes for every organ. And as, in the cases indicated, Nature is using the tissues with sufficient *power*, but requires that form of help which shall open the conduits through which she may eject the harmful accumulations and then restore a balance of action to the frame, the stimulants so act as to leave these accumulations within the system, where they may work their mischief. In many instances, this class of agents, although misapplied, may incite such force as ultimately to overcome the obstructions; but Nature ever prefers to do her work with mildness rather than under compulsion. Yet the true remedial stimulants never exhaust a tissue beyond the limits of subsequent usefulness, and never corrode a structure — the statements about vesication following the use of capsicum being incorrect.

POSITIVE DETERMINATION OF A REMEDY

58. Because remedial agents are liable to misapplication, or even to positive abuse, in the manners just pointed out, some men profess to be unable to determine what is a true remedy. They imagine that there can be no definite rules by which an agent of this class can be determined with scientific exactness; and are found resorting to the baseless sophism that "good remedies may become poisons, and therefore poisons may become good remedies, according to the time and quantity used." In the earlier sections of this department, and especially in sections 8, 9, and 10, it was seen how changeless are the laws of Nature. And in the sections relating to the injuries that often ensue from over-eating, (§39-42,) was seen the utter fallacy of that idea which would change the relations of an article to the human frame with every variation of quantity. By strict analogy, the points there established should at once settle the question here raised against remedies — showing that this can be nothing more than a sophism, or else that scientific principles and physiological relations can be changed by such a trifling accident as the weights in an apothecary's scales. The difficulty here lies in that insufficiency of observation, that hurried jumping at conclusions which appear satisfying, which have already been stated to be the great hindrances to scientific advancement. (§6.) By laying aside all prepossessions either for or against an agent, and by following the rules which are accepted as guides in all other fields of scientific research, it will be found that a beneficent Creator has not only supplied man with an abundance of harmless articles with which to relieve his sufferings; but that these articles are fixed in their relations to the human frame, never change their actions, and may be determined with unvarying certainty. Let us closely examine the modes for their investigation, and the rules by which they may be unerringly distinguished from all other articles. (§64.)

59. In attempting to form an estimate of an agent, it is necessary that, *first*, the observations upon its action should be numerous; and, *second*, that the article be used

alone and not in combination. It is altogether too common a practice for physicians to reach large conclusions from very small premises; and perhaps nowhere is this disposition so strongly exhibited as in deciding upon the action of any article called a remedy. Some of the evils of this over-haste were alluded to in §7. The practice is so prevalent, that the editor of the *New York Medical Record*, (Allopathic,) under date of January 1, 1868, has felt himself called upon to make these remarks: "It seems strange, at first sight, that as the whole object of science is truth, there should be any question in regard to so-called scientific facts. All of us are, however, aware that statements intended to be scientific, are constantly open to every conceivable doubt as to their authenticity. How fashionable has it become, when any startling assertion is made by a professional brother, for one to ask the other, 'Is he reliable?'" There can be no doubt but these remarks are well founded; though if our Allopathic neighbors feel compelled thus publicly to question the common veracity of their own "brothers," it can hardly be hoped that said "brothers" can be expected to adhere very closely to the truth, when they indulge in reflections upon people and remedies against which their strongest prejudices are engaged. Too often do gentlemen form their opinions beforehand; and then, desiring to see an agent lead to a given result, they conclude that it has produced this result, if they but see said change take place after the exhibition of an article. They ignore all the part taken in a cure by the vital force. (§29.) They ignore a hundred cases where quite the contrary results clearly were produced by the article in question; and they cling tenaciously to the fact that they observed a certain desired change in one or two cases after the article had been given. It was, probably, a mere accident of time — the change being in progress, under the action of other influences or forces, before the article was exhibited at all. Observations are so commonly made after this fashion, that a very large portion of the praises of different remedies is made upon such limited and disconnected experience as to be entitled to no confidence whatever.

60. Manifestly, the cause of truth demands that an article shall be tried *thoroughly*, before any judgment is passed upon it. It should be given in many separate cases, under different circumstances, in various temperaments. And the observations thus made should be conducted by a number of persons; and the quantities used should be sufficient to bring the system fairly under the influence of the article. By associating the experience thus obtained, a definite and reliable opinion of the article is rendered possible. An opinion thus founded will discriminate between the

action of the agent and the action of the vital force; and nothing will be left to prejudice, hope, or inference.

61. In the next place, the article should always be employed alone, and not in company with other agents, in order to arrive at a clear perception of its nature. The necessity of studying each agent by itself has already been pointed out in sections 32, 33. A great many opinions of physicians are reached by pursuing the contrary course. They get accustomed to using a certain compound; and then, from whim or suggestion, add to it some agent with which they are familiar. The case under treatment passes through an unexpected change, and at once the change is attributed to the new article, and forthwith it is rated as an agent capable of procuring such and such results. But it may have been associated with remedies that would of themselves, aiding the efforts of the vital force, have secured the results in question; or the new article may not only have failed to do any portion of the work, but may actually have been in the way of the others. Instances of this latter kind are much more numerous than would at first be supposed; and many a pleasant cure is attributed to quinine, or to capsicum, or to some other agent equally serviceable in its place, when a full acquaintance with the facts would have shown that the quinine or capsicum was wholly misapplied in being used at all. In the same way is it common for Allopathic physicians to use lobelia with opium or hyoscyamus or hydrocyanic acid, and give to the associate articles all the credit for whatever benefits may follow, but heap upon the lobelia all blame for resultant injury or death, And the Eclectics also prescribe lobelia or asclepias in company with veratrum or aconite or gelseminum; and then herald the cure as an evidence of the virtues of the latter articles.

62. It is not uncommon, indeed it is wonderfully common, to read in the current journals long communications upon the fine qualities of some particular agent; and to find by the communication that the opinion was formed simply and wholly by using the agent in a variety of combinations with some other agent, and not by testing the article alone and upon its own merits, Let a single instance suffice to illustrate this whole subject: In the *British*

Medical Journal for 1867, Dr. A. Fleming reports the particulars of five very severe cases of habitual constipation, in which he used very small doses of atropia, (belladonna,) and had the satisfaction of seeing a cure. Forthwith he sings peans to the virtues of atropia in constipation. But now mark. In one of his cases, (and almost the same thing in all,) he says: "I directed him to sponge with salt water once daily, in the morning; to rub the belly vigorously; to take abundant exercise; to omit from the diet tea, coffee, and stimulants; to take cocoa at breakfast, porridge at supper, and vegetables and fruit in moderation." Any practitioner will be free to pronounce such course of management abundantly able to cure any of Dr. Fleming's five cases, or almost any other case of the kind; and the current history of atropia, with its thoroughly demonstrated power to induce muscular paralysis, will satisfy any mind that the cures would have been more easily and safely accomplished without it. And yet the cases, under this course of management, are cited as instances illustrating the value of atropia as a laxative! If this farce were only an occasional one, it would not be just to quote it here; but one can scarcely take up a number of an Allopathic, Eclectic, or Homeopathic journal, without finding the same course repeated. Opinions obtained in such a slipshod way, are of no earthly use to the cause of science. They merely serve to deceive those who place any confidence in them, and are as valueless as the opinion of the above Dr. Fleming upon lobelia, which he gives in the report of one of his above cases by saying: "It appears that a year ago he had sought advice, on account of indigestion, from a quack, who gave him four doses of some drug, probably lobelia, which purged him very severely, causing much pain and discharges of blood and mucus." If the doctor knew no more than this of lobelia, he is a wonderfully ignorant man in his own profession; and yet it is by just such reckless assertions as these that strong "authority" is quoted against good remedies, and equally valuable "authority" multiplied in behalf of virulent poisons, till one would imagine that the most noxious stuffs were very elixirs from heaven.

63. Let it be repeated with emphasis, then, that no article should be judged of in combination, if a clear opinion of its action is desired. That course may answer for those who are indolent in study; or those who have some particular and pet notion to sustain at all hazards; or for those who will accept from another any extravagant assertion that excites their credulity. But the calm and conscientious physician, who loves the truth and feels the responsibility of human life, should never be entrapped into such a mode of procedure, nor

enticed by opinions reached through such a plan. He should take each article by itself, and test it abundantly as it stands alone; and then he will be able to reach conclusions that will be reliable, and to offer opinions that will endure the most rigid scrutiny. After the properties of each individual agent have been learned, the principles which favor or oppose their combinations with others will be another and further subject of inquiry. (§254.)

64. To return, now, to the question started in section 58: How may a remedy be determined positively, without confounding it with agents of any other class? By what characteristics may an article be known as a true and harmless remedy? Taking pains not to confound the action of the article with the effects of deleterious substances retained within the system, and being careful to make observations with it alone, and to extend these observations through an adequate extent, and the following rules will determine it to be a remedy in the true sense of the word:

Rule 1st. — Their action is definite, and the vital response to their impression is also definite; hence they can be depended upon to secure certain absolute results. Lobelia relaxes, and will relax under any and every circumstance where it can show its character; oak bark astringes, and will never act in any other way than to astringe; capsicum stimulates, and will do so under all circumstances. The agents do not change these characters in different temperaments nor in varying forms of disease. The manifestation of their power may be interfered with, not only by death, but by partial paralysis, incipient mortification, atrophy, and other conditions. (§141.) But when they act they always do so in the same unvarying manner; and the practitioner will not need to be in any doubt as to the character of the impressions that any true remedy will make, or of the response that the life power will make. (§28.) In poisons, this is not the case; as will hereafter be seen.

Rule 2d. — They can be given persistently, and continued indefinitely, till they accomplish their work. It will not matter whether the dose be large or small; whether the agent be used one day, several days, or many weeks; whether the patient be robust or delicate; if it is a remedy

and not a poison, and its action is required, the system may be kept steadily under its influence till the normal condition of the structures has been restored. And when this condition has been restored, the article may be continued steadily, so as to maintain this state till the parts have recovered sufficient strength to perform their duties without any extraneous assistance. In this latter fact is found the most overwhelming proof that a true remedy acts in harmony with the life principle, and is a friendly instrument in the hands of vitality — that the living frame receives the article kindly, and never wars against it or feels oppressed by its presence.

Rule 3d. — As a sort of corollary to the second rule, is this: That after a true remedy has accomplished its full work, no matter how much or how little was given for this purpose, the parts acted upon by it are stronger than they were before — better able to perform their functions, and therefore in a state of better health and higher integrity.

65. These three rules are but divisions of one general idea — the idea of *actual harmlessness*. They make so many different standpoints, from which to enter upon an analysis of a reputed remedy. If the article will fill all three of these requirements, its character may be considered as having been “acted upon and passed.” Stronger and more pointed tests should not be required; for if the article can stand this ordeal, its curative and innocuous character is as thoroughly proven as can be any proposition to which man applies his faculties of reasoning. And a confirmation of this correctness may be found in the facts, *first*, that even an excessive use of a remedy causes no lesion in any structure; *second*, that its use is often followed by an unexpected amount of secretions, in which it resembles the excessive flow of *accumulated* sweat or urine by which Nature herself often terminates in acute malady; and *third*, that even a palpable misapplication if it will cause no *permanent* injury. Surely, the human mind can have no ground on which to retain a doubt of the absolute harmlessness of an article which will thus prove its congeniality to the power of life; for when observation and the confirmation of experience have proven an agent thus naturally incapable of mischief, all further cavil is the prejudice of untruthfulness.

NATURE OF POISONS

66. In the classification of agents made in section 34, poisons were spoken of as articles that “always carry the tissues away from the healthy standard, and remove them more or less from under the control of the life power.” This class may also be defined as agents which tend to impair the tissues and permanently derange the functions. Dr. Gardner, in his *Medical Dictionary*, defines a poison thus: “That which, when applied externally, or taken into the human body, uniformly effects such a derangement in the animal economy as to produce disease.” This is an excellent presentation of the scientific ideas connected with the word; and it is of double value to us, as coming from standard Allopathic authority. Another vigorous Allopathic definition is the following, as given by the former editor of the *Boston Medical and Surgical Journal*: “Poisons, however much they may differ in other respects, agree in this, that they suddenly and rapidly extinguish a large portion of the vitality of the system.” Dr. H. Dobell, of England, classes poisons among “the causes of disease.” And in the same manner every lexicographer, and every medical author who has touched upon the subject, agree in attaching the term poison to such articles as will induce disease — as have such an inherent relation to the body as will lead to injury, or even to death.

67. Poisons may be found in all three of the natural kingdoms — animal, vegetable, or mineral. A very large number of the mineral compounds are poisons; though some of them, as salt, are harmless; and some which are almost inert in their simple metallic state, become intensely poisonous when compounded with other articles. (§33.) A portion of the animal kingdom enters into man’s most concentrated food; but a great part of that kingdom is very poisonous; and the chemical viri resulting from decomposition of animal tissues, are peculiarly inimical to life. In like manner, the vegetable kingdom furnishes man with the larger and more delicious portion of his sustenance; yet it contains some of the most violent poisons known — poisons which will act with more uncontrollable rapidity than any in the mineral kingdom. It is, however, a peculiar fact that some vegetable articles are poisonous to some animals, and edible by others — as for

instance that one species of the water hemlock (*Phellandrium aquaticum*,) is very fatal to horses, while cows eat it with impunity; and the jimson weed, (*Datura stramonium*,) is destructive to man, but is a favorite food with goats. So common is this fact, that it would be useless to draw any inference as to the effects of an article upon man, by observing its relations to some other animal; though, from man’s higher and more delicate organization, it is quite safe to say that an article which has proven fatal to beasts, will also prove fatal to him.

68. In their modes of action, poisons are of two general classes: 1st. Corrosives; 2d. Narcotics. Some articles combine the two properties, corroding or abrading first, and afterward making a narcotic impression. *Corrosives* act upon purely chemical principles — seizing upon the tissues, taking them from under the control of the vital force, and resolving them into dead compounds in conformity with chemical laws. (§35.) For instance, sulphuric acid will attack any tissue of the body, force out the vital principle, and then dissolve the structure precisely as if the life power had not so recently been in possession. The dethronement of vitality is with it prompt and complete. Corrosives invariably provoke irritation in the living parts beyond. *Narcotics* do not cause any immediate and palpable corrosion of structure; but they abate the vital sensibilities of the tissues, and lower the nervous property of feeling till they destroy it altogether. An instance is found in carbonic acid gas, (whether arising from burning charcoal, or any other source.) This first impairs the senses, then produces stupefaction, and presently leads to somnolent death. Narcotics do not openly resolve tissues into purely chemical compounds, and it was for a long time supposed that they made no lesions whatever. This latter supposition was not in keeping with analogy; for it would be incredible to imagine that any article could lead to death, and yet leave the tissues in their normal integrity. Late microscopical researches have clearly demonstrated that all kinds of narcotics impair the soundness of the nerve tissues — breaking up the cells and softening the nerve substance in the most absolute and fatal manner. (§90.)

69. From these well-known facts, it is at once apparent that corrosives and narcotics do not use the tissues, or do not make impressions upon the living frame, in any such manner as is natural to the vital force. (§49.) They do not improve the states of the fibers, because they do not put them in a condition of health; and therefore they can not restore them to health when they are diseased. Such impressions as have been named are

themselves disease; and consequently the inherent tendency of agents that will make such impressions is toward the dethronement of the vital force, and therefore toward death.

70. Every poison, however, does not produce immediate nor even early death. Neither does every poison cause a decided and glaring change in the health of a part, or a permanent disturbance of the functions performed by that part. On the contrary, persons have taken rather free quantities of a poison, or have used it for some time, and yet were not in immediate prospect of death from it. Indeed, it may be conceded as a fact that calomel will secure discharges from the liver, and there are many occasions on which an increased biliary flow is a great desideratum; and opium will usually secure sleep, and this is oftentimes an imperative necessity. From a multiplicity of such observations, it is seen that not only may persons take into their bodies poisons, and live; but that articles admitted to be poisons may be used to *apparent* advantage in restoring various functions. From this has sprung the practice of using agents of this class in the treatment of disease; and so great has been the importance attached to such observations as the above, that the class poisons has come to be considered the best remedies — the means that will kill to be pronounced the most effective for saving life! The idea is an utter paradox; and might be dismissed as an absurdity, and as an attempt to nullify all our ideas of fact and language. But those sentiments are at this time so firmly rooted in the minds of such a great number of people, that it will need a careful analysis to overthrow them.

POISONS CAUSE DISEASE

71. There is no physician but proposes to *cure* disease; and no class of physicians is more ready than the Allopathists to use the statement that they seek to “aid nature.” The whole difficulty lies in their mistake as to what kind of “aid” Nature wants. Prof. R. Dunglison says, (*Therapeutics*), “The most energetic poisons are used in the treatment of disease. . . . Our agents are resorted to with a view of exciting a *new disease* in the place of one already existing.” Prof. G. B. Wood says, (*Therapeutics*, vol. i, p. 55,) “If we can produce a *new disease* in the exact position of one that may be existing, we may possibly supersede the latter; and *if* the new disease subside without injury, we cure our patient.” Sir J. Forbes, for fifty years one of the most favored physicians of Europe, says, (*Nature and Art in Disease*, p. 32,) “The strongest and most effective powers of Art are usually employed for the *very purpose* of setting aside or counteracting the powers of Nature. We may even say that the arm of physic is invoked purposely to disturb, and obstruct, and overwhelm, the normal order of the natural processes.” Dr. T. R. Chambers, physician to the Prince of Wales, in his lectures on the Renewal of Life, says, (p. 614,) “I hope you all by this time clearly understand that all departures from full health are diseases. The artificial states which many of our remedies produce, (sometimes even as a means of doing our patient good, but more often as an incident unavoidable and lamented by us,) are as much diseases as any of those on the roll of the Registrar-General.” Prof. M. Paine says: “As a change arises when efficient agents operate, and as that change is not a restoration of the morbid to the natural state, it is necessarily a new pathological condition. (§901.) . . . The most efficient remedial agents institute their favorable effects by establishing new pathological conditions. (§239.) . . . Remedial agents exert their salutary effects by inducing new pathological states, and are generally liable to produce disease when exhibited in health. These morbid states, *when not excessive*, are of a nature to allow the full exercise of the recuperative tendency. But there is a class of agents more profoundly morbid, and whose results transcend the natural recuperative process. It is for the removal of *these* consequences that we employ the other class of

morbid agents, [use the milder poison to remove the disease caused by the stronger poison.] Or there are yet other means — like air, exercise, etc. — which appear to cooperate in a direct manner with a tendency to restoration. Our remedies, therefore, are curative by substituting new pathological conditions, and nature does the rest. It is only with a view to a right interpretation of their mode of curing, that I confound the operations of remedies with that of the ordinary causes of disease.” (§901.)

72. The above are merely a few scattering quotations from the latest Allopathic authorities. They serve abundantly to show that poisons are used as remedies, with a distinct understanding that they act as *causes of disease*; and that the *aim* is, to *have them cause disease*. It is not pretended that they directly restore the tissues to health; as this can be done only by Nature, aided by such hygienic influences as “air, exercise, etc.” The only merit claimed for these poisons, is, that the disease they produce may be more easily manageable by Nature than the disease that already existed. But it is conceded that the “most efficient” poisons may *overwhelm* Nature, and establish a disease beyond the strength of the life power to remove. In no case is it pretended that the articles in question leave behind a natural state; but it is lamented as an “*incident unavoidable*” — one that the most skillful hands have no means whatever of preventing — that they produce and fasten upon the frame “artificial states which are as much diseases as any that are on the roll.”

73. This much space has been occupied in making this point clear; that it may be seen for what purposes, and with what expectations, the leading and living teachers of Allopathy give calomel, opium, antimony, belladonna, and all other current poisons. With their objects and anticipations thus plainly presented, let us proceed to examine into a query suggested in section 70. Why does not a poison always kill? This has been intimated in the above quotation from Prof. Paine, where he says: “These morbid states, *when not excessive*, are of a nature to allow the full exercise of the recuperative tendency.” Or as the same author says in another part of his work, (*Institutes of Medicine*, §898,) “When disease subsides under the influence of remedial agents, [meaning poisons,] it is only in consequence of the great law of recuperation.” For, as he says in his 854th section: “A repetition of the means before the influences [poisonous impressions] already established shall have ceased, either prolongs the cure, or exasperates and multiplies disease.” The patient lives through it, simply on account of the wonderful

resistive and recuperative power of the vital force. (§20.) As Dr. Dobell lucidly states it in his *Germs of Disease*: “How does it happen that the same substances may kill or may not kill? The answer is very simple. In the one case, the substance is within the power of the organism to dispose of; in the other, it is beyond such power. . . . There is within the organism a force capable of dealing with poisons, so as to avert their fatal effects *within certain limits*. . . . In fact, *under favorable circumstances*, the human being may live through injury, through disease, through almost any thing, by its own unaided assistance.” The experience of the entire world confirms these remarks; and proves that the human frame may resist poisons as well as cold and other accidents; but that its laws of limitation (§19, 20) may be transcended in any of these respects, and then the injurious impressions will assert themselves and work their own legitimate consequences.

POSITIVE DETERMINATION OF POISONS

74. By the light of the preceding sections, it will now be easy to lay down plain rules, by which any poison may be determined with absolute certainty. Of course an article of this class must be tested under these rules, according to the same patient methods of observation that were laid down for the study of remedies in sections 59 — 63. Proceeding upon those plans, and an article may positively be pronounced poisonous, if it answer the following descriptions:

Rule 1st. — The extent of their action is uncertain, and the vital resistance to them is uncertain; hence they can not be depended upon to procure certain definite results at all times. Nothing is more common than to find Allopathic authors cautioning young practitioners against hoping to find the action of their poisons always the same. They carefully teach that differences in circumstances will alter, or even entirely change, the results obtained from the use of an agent of this class. It is held as a matter of great importance, to know that calomel will lead to different consequences in cases of scrofula and of inflammation, in the bilious and the vital temperaments; that opium may be relied on to secure sleep in some cases, but will utterly fail, or even excite the most exhaustive wakefulness, in others; and so of every such article. So common are these facts, that it is customary to speak of each article as having two actions — the *primary* and the *secondary*; and these are usually the opposites of each other. These things clearly show that a poison is not received kindly by the vital force; and that this force will be aroused to resistance whenever the circumstances will allow. It is in those of rather low vitality, or of a delicate organization, that calomel will most surely work destruction; while the robust and energetic may cast it out. So also the phlegmatic and loose in structure easily become somnolent under opium; but the dense tissue and high strung are excited to powerful resistance against it. Any article that will currently incite different kinds of vital response — or, more properly, that will be attended by one set of consequences in the strong, and an entirely different set in the weak

— is palpably a poison, and an article to be classed only with the causes of disease. The *kind* of impression made by it is necessarily the same in all cases; but it depends entirely upon the present state of the system whether it be rejected with a wearying excitement, or whether it bring the frame under its own control.

Rule 2d. — They can not be given persistently, in all cases, till their full impression has been made. Everywhere is it recognized as a fact, that there comes a point when the use of calomel, and opium, and strychnine, and antimony, and similar articles, must cease, whether the purpose for which it was given has or has not been accomplished. The more delicate the constitution, or the greater the reduction of strength from disease, the sooner is this point reached. To go beyond it, is directly to jeopardize life; for it is currently known that the frame “will not stand” more than a limited quantity of these agents. In this fact, as well known as is any fact in the world, we find the full recognition of the principle that poisons are at war with the well-being of the frame; and that to *dare* continue their use beyond a certain point, is to risk carrying their influence beyond what the frame can endure, and thus “extinguishing vitality” entirely. To use them at all, then, is to institute a war against life; and however small may be the quantity given at any one time, it makes its own impression so far as it goes. (§73, 108-121.) And in proportion as disease advances, and the need of remedial help increases, the use of this class of agents has to be curtailed; because they do not aid in overcoming disease, but act only by making more disease. Any article, therefore, which can not be given to the feeble as well as to the robust; which can not be used in doses of any size that the condition of the organism may require; and which can not be continued persistently and indefinitely, till it has accomplished perfectly the purposes for which it was given, is an article opposed to life, a poison in every accepted definition of that term. (§66.)

Rule 3d. — When an article leaves behind a condition that is unnatural — whether a state of abnormal erethism or depression — it is a poison. Such a condition is not a healthy state; it shows that the article used has produced disease; and therefore it has not cooperated with the vital force, but has proven inimical to the general well-being. Calomel, opium, veratrum, lead, aconite, gelseminum, and the whole list of poisons, do leave behind such abnormal conditions, even when they *seem* to have accomplished the good that was claimed for them. As this “good” merely means the capacity of the article to establish disease, (§71,) such an enfeebled and unhealthy state of the

structures is a thing to be expected from their use.

75. Let these three rules be applied as a test to any article suspected of being poisonous. If it is judged guilty under one of them, it will be found equally guilty of all, if sufficient pains be taken to carry out the inquiry. Too often, the last rule is overlooked; and patients recovering from some sickness with aching bones, or stiffened joints, or trembling nerves, or ruined digestion, or rotting teeth, or some other difficulty that will cling to them all the remainder of their lives, are told that such derangements are legitimate offsprings of their malady. Thousands of miserable sufferers, with wrecked constitutions, are now dragging out a wretched existence, under the belief that their sufferings are unavoidable results of the previous sickness. As Hugh Miller startlingly describes Jock Gordon: "He had been like other people, till his fourteenth year; when a severe attack of illness left him bankrupt in body and mind. He rose from his bed lame of a foot and hand, his one side shrunken and nerveless, the one lobe of his brain apparently inoperative, and with less than half his former energy and intellect; not at all an idiot, however, though somewhat more helpless — the poor mutilated fragment of a reasoning man." Such wrecks of mind and body are rarely due to disease, but to poisons that were given under the absurd philosophy of the Allopathic school. Nature, unwarped by interference, never leaves behind such ruin. She either "cures perfectly," or else fails to cure at all. Such instances as the above were not known in ages before this poisoning system (only a few hundred years old) was adopted; and are never found among barbarous people of the present day, where physicians are unknown outside of the priests with their incantations, and old crones with their herb teas. Such things are reserved for enactment in "civilized nations;" and for those who prefer to groan and suffer under the above Allopathic practice. In the *millions* of cases treated by Physio-Medicalism in this country during the seventy-six years of this practice, in not one single instance have any such wrecks marked recovery from even the most terribly severe maladies. Several millions of observations, with not a solitary variation, are sufficient to establish any point, to the satisfaction of the most skeptical whose bigotry is not so strong

that it will not be convinced. By such overwhelming testimony (even throwing out the thousands of detailed admissions of Allopathic writers) is it proven that such utter ruinations of life are not due to the original disease; but are themselves the diseases fastened on the frame by the morbid articles forced upon it. Such is the terrible weight of misery that Allopathy has heaped up in condemnation of herself; and which Homeopathy and Eclecticism are now repeating for themselves, by resorting to almost the entire list of Allopathic poisons.

EXAMINATION OF MERCURIALS

76. In the sections under the last general head, we presented considerations which should leave unnecessary any further arguments in condemnation of poisons. If the laws of human reason are to be considered of any force in medical investigations, enough has already been presented to show that a poison can be determined with an accuracy that is as positive as a demonstration in geometry; and to prove that by no possibility can a healthy constitution, or a curative action, be established by the use of agents which have no other power, and were never introduced for any other purpose, than that of “substituting one morbid condition for another.” But as already intimated, it is contended that such a substitution is the very thing required by Nature; that the impressions thus made actually aid Nature in effecting a cure; and therefore that “poisons are good remedies” on account of this very action. Praises innumerable are recorded in their behalf; and there is no lack in the multiplicity of hearty assertions in favor of their absolute curative power. But as “all is not gold that glitters,” so all is not reliable that is asserted. The grand difficulty lies in the too common practice, among medical men, of stating only that part of the fact which suits them, and setting aside all that does not suit them. (§7.) Manifestly this is a proceeding so unfair as to bear the appearance of prevarication; and though the intention may not be always wrong, the motive will not prevent this course from deceiving the younger mind and from having the same effect as a deliberate falsehood. But no amount of one-sided assertions, however loud or respectable, can be received in establishment of any scientific question. This can be done only by a perspicuous statement and unbiased examination of the “whole truth.” The question now before us must be examined in this way, without the least reference to time-honored prejudices or gray-haired authority — which are only so much rubbish, if they stand in the way of demonstrable science.

77. Probably no agent, whether of simple remedies or admitted poisons, has ever received from the profession such universal and

unqualified praise as calomel — subchloride of mercury. Among many admirable qualities ascribed to it, is that of inducing freer action in the liver, and thus securing a more abundant flow of bile and more regular movements of the bowels. We will admit that the article favors such results; although a large number of prominent Allopathic physicians, and among them Prof. N. Chapman, of Philadelphia, and the learned John Hughes Bennett, of Scotland, say that no manner of dependence can be placed upon it in this connection (See Rule 1, §74;) and that it is only vitiated bile that ever follows the use of calomel.* Of course it is very frequently desirable to secure increased hepatic action, and additional motion of the bowels, by increased flow of bile. But when it is claimed and admitted that calomel will induce these very advantageous results, only a *part* of the truth is stated. The *whole* truth includes the additional facts, that weariness of the liver always follows its stimulation by calomel; that congestion of it, with chronic enlargement and tenderness, *very* frequently ensues; and that hardening and small abscesses, rather extensive abscesses, and even cancer of this organ, have often been found as ultimate consequences of the exhibition of this article. The testimony on all these facts, is found in great abundance in such eminent Allopathic authors as Christison, Taylor, Hamilton, Orfila, Thompson, Wood, Hall, and a host of others. So extensively has such testimony been presented within the last fifty years, that it is not here necessary to more than allude to it. All such results are in strict accordance with the very purpose of using calomel at all; for it is desired that a poison shall “produce a new disease in the *exact position* of one that may be existing,” (§71;) hence it is *intended* that calomel shall relieve the liver by establishing another disease in that same organ. With what terrible exactness it accomplishes this work, the miserable pages of medical history can tell.

* “Is mercury a cholagogue? We have no proof whatever that it increases the secretion of bile; and the only experimental investigation with which we are acquainted, namely, that of Dr. Scott, who gave calomel to dogs and then collected bile through a fistulous opening made into the biliary duct, found it in three days to diminish the quantity of that fluid. Is it anti-syphilitic? In recent times it is admitted that syphilis has diminished in intensity just in proportion as the use of mercury has declined; and the gigantic experiments made on entire garrison regiments in France, Germany, and Sweden, prove that the non-mercurial treatment of syphilis is *far superior* to the mercurial, in every respect.” — *Prof. J. H. Bennett*, of the Edinburgh University. *London Lancet*, 1863.

78. But these “secondary” effects of this mercurial, (Rule 1, §74,) are by no means confined to the liver. How well — ah, how too well — is it known that it will so attack the joints that very ordinary exposure after its use will probably establish rheumatism. The treatment of “mercurial rheumatism” is regularly discussed in Allopathic works on theory and practice, and admitted to be a most intractable form of this malady. It is also a marked feature of calomel’s history, that the fibrine of the blood becomes impoverished (dissolved) under its action; that persons of a scrofulous tendency are liable to suffer tubercular deposits through its influence; that abscesses in the long bones, and exfoliation of the dense bones, are liable to occur after its use; that the constitutional effects of the syphilitic poisons are greatly aggravated under its exhibition. So thoroughly are these points proven by numbers of the very highest of Allopathic teachers, that none of them can be truthfully called into question. Indeed, no surprise need be felt at such results; for the article being prescribed on the principle of its being able to “establish a new disease in the exact position of the one already existing,” its only use for inflammation grows out of its power to lessen the amount of fibrine; its only use as an alterative depends on its ability to “change the action” of the nutritive organs; and its value in venereal complaints rests upon its power to establish its own morbid influence upon the same absorbent structures as are already being attacked by the syphilitic virus. Such results are in the very strictest logical harmony with the avowed object in using this poison.

79. Thus the apparent good to be obtained from the employment of calomel, subjects the patient to liabilities of the gravest character. Should he be in very robust health, and should it be given (as Dr. Dobell says) “under favorable circumstances,” it may provoke an earlier action of the liver, and be carried away without any material detriment. (§73.) But should the healthful tone of the system be reduced from any cause, the influence of the mercurial will tend to reduce it still further; and then the consequences of a single dose of it can not be predicted for an hour. As an instance, a diseased state of the stomach may enable this organ to secrete only very imperfect gastric juice; such juice may soon pass from a vital

fluid, and undergo a chemical change which will produce hydrochloric acid; and it is well known that the chlorine of this acid will readily leave its hydrogen to unite with mercury. Now introduce into the stomach a dose of calomel; and the facts of chemistry will tell you that this subchloride of mercury will there be changed into a chloride of mercury — or corrosive sublimate — by the chlorine of the acid. And thus a three-grain dose of calomel may be changed into enough corrosive sublimate to cause ulceration and early death; and no man living can possibly foresee this state of affairs. The case is made still worse by the fact that a previous use of calomel, which seemed to be doing the liver so much good, may have so deranged the stomach as to lead to that change in the secretion which may ultimate in the formation of the sublimate poison at the very next dose. And it is because the general vigor of scrofulous persons is below that of others, that they are so much less able to resist this article; and hence these suffer so directly and fatally under its action, that no intelligent Allopathist ventures to give it in that diathesis.

80. It is also well known that this and every other mercurial compound is very liable to be absorbed, whether given by the internal surfaces or applied in any form upon the skin. In fact, it is in only a few cases that it is not absorbed. Says Prof. A. T. Thompson, of England: “In producing their effects, mercurial preparations, whether oxides, chlorides, cyanides, iodides, or any other, are decomposed; and the mercury, in a metallic form, is either thrown out of the body by the skin and lungs, or deposited in the glands and bones.” When thus absorbed, it may lodge in the liver, bones, or muscular structures; though the spongy bones, as the alveolar processes and the heads of the femur and tibia, are its favorite places. In such situations, it may proceed at once to disintegrate these structures and cause their decay; or it may be confined in position by a wall of firm lymph, (see my P.-M. Surgery, article *Abscess*.) There it may remain for a few weeks, or for many years; and no unpleasantness be felt beyond that delightful sensation one enjoys from being a living barometer and suffering torture on the approach of every storm! The person praises the virtues of calomel; and points with pride to the time when he last took it, and it seemed to do him so much good. But by and by his system begins to suffer a reduction in its vital tone. Typhoid fever, or some other prostrating malady, brings him low; or he suffers some accident that makes a large drain upon his general strength. Now the system is no longer able to triumph in the contest by which it has held the mercury in abeyance. The plastic wall breaks down; the mercury commences

its ravages upon the enfeebled frame; and these ravages may now be so great, as to turn the scale in favor of death under circumstances where there would otherwise be no question against the most promising issue. And though but one or two doses were all that were taken by the patient, and it is probable that no more than a single grain of pure quicksilver has lodged in the bones, the extent of the destruction is not governed by the smallness of the quantity. The decay is chemical, its products are chemical viri, (§67;) and by the well known chemical law of catalysis, a minute portion of any fermentative or other substance, may determine the commencement of changes which will then be continued indefinitely through the surrounding mass. Occurrences of this kind have been met at a date of ten, and sixteen, and even twenty-two years, after the patient had used the last grain of calomel that he ever took. Many such cases are recorded by such eminent Allopathic physicians as Hamilton, J. M. Good, Eberle, Watson, Parry, and others. Indeed it is a daily fact that every intelligent physician of that school, if called to a new patient with a severe malady, will inquire if he has ever taken a mercurial course; and if he have taken one, this fact adds largely to the unfavorableness of the prognosis, and may outweigh a large number of very favorable symptoms. So also is the mercurial cachexy everywhere recognized as an almost incurable condition; and the lapse of time in no measure lessens its dangers.

81. All the facts in the case are now before us. The presentation is of necessity very brief, but serves the purpose of a review. From this review can now be judged how much good calomel is ever likely to do. In the very cases where its use is most commended, and where it has been pronounced nothing better than the wildest "quackery" to attempt a cure without this article, it is seen that it may insure several forms of disease — each one of which is far more serious, and much less amenable to treatment, than was the original difficulty. In addition to this, is the great liability that it will undergo chemical changes, or enter the tissues and form a nucleus for after disintegration, and thus become the direct cause of most fatal mischief. And the danger is immensely heightened by the fact that, when even a small dose is once given, it is beyond the power of man either to foresee

its effects or to stay its ravages. And when it is supposed that it has done the greatest possible amount of good of which it can ever be deemed capable, the total evidence shows that it has not done this by putting the structures in a healthy condition, but by goading them to an unnatural action. It secures a flow of bile only by irritating and provoking the liver. Such an impression debilitates and damages the organ, as is made known by the pale face and sense of exhaustion that follow even ordinary catharsis from this article. There is not one shade of quality about it that harmonizes with the laws of life; but the flow of bile that is considered so valuable a sequence of its use, is procured only as a violence upon the liver, and under a risk that may unavoidably, in any case, lead to the above most alarming consequences.

82. In like manner might the entire list of irritating poisons be studied; and to them all would be found attached results of the most serious character. The very good they are claimed to effect, is done only through provocation, violence, and perturbation. They disturb the vital harmony, even in their best estate; and that can never be done, under any circumstances, without making a draft upon vitality, for which Nature will demand full compensation. It is merely acting under a deception, for any man to imagine that he can thus do violence to the laws of life on the plea that his *intentions* were kind. It is a mere subterfuge to attempt to conceal the probable and very frequent bad results following the use of a poison, and to put forward only the questionable good that it seems to do. That is but tampering with human life. The cause of truth demands that every fact bearing upon the action of an agent, be studied and acknowledged; and by these facts, under the application of the above rules, the article must stand or fall on its actual merits. Let this be done with every acknowledged poison, and it will be found that each and every one of them is baneful, and is worthy only of immediate rejection. It matters not whether the article be mercury, antimony, lead, zinc, bismuth, copper, silver, gold, phosphorus, bromine, chlorine, iodine; whether it be given internally or externally; whether the man who prescribes it calls himself an Allopathist, a Homeopathist, or an Eclectic. The laws of God are fixed and eternal; and do not adapt themselves to the wishes and passions of the schools. Let man study them, and elevate himself by obeying them. They sweep away the above entire list, as being but so many besoms of destruction — by their inherent nature opposed alike to health, happiness, and life. As Sir J. Forbes said, after a wonderfully rich experience in a wide field for observation during fifty years: "In rare instances, the violent artificial disturbances so excited

in the system, seem to overcome the natural disturbances existing in it; but as a general rule, the indication is not only not fulfilled, but the existing disease is either aggravated directly, or the natural restorative powers of the system are arrested, enfeebled, or misdirected. Our estimate of this kind of treatment must, therefore, be of an *entirely damnatory character*; the slight amount of good ever derived from it, being counterbalanced by a large sum of evil.”
{*Nature and Art in Disease*, p. 231.)

EXAMINATION OF NARCOTICS

83. The relief of actual pain is unquestionably an incipient idea of all medical practice. To soothe acute distress and secure good sleep, are leading efforts with the physician, at every stage of his varied duties: and the means that will effectually aid him in the accomplishment of these great objects, are naturally prized as treasures in his materia medica. The Allopathic profession has brought to notice quite a variety of articles for these purposes, which are classed variously under the descriptive terms Narcotics, Anodynes, and Sedatives. They are chiefly derived from the vegetable kingdom; and include such articles as opium, and its preparations of laudanum, morphia, etc.; henbane or hyoscyamus, aconite, stramonium, veratrum, cannabis, tobacco, prussic acid, etc. Each of these has peculiarities of its own; yet they one and all possess characters so much in common, that they are always classed under the one general class of Narcotics. Opium is the principal one, and the accredited representative of them all; it is used to an enormous extent, and in nearly every form of disease; and so great are the praises accorded it, that it has vauntingly been proclaimed as “*Magnum Dei donum*” — the great gift of God.

84. To judge of the fitness of opium to relieve pain, the nature and intent of pain are first to be considered. When perfect health is enjoyed, there is no suffering; but every organ moves forward in its duties with an ease which leaves us unconscious of their presence, except by the pleasurable emotions they impart. As the structures begin to wander from the healthy condition, uneasiness ensues; and as the departure increases, the sensations deepen into pain. The acuteness or bluntness of the pain will depend much upon the form of the disease, and the character of the tissues affected; but in all instances, the suffering is a direct consequence of disease. Sometimes there are the most grave evidences of disease, without any accompaniment of pain; and such cases are recognized as of the most serious import, indicating that disease has so advanced as to prostrate the sensibilities. Under all circumstances, a sudden abatement of acute suffering, without any simultaneous change for

the better in all the symptoms, is looked upon with serious apprehension, as heralding the speedy access of mortification. The existence of pain, therefore, is an evidence of disease, but is not itself disease. It arises under accidents, the introduction of foreign solids, the accumulation of unwholesome substances within the frame, and similar irritating conditions. The eye suffers from a small particle of dust, the skin smarts from a blow, the bowels become acutely painful from accumulated materials, the bladder endures torture from the presence of a calculus, and so of a thousand other offenses to the system. Were such things present, and yet provoked no misery, we would consider that part too nearly dead to recognize, or to make any struggle against disease. The property of nerve sensibility is, in fact, everywhere known to be the highest vital endowment; and by it alone can the frame take cognizance of danger, and so announce the threatened invasion as to put the whole frame in a state of resistance to the foe.

85. From this plain teaching of Physiology, no deduction can be more simple than that relief from pain is to be sought by compassing a removal of the substances and conditions which gave rise to it. The pain itself is in no sense disease, but is Nature’s safest and most unerring friend; and to offer to overcome the pain while the provoking circumstances remain, would be the weakest absurdity that man could suggest. If one had fallen upon glass, and thrust pieces of it under the skin of the hand; how ridiculous would every body pronounce a suggestion to let the pieces remain while all attention was given to the abatement of the suffering. The nature of the proposition is not one whit changed, when it is offered to lower the irritability of a fever patient before securing an ejection of the retained secretions which caused the trouble; or to soothe a gathering abscess, or an ordinary inflammation, while the original causes of offense remained. After the causes have been removed, the pain will of course subside, or the irritated nerves may be soothed. Hence any attempt to destroy this nervous susceptibility, is but a form of destroying life; and any effort to subdue the suffering, is but a display of an utter disregard to the welfare of the system, or else a manifestation of ignorance in the principles both of Physiology and Pathology.

86. Now turn from these fundamental facts in medical science, and see upon what ground rests the use of narcotics. Selecting opium as a fair representative of the whole class, the following outline of its effects will be found in Pereira’s *Materia Medica*, (or any other similar work:) First it may excite the cerebro-spinal

functions, and then the heart; and thus for a time there is an exaltation of the pulse and the mental faculties. To these succeed a state of mental depression, a sleep that borders upon stupor, a feverish condition of the surface, a diminished state of the muscular power that borders upon paralysis, a reduction of the pulse below the normal standard, dryness of the mouth and throat, diminution of appetite, increase of thirst, costiveness lasting for several days, general suspension of the secretions, confusion of mind, and loss of general sensibility. These are the ordinary impressions on the use of one or two small doses. They are followed by a furred tongue, headache, persistent listlessness, and sluggish capillary action bordering on congestion. In somewhat larger doses, or in the small doses continued for a time, the semi-paralyzed condition increases, and is manifested by great diminution in the secretions of the liver and bowels, slow breathing and insufficient oxygenation of the blood, loss of sensibility in the bladder leading to dangerous retention of urine, blunting of sight, hearing, and the other senses, a chronic state of capillary feebleness, palpable confusion of the mental operations, and symptoms "almost exactly the same as" apoplexy. (*Christison.*) In large and fatal doses, the symptoms reach to paralysis, insensibility to sight and sound, stupor of the cerebral center, general congestion, extensive diminution of the secretions, and asphyxia. These are of course the extreme developments of its action; but it will be noticed that they are precisely the same, *in kind*, as are produced by the smaller doses. The fatal impressions from large doses do not differ in character from those made by the small doses; and the small, or so-called therapeutical doses, carry the frame on the same road to death, so far as they go, as is traversed under the fatal power of the larger quantity.

87. The most cursory analysis of this catalogue of symptoms, at once shows that the action of opium does not relieve pain by placing the organism in a state nearer to that of health. It carries every tissue into a most dangerous condition — the condition of insensibility. That it will put an end to pain must be admitted; and that relief from pain is of momentous importance, is fully understood; but the *manner* in which opium (and all other narcotics) accomplishes this end, is most reprehensible.

In effect, this kind of relief is the similitude of death; for it removes no obstruction, reestablishes no suppressed excretion, casts out no offending substances, nor in any other way renders the system one jot or tittle of help in overcoming the causes that provoked the suffering. It leaves those causes still within the frame; while it expends its power in striking down that nervous sensibility and energy which guard the very citadel of life. And when the effects of the narcotic have passed off — when the body arouses from the loss of sensibility, the stupor, the paralysis, the congestion, induced by the opiate — all the original causes of disease remain, and to them is now superadded the sluggishness and vital depression occasioned by this poison. Such a method of seeking relief from pain bears a resemblance to nothing so much as to the rope of the hangman or the stiletto of the assassin. Let the *intention* of the physician be ever so humane, the prescription of such an article secures a result too closely allied to death to be wholesome to either himself or his patient.

88. So thoroughly are these fatal tendencies of the narcotics understood by the ablest Allopathic physicians, that they do not pretend to prescribe such agents for the *cure* of disease. Their philosophy directly proposes such articles on the one and only ground that they "make disease" in the nervous structures. (§71.) It is only your half-educated Allopathist, or your Eclectic who tries to screen himself for using narcotics while he seeks public patronage by the assertion that he discards poisons, who pretends to find any shade of *curative* action in a solitary article of this class. The ablest and most honored living Allopathic authors of both hemispheres, are full of evidences and statements against the supposition that any narcotic removes disease. Curative powers may be claimed for calomel, antimony, iodine, gold, phosphorus, etc. (§76, 77;) but nothing of the kind can be claimed for a single one of the sedatives. Turn for a few moments to some of their ablest authors, and hear their testimony on this point. Dr. J. Johnson says: "The whole tribe of narcotics — as opium, hyoscyamus, hop and laurel water, prussic acid — are dangerous sedatives, presenting allurements to the unwary, with all the suavity and meekness of the serpent of Eden; and the deception too often is equally fatal." Prof. J. P. Harrison says: "Opium enhances nervousness; if the brain is affected, it increases the disease; inflammation of the stomach or bowels will be made worse, perhaps incurably worse, by an opiate. *It is hurtful, because it is contrary to Nature.* It is a foreign substance; which Nature does not call for, or rightly receive, as long as she is in her right mind." Prof. Eberle calls it a treacherous palliative; and

says that when used on children “the appetite and digestive powers fail; the body emaciates, and the skin becomes sallow, dingy, and shriveled; the countenance acquires an expression of languor and suffering; and a general state of apathy, inactivity, and feebleness, ensues — which ultimately often leads to convulsions, dropsy in the head, glandular indurations, incurable jaundice, or fatal exhaustion of the vital energies.” This is a horrible picture, but a most truthful one, of the legitimate effects of quite small doses of opium as prescribed by physicians of the highest education and of abundant experience. The testimony of the candid Eberle is but a miniature rendition of the experience of thousands of Allopathic physicians — whose testimony on the undermining and absolutely disease-producing character of aconite, stramonium, hyoscyamus, belladonna, veratrum, and all the other narcotics, would fill our whole volume. In the condensed language of Prof. Paine: “Narcotics are *extremely deficient* in curative virtues. It should never be overlooked, that the most that is accomplished by opium and other narcotics, is that of diminishing sensibility. It is for the relief of pain that narcotics are most abused, and where they do their greatest injury. The narcotics are *constantly morbid*, while continued in their moderate therapeutical dose.” (*Institutes of Medicine* — §891, 959.)

89. Allusion has been made (§86) to the general diminution of the secretions that takes place under the influence of opium. The skin alone may continue to act, and may even act excessively; but the perspiration is cold and clammy, and bears evidence of that passive state which every physician knows is most undesirable. All the other narcotics resemble this in suspending most of the secretions through the *paralysis* induced by them upon the nerve centers; and with each one it is usual to have some solitary emunctory left open, and in excessive action, as the only safety-valve reserved by Nature for the prolongation of life. Examine, now, the consequences of such suppression by the narcotics. Says Prof. Paine: “Let us consider their *never-failing effect*, in their *ordinary doses*, of so injuriously modifying the action of the glandular organs, that the secretions of *the whole*, (especially of that most important organ, the liver,) are more or less

diminished. Whereby Nature is obstructed in one of her greatest processes, and morbid influences thus reflected upon all diseased parts, and upon the whole organism.” (*op. cit.* §891, *a.*) How much trouble comes from deficiency of mucous secretion in the alvine canal, in ineffectual peristaltic motion, and the sequent retention of excrementitious materials! What a long category of ills is developed by torpor of the liver, its subsequent partial congestion, and the retention and re-absorption of bile that must thence ensue! What forms of torture grow out of deficient salivary and gastric secretions, with their inevitable indigestion, dyspepsia, and unhinging of the whole nervous system! What intractable difficulties spring from derangements of the kidneys, suppression of urine, and non-elimination of urea! Such disturbances in any one of these organs will lay the foundation of enough disease to try the utmost skill of the physician. Some of the most baffling maladies in the nosology have their seat and origin under each one of these several heads. But if all of them suffer together, who can calculate the consequences? If any two of them become suppressed at the same time, who can estimate the wreck that they may occasion to the constitution? And yet the experience of the entire world, since the time that narcotics first found their way into the hands of the physician, rises up to show that this entire class of articles will always and directly, when given in their ordinary doses, cause a greater or less diminution of nearly every one of the secretions. Is it any wonder that, under the exhibition of such agents, Nature struggles to maintain her authority as long as she can; and then yields, and sinks hopelessly, under what has been fancifully termed the “cumulative action” of the deadly drug? Such facts overwhelmingly bear down that whole sophistry which would resort to narcotics to relieve pain — showing that *such* relief is but a war upon Nature, and an auxiliary to the grave; and establishing our position that the narcotics left the original sources of pain unmoved, and *added to them* an alarming depression of the tissues and a serious additional load of accumulated animal poisons. The most trifling resort to an agent of this class, is thus unjustified by any of the requirements for pain itself; and is a reckless tampering with the most useless and treacherous means of destruction.

NARCOTICS IN WAKEFULNESS AND NERVOUSNESS

90. Another superior virtue claimed for the narcotics, is their power to calm excitement and induce sleep. These would indeed be most desirable qualities; for there are many occasions on which the entire life of the patient may depend on getting the nervous system so quieted that he may obtain some rest. That the narcotics very commonly secure sleep, can not be doubted; and yet it by no means follows that *therefore* their action is beneficial. This question depends entirely upon whether or not the repose secured by narcotism is natural. There is a repose in death, as well as a refreshing living sleep; and no agent that induces the former or a resemblance to it, can be pronounced in any sense beneficial to the frame. This statement is so self-evident as to require no argument. Now all the testimony to be found, concurs in proving that the calmness and the sleep induced by a narcotic, are due simply to blunted sensibility. Says Pereira: "The most important effects of opium, are direct and obvious *lesions* of the nervous functions. (§68.) The other effects arise out of the lesions just referred to." Dr. Cullen says: "It diminishes the mobility, and in a certain manner suspends the motion, of the nervous fluid." A state of quiescence induced by such "lesions" and "suspensions" at the very center of life, is but the quiescence of so much death. Hence the sleep that follows this drug, is everywhere called "stupor," and "coma." Say Wood and Bache, in the U. S. Dispensatory: "At the end of half an hour or an hour from the administration of the narcotic, all consciousness is lost in sleep. The soporific effect, after having continued for eight or ten hours, goes off; and is generally succeeded by more or less nausea, headache, tremors, and other symptoms of diminished or irregular nervous action. Such is the obvious operation of opium, when moderately taken." Prof. M. Paine says: "So great may be the quiet and insensibility that the narcotics produce, that the patient may drop into the grave without raising the suspicion that he was doomed by the narcotic." (*op. cit.*, §891, *h.*) Stille in his Therapeutics, and Headland in his Action of Remedies, are careful to state that opium produces narrowing of the cerebral arteries and

diminished flow with partial congestion of the brain, as precedents to its securing sleep; and that hyoscyamus, digitalis, laurel, and most of the other narcotics, paralyze the arteries and crowd the brain with dark blood, prior to inducing somnolence. And these and all writers agree in stating that the sleep secured by any narcotic, is always preceded and accompanied by congestion of the brain; that the sleep itself is dependent on, and proportioned to, the extent of this congestion; that this sleep is always accompanied by fatiguing dreams, unless it is so profound as to be an alarming coma; that the most unequivocal evidence of cerebral congestion and paralysis is found in the paleness, coldness, and clamminess of the surface, in every grade of this sleep; and that when the patient awakens, he is listless, tremulous, weak, and unrefreshed.

91. From such testimony and facts, it is evident that there is nothing natural about the sleep of narcotism. As Prof. J. P. Harrison says: "It *stupefies* for awhile, and forces into *unnatural* sleep." It only overcomes the sensory powers by inducing that serious condition — *congestion of the brain*; and therefore the smallest amount of repose obtained through such an agency, is a temporary suspension of feeling secured at the risk of making life bankrupt, but without the removal of a single one of the numerous causes of previous wakefulness. It is not, therefore, the quiescence of health, but the somnolence resulting from a violent depression of a great vital property. Against this violence the life power is continually struggling. As Wood and Bache say, it requires the recuperative energies of the system "to repair the damage done by even a trifling amount of any narcotic action." If the patient be of an active temperament, vigorous, and not already in a state of depression, the opposition made to these agents will be wonderfully vigorous. The excitement of the brain will increase, and become so intense that the wildest delirium may ensue; and the agitation, nervous restlessness, and muscular twitchings, will become extreme. To continue the narcotic then, is but to increase the very wakefulness that it was given to overcome; thus showing the warfare of the article against Nature, in consequence of which it becomes not only worthless, but dangerous, in the hour when its reputed good effects are most needed. (Rule 1, §74.) In such cases, no practitioner would dare to continue the use of a narcotic till its full effect was produced. While the tension aroused by the vital power in resistance to the article would enable it to hold in check quantities that could not be resisted at another time; yet this opposing effort has its limit, (§20,) and if the narcotic were used in quantities to overcome that

effort, the entire or “cumulated” action (§89) of all that had been given, would at once be manifested, and the patient would inevitably die.

92. The facts that prove the unfitness of every narcotic to procure sleep, serve still more completely to condemn them for any form of nervous agitation. They are now so widely used in this large class of troublesome affections, that the majority of the profession rely upon them as the most wonderful of all blessings provided by the Creator for nervousness. It is generally a pretty dangerous thing for man to attempt an explanation of the intentions of the Maker: and the above opinion needs to be inquired into; for if it is correct, it will be found in harmony with all the laws that God has established to guide the human frame. (§9.) Enough has already been quoted to show that the narcotics act directly upon the great nervous centers — inducing lesions there, leading to congestion in the brain and spinal cord, and thence spreading a state of more or less paralysis throughout the frame. Thus, in full accord with the Allopathic doctrine of attempting to cure one disease by making another in *the same place*, (§71,) the narcotics are given to relieve nervous derangements, by virtue of the very fact that they will cause disease of the nerves! The only philosophy by which their use is attempted to be maintained, is that of displacing one disease by establishing another — leaving the *cure* of the latter to “the recuperative energies of the system.” This practice is consistent enough with that dogma; but who can have the hardihood to say that such a dogma harmonizes with the laws of God!

93. The only relief, then, that narcotics bring to the nervous system, is the development of depressing forms of disease to take the place of excitement. Physiology shows plainly that exalted sensibility is far preferable to lowered sensibility, (§84;) and hence the “quieting” of the narcotics is a condition nearer to death than the state they were given to overcome. So well known is this fact, that Prof. Harrison honestly said the narcotics “enhance nervousness;” and Prof. Eberle openly asserted that they produced “fatal exhaustion” of the vital energies. Prof. Paine says, (*op. cit.*, § 904, a:) “Narcotics induce peculiar modifications of the nervous power, when administered by the stomach; and the

power thus modified, is reflected especially upon the organic and animal properties of the brain and spinal cord. Hence the obtuseness of the senses, and the venous congestions of the brain, which follow their administration.” It needs but a moderate continuance of one of these articles, to produce such a deep impression upon the nervous centers as almost to overthrow them. The muscles become weak and irregular in their motions, the whole system is in a tremor of unsteadiness, the nutrition of the entire frame is interrupted, and the body at large becomes like the tottering hulk of an inebriate. The world is already too full of the poor, emaciated, nervous wrecks of narcotism. The fact of its blasting curse upon muscle and brain, upon body and mind, is already too familiar to the public. For it is well known that the relief given to suffering by a narcotic is but a transient and delusive lulling of the senses. So soon as the stupefying dose has worn away, and left its own mark of tremulousness, the pain for which it was given will return. With its return will be that unnatural nerve-sensitiveness which the narcotic always entails; and thus the original suffering is aggravated, and the dose of the sedative must be repeated and enlarged. By such repetitions is the habit of using such a drug fastened upon the system — the nerves at each step becoming more and more unstrung, till the very fountain of intelligence is prostrated, and the mind itself is left a dawdling wreck. And this terrible state of things, as induced through the prescriptions of the physician, is aggravated by the fact that, while nervousness and insanity from all other sources are amenable to treatment, those from the use of narcotics are beyond all hope of restoration. (§121.) Thus the diseases they create are a thousand-fold worse than those for which they were given.

94. The plea is sometimes urged in palliation of the use of these agents, that they subdue the suffering while other and sanative articles are brought to bear against the disease proper. In this it is conceded that the narcotics are not curative in their action; that they do not remove the causes of suffering, nor give relief in a desirable form; but it is urged that the pain endured will prostrate the system very much, that this can be averted by a mild narcotic which will quell the pain, while the proper remedies in the mean time will be curing the disease. The trifling degree of narcotism thus induced is claimed to be more easily rallied from than would be the prostration caused by the pain. This looks pleasant and plausible; but it lacks the very important quality of truth. Remedies create impressions only on *living* tissues, and not upon *dead* ones. Narcotics stupefy the nerves and render them

insensible to extraordinary degrees of impression — even to severe mechanical violence. By what anomalous property, now, are narcotized nerves to feel and respond to the action of remedies? The thing is an absurdity. There is not a possibility of making a remedial impression under such circumstances. The best and most powerful of curative agents can not make themselves felt, so long as a sedative is acting upon the nerves; but every thing must wait till the sedation passes off, and the nerves recover their sensibility, before the remedies can proceed to their duties. And then they have to remove the original disease, and the additional mischief created by the narcotic. (§89.) This plea, therefore, is the weakest and most insignificant of excuses; and is contradicted by every fact in the history of narcotics, and by even the A B C rudiments of Physiology.

NARCOTICS VERSUS RELAXANTS

95 The analysis of poisons, and especially of the class narcotics, has been so thorough, that it would seem as if there were no longer any excuse for using such articles; and that no ground remained to lure any medical man into the hope that they could be of the least shadow of benefit in overcoming disease. And the rules for determining, and the facts for distinguishing, between poisons and true remedies, would seem to be so complete, that there need be no trouble in separating them with unerring positiveness. And yet so powerful are the prejudices growing out of education, that most physicians dread to look the facts in the face, and promptly to submit to the principles they teach; but turn to every species of subterfuge by which to shield their opinions. This disposition leads to the assertion that the sedative and antispasmodic actions of the narcotics, are precisely the same in kind as the nervine and relaxing properties of Physio-Medical remedies. It is claimed that no lines of difference can be drawn between the two; and that the observations which are used to condemn the one, are equally effective against the other. Especially are lobelia and tobacco said to be so very similar in their action, that no difference between them can be detected; and that either can be used for the other, indiscriminately. This is a wide assertion, bearing with it consequences of the gravest character. If correct, it overthrows all distinctions between remedies and poisons, and sweeps away the grand beacon which serves as the guide and banner of Physio-Medicalism — the principle of an absolutely harmless medication. Consequences so wide as these, must not be treated lightly; for they not only unsettle the mind as to there being any notable differences between Allopathy and Physio-Medicalism, but they demand that the latter system shall point out with scientific accuracy the distinctions between narcotics and relaxants, or else give up all claim to being worthy the name of a system of medicine. The duty, therefore, devolves upon us to meet this averment fairly and examine it carefully.

96. *Tobacco Relaxation.* — If a physician is called to a patient whom he finds with cold hands and feet, clammy skin, face very pale and bedewed with a cold sweat, the pulse small and not above 60 to the minute, the muscles flabby and tremulous, the breathing labored, and the mind deeply comatose, he at once recognizes the case as a very dangerous one. Without needing, as yet, to inquire into the causes of such a condition, he is conscious of a degree of vital prostration that is very alarming. This is, in part only, the exact state of things induced by tobacco. On giving small doses of this article, it soon induces nausea, a feeling of extreme lassitude, tremulous relaxation of the muscles, dizziness, and a tendency to faint. The pulse presently becomes small and weak; the mind confused and wandering; and vision enfeebled, so that objects look indistinct. Usually there is a brief period of vomiting; the dizziness and weakness then become so great that the man can not stand; and actual fainting is not uncommon. Respiration becomes slow and labored, the face grows ghastly white, the entire surface becomes pale and very cold, and a profuse clammy sweat breaks out. Should the symptoms not be arrested here, the pulse will become almost imperceptible, the action of the heart show an almost paralyzed state of this organ, and the mind sink into a long period of the deepest stupor.

97. *Lobelia Relaxation.* — That the patient is relaxed by the tobacco, is evident; but the veriest tyro in medicine knows that such a form of relaxation constitutes an alarming state of disease, to which death may ensue. Contrast this with the condition of the person relaxed with lobelia. There will be nausea, and probably vomiting; and if the stomach is empty, the vomiting may be distressing. To these succeed decided relaxation, softness of the pulse, profuse sweating, and finally a condition in which the man is unable to move a muscle — even unable to move the tongue or the eyelids. This condition may continue for several hours. But now mark. The man who uses lobelia does not faint; his pulse rarely falls below 65, but its volume increases as its frequency diminishes, and thus the general freedom of circulation is improved rather than curtailed; his sweat is moderately warm, and is never clammy; and at no time does the surface become cooler than would be natural to so free a perspiration. His breathing is as even and gentle as a babe's; and though he may lie speechless for hours, in consequence of the relaxation being so profound as to reach the tongue, his mind remains perfectly conscious, and his senses note with perfect accuracy every word and motion made near him. When the man who uses tobacco comes out of his stupor, he is weak, tremulous, and

prostrated for hours or days; but he who uses lobelia feels greatly improved in every portion of his body, and is elate with a keen appetite, vigorous strength, and a lively play of the mind and all the senses. Of tobacco I can speak of once (and, I thank God, only once) when personal experience in its “manly” use nearly cost me my life; but the authorities of the whole world concur in setting down the above symptoms as those constantly produced by this article. Of the lobelia I can speak from repeated experience where its free and continued use placed patients in the most profound state of relaxation, currently known as “the alarm;” and my own observations, and those of thousands of Physio-Medical practitioners through many years of practice, present the above as the true symptoms from this agent.

98. It requires no argument to prove that the conditions produced by the two articles are wholly unlike. If semiology teaches any thing — if the silent utterings of Nature by symptoms are to be regarded — then no shadow of resemblance can be traced between the two kinds of relaxation. The one is a profound prostration of the nervous system, and bears every resemblance to paralytic death; the other is a loosening of the structures and an opening of the emunctories, which augur the earliest relief from obstruction and a happy termination of disease. From the lightest incipient action of tobacco, its work shows that the conditions produced by it are never desirable, never encouraging, always grave, always dangerous, and indicative of a wide departure from the healthy standard. On the other hand, the conditions induced by lobelia are at no time grave, never serious, never imply any impending danger, never threaten any disruption, but are full of encouragement as presenting the most desirable of all changes — changes which the physician labors with all his art to secure as the most important and valuable results in a large number of the most serious maladies, and changes which any member of the profession feels himself all too happy if he can induce.

99. Let this thorough mode of analysis be pursued with all other articles of the narcotic class, let it be applied to any agent whose true relations to the system have not yet been determined, and the most definite and reliable

conclusions can at once be reached. Thus, *opium* dries the lungs, diminishes the lubrication of the bowels, lessens the elimination of bile, retards the secretion of urine, and fills the system with these retained elements of disease; reduces the pulse, causes a cold and clammy surface, causes cerebral congestion and paralysis, induces labored respiration, blunts all the senses, produces deep stupor, and by small repetitions shatters the nerve centers and shakes the foundations of the mind itself. *Hyoscyamus* causes headache, dizziness, dimness of sight and loss of speech; and leads to painful purging, irritation of the stomach, paralysis, and furious delirium. *Veratrum* occasions faintness, headache, cold sweats, and a sense of great prostration; produces tremors, violent retching, hiccough, dimness of vision, pinched features, and a reduction of the pulse to even 40. *Aconite* induces dizziness, tingling, neuralgic pains darting through the body, burning sensations in the throat and stomach; is soon followed by great pallor, numbness, cold extremities, and extreme prostration of the pulse; and, as Prof. Paine says, “endangers life under all circumstances of health or disease.” From *gelseminum* are found a reduced pulse, dizziness, double vision, confusion of mind, general muscular prostration, a staggering gait, numbness, slow but constricted respiration, etc. And thus throughout the list, every symptom conspires to show a depression of vitality that is totally dissimilar to the genial relaxation of lobelia; and which, if symptoms are ever to be used as indicative of conditions, points out the road to death over which one and all of these narcotics have carried so many helpless victims. It is not necessary to push the use of the article till the patient fills the grave; for a comparison of its impressions with the standard of health, shows that every degree of its action is inimical to life. And it is the weakest of all pleas, and an acknowledgment of utter ignorance in pathology and diagnosis, for one to attempt the defense of such an article on the ground of *his* not having seen any bad results from its use; for not to see, is to shut one’s eyes willfully to the most clearly graven language of Nature; and is to set up his own little subterfuge against the concurring and positive testimony of hundreds of thousands of the most competent and experienced Allopathic witnesses. (§8.)

MEDICINAL AND POISONOUS DOSES

100. The design and expectation of the physician in prescribing poisons to the sick, were seen in §71. When Dr. R. Hooper, of England, said, "All our most valuable remedies are active poisons;" and when Prof. M. Paine, of New York, said, "Where there is poison there is virtue," the only meaning they had in view was that of "exciting a new disease in the place of the one already existing." In no place is it pretended that the poison directly restores the tissues to a state of health; it merely that it "substitutes its own action" for the disease already present. This latter "action" is the production of "a new disease;" and the displacement of this new disease, and the restoration to a state of health, are then entirely dependent upon the recuperative energy of Nature.

101. In §73 it was seen that this recuperative energy had certain limits; and if the poison *exceeded* these, or if it were repeated too frequently, the original malady would be prolonged, or disease be multiplied. This is the only teaching of Allopathy on this matter; and let us not forget that it is only on this doctrine that the use of poisons ever was introduced. This doctrine can not now be shifted from its true intent, but must abide by all the consequences growing out of it. The proposition is not altered in the least, by the qualifying clauses that "the agents must be used properly," "must not be given improperly," "must not be abused," "are safe when given by skillful hands," etc. It is sometimes supposed that such expressions imply that certain modes and times of using, entirely change the character of the article given — as if some acquired "skill" of man, the creature, could at pleasure vary the laws and properties established by God, the Creator. (§9.) Such, however, is not the purport of these qualifying phrases; for to allow such a meaning, would be to introduce poisons to the *Materia Medica* on the single round that their virtue lay in their power to cause disease; and then to defend their retention there on the plea that the manner of their use prevented their being injurious at all. To offer such plea, would proclaim the utter hypocrisy of the first position; to do that, would at once crush into dust the very cornerstone of

Allopathy, and accept the whole Physio-Medical doctrine of an absolutely harmless medication: while this in turn would sweep away the entire list of poisons as but so many criminal instruments. However desirable and beneficial such a course would be, it is not at all supposable that our Allopathic neighbors intend any thing of the kind. When they use the expressions alluded to, they simply mean that the poisons should be employed with such caution as to keep them from transcending the recuperative power. Their quantity is to be so limited that, while they make new disease, they shall not do so in *excess* of the restorative power of the frame. The "skill" of one man above another, therefore, lies in his being better able to judge how much poisoning the frame of a given patient will endure; as an error in this adjustment would be serious, if not fatal to the patient. Such a position is a very uncomfortable one for the medical man, but is particularly so to the invalid; as human judgment is so far from being infallible, that the oldest and wisest might (in any prescription) mistake the resistive power of the frame by a fourth or a tenth of a grain, and in so doing prove the means of hastening his patient into the grave. That the mistake was unintentional, will not relieve the physician from his responsibility in using such articles upon such doctrines and if he would be safe from the consequences of thus tampering with human life, he must cease such practices by discarding the doctrines on which they are based.

102. The works of medical men are teeming with facts in relation to the errors in judgment that physicians of the highest standing have made as to the resistive power a patient may oppose to a poison. Their testimony is overwhelming in proving the assertion that the very wisest and most experienced physicians can not foresee what may be the result of the struggle between a poison and the "recuperative tendency of the system; but that doses expected to produce only a very mild impression, quickly lead to serious and even fatal results. Says Prof. Bigelow, of Boston: "I have known an ordinary dose of calomel given as a cathartic, to produce salivation in twenty-four hours." Says Dr. J. M. Good, of England: "I have known salivation produced by a single dose of calomel." Prof. J. P. Harrison, of Cincinnati, says: "Mercury sometimes produces *fatal* effects in *very small quantities*." Prof. Watson, of England, relates the case of a lady to whom a physician once gave two grains of calomel in some cathartic extract: "Furious salivation came on in a few hours; and she died at the end of two years, worn out by the effects of mercury, and having lost portions of her jawbone by necrosis." Dr. Pearson, of Lock Hospital, London, details sudden and unaccountable

deaths occurring in that institution each year, which he finally found were occasioned by the *uncontrollable* poisonous action of *small quantities* of mercury; and he adds: "Its deleterious effects were not proportioned to the actual quantity of the mineral absorbed into the body." Of opium, Dr. Simpson, of Scotland, says: "Three drops of laudanum, in chalk mixture, destroyed a stout child, fourteen months old, in six hours. Another child, of nine months, died in nine hours after taking four drops." Prof. Christison, of England, says: "It is scarcely possible to use the most insignificant doses of opium with safety." Prof. J. P. Harrison says: "We have known the half of a grain of Dover's powder, which is but the twentieth part of a grain of opium, induce fits. A small dose of paregoric will often induce fits."

103. Proofs of the above tenor might be introduced freely upon every one in the entire list of poisons, to show that the most "skillful" men have never been able to make any reliable estimate of the work of destruction that might be done by even an unusually small dose of such an agent. That such an uncertainty would exist, should naturally be expected from a little reflection upon the fact that every poison institutes a war upon the frame; and it is beyond the possibility of any physician to know precisely how great is the resistive capacity at any given time. He may form what he considers to be a fair estimate: but facts like the above show how great may be his mistake, and illustrate the serious consequences of such an error. To talk of the poisonous and non-poisonous dose of such an article, simply means each man's judgment of how much the patient before him may be able to bear, how much to endure; but there can be no *rule* in the question, as such a practice has no scientific foundation — being contrary to the laws of life. At no time, therefore, can there be any ground of safety in the use of any poison; and even when the article has not produced grave consequences, it has made an evil impression so far as it has acted at all. This fact also is everywhere recognized by Allopathic authors. Prof. Stille, of England, says of the narcotics, (*Therapeutics*:) "Small doses produce the *same kind* of impressions as the large ones, merely not being so decided." Says a writer in Rankin's Abstract: "Cases are on record which show that a person may recover from the first symptoms of

poisoning, and yet ultimately die from the effects of a single dose." The history of arsenic fully exemplifies the truthfulness of this remark; and so does that of many other poisons. Says Prof. A. S. Taylor, of England: "We know that active poisons are sometimes taken without causing death; but this does not alter our opinion that they are substances destructive to life, and *likely* to give rise to the most serious consequences." (*On Poisons*.)

SMALL DOSES DO NOT DIFFER FROM LARGE DOSES

104. The series of incontrovertible facts given throughout this discussion upon poisons, show that the dose makes no difference whatever in the *real character* of the article; but that the results may differ according to the different responsive capacity of the system at various times. So abundant are the facts in this connection, that it would seem no proposition could be more plainly demonstrated than this one: The increase or diminution in the *quantity* of an article, makes no change in the *character* of its relations to the human frame. Were it otherwise, then none of the laws of reason could be applied to medical topics; and curative efforts would reside altogether in the will of the physician, who at his pleasure could increase, diminish, or entirely change, the innate qualities of every article on the globe. Such a proposition would be a monstrosity; and would stand opposed to direct and accumulated facts, and controvert every analogy in Nature. (§14.) In short, did variations in the size of the dose alter the character of its action upon the human frame, medicine would at once cease to be a *science*; would immediately be resolved into a mass of accidental and contradictory observations, which would not remunerate any one for either studying or practicing; and would be a mockery to the invalid, as well as proof of incapacity on the part of the Creator.

105. And yet the absurdity just alluded to is becoming rather a current opinion with many people. In sections 100 — 103 it was seen that this is not an Allopathic doctrine. The gentlemen of that school are entirely too well educated not to see that the idea of *quantity* altering *quality* is too great a piece of absurdity to bear the test of science for a moment. In looking for varying results according to the size of the dose given, they place the difference exactly where it belongs — on the vital force. The agent acts precisely alike in all quantities; if the greater number and degree of circumstances favor the life power, (§15,) it will prove superior to the poison, and overcome it, and repair the damage done; but if the preponderance is against the life principle, then the poison will manifest its action without restraint, and a very small dose (on the well-known chemical principle of

catalytic action, §80) may suffice to inaugurate changes at will spread wide devastation. With all the errors and failings of Allopathy, that system must have credit for seeing the folly of the above notion; and it does not base its diminution of doses upon the sophism of thereby changing their character. So also the Homeopathist recognizes the inconsistency of such an idea; and when he reduces his doses to the thousandth, or to the ten-thousandth part of a grain, he does not expect to see their nature altered; but proclaims his knowledge of facts to prove that a small quantity of a poison will excite less resistance on the part of the vital force, and therefore will find its way into the system more insidiously, and hence lodge itself where it can work its effects more surely. And in the presentation of these facts, as applied to the use of poisons, he is correct beyond a question; for a very small quantity of an agent of this class will scarcely be noticed, in the majority of cases, while Nature is wholly engaged in a struggle against disease; and therefore it ill the more surely be absorbed, and from being absorbed will find its way to some place where it can the more surely become a leaven and work its evil by catalytic action or direct narcotic depression. He, like the Allopathist, proposes to cure one disease by making another, and also consistently deems poisons the best means for doing *this*; and he differs from the other only in requiring that the new disease shall be *like* the original one, instead of *unlike* it. He prescribes copper and arsenic for diarrhea, because they will make diarrhea; strychnine for spasms, because it will make spasms; muriatic acid for hectic fever, because it will make hectic fever; iron for hemorrhage, because it ill produce hemorrhage, etc. He accepts and “proves” the well-known poisonous symptoms produced by these and other deleterious agents; accepts them and the Allopathic doctrine that they will cause disease; believes it is best to apply them to cure the same kind of disease that they will cause; but never for a moment imagines, nor ever saw a fact to imply, that the attenuation or dilution of an average dose would to the least degree vary the character or kind of action of the poison. Indeed these two systems would have nothing to rest on, were this proposition true.

106. It has been left to the Eclectic school alone to suggest this absurdity, and to adopt it as a “fundamental principle. While claiming for itself vast superiority for “selecting the good from all others,” (never, however, giving credit for things taken which is a display of moral obliquity that upright men would hesitate about feeling proud of,) and while asking for public confidence and support on the ground of not using poisons in practice, it yet resorts to every poison

of Allopathy except mercurials and antimonials, and prescribes some animal poisons that Allopathy has not yet had the hardihood to attempt to use. In narcotics, especially, the Eclectic school deals with a freedom and rashness such as Allopathy has never been guilty of, even in her worst days. While the public, in employing an Eclectic, confidently resting on the belief that he gives no poisons, the current practice of the school to which he belongs embraces the most lavish use of the very worst articles in the whole list of poisons. To exculpate itself from this criminal position of being a public deceiver, the Eclectic first denies that he uses poisons at all. Now confront him with the following list of articles, currently prescribed in the text-books and books for family use written by the principal Professors of that school: Arsenic, (Scudder,) Antimony, (Paine,) Iodine, Lead, Snake poison, Dog Button, Strychnine, Zinc, Prussic acid, Henbane, Bromine, Gold, Phosphorus, Nightshade, Leeching, Silver, Poison Oak, Poison Ivy, Creosote, Opium, Blister-Fly, Morphine, Burning, Chlorine, Poison Laurel, Veratrum, Bismuth, Foxglove, Stramonium, Mineral acids, Copper, Aconite. At first there may be a blustering denial that this list of agents is prescribed by accredited Eclectic authors; but when the works of Profs. Scudder, Newton, King, Paine, Jones, and others, are opened, and the lavish use of these articles is pointed out, what is the answer? Every thing is poisonous according to the quantity given; and by using small doses of these articles, they are rendered harmless! By such a puerile sophism does the Eclectic school attempt to shield itself from its destructive inconsistency. The only answer that such a proposition requires, is given in the method for analyzing narcotics. (§96, 97.) Make similar observations with any poison; give it in small, very small, doses — repeating at intervals of a few hours; and that man must have a rare amount of obtuseness, who can not see that the small doses will steadily overcome vitality and work a fatal result. (§103.) If he profess still to believe that a diminished dose of a poison is harmless, let him take one-fourth part of the average dose of arsenic, or aconite, or veratrum, or strychnine, or even his favorite gelseminum; let him repeat it thrice a day for a month. If he dare not do this on himself, to prove the soundness of the argument he uses to hush his patients, then

how dare he give it to another? If he dare not thus trust his own life to his own practices, then how dare he attempt such practices upon the lives of others?

107. The question about large and small doses, might now safely be left to itself; for the mind that is not prepared to admit the conclusive force of the arguments already presented, is evidently too much a victim of partisan prejudice ever to become a pupil in the school of science. Yet the suggestion offered at the close of the last section, tempts one to make an application of it to a few cases; and I purpose doing so, even at the risk of proving somewhat tedious.

108. *Muriated Tincture of Iron.* — Let us first take under examination the *muriated tincture of iron*. This is one of the most popular Allopathic and Eclectic prescriptions of the day; and is resorted to as a tonic and astringent under such a variety of circumstances, that it might almost be pronounced the one standing remedy of those schools. To promote appetite and digestion, give tone to the bowels, and solidify the structures generally, it is commended with a unanimity and zeal that would suggest the utter uselessness of any other tonic. The dose ranges from ten drops to a drachm, given in some diluent. Let, now, a man in perfect health commence the use of ten drops three times per day, and continue it for one month. For the first few days, he will experience a sense of warmth, or an agreeable glow, in the stomach; appetite will increase; the pulse will become firmer and a shade more frequent; and he will be very likely to praise the finely invigorating properties of his medicine. During the second week, however, costiveness will arise; the urine will have become so free as to suggest an enfeebling drain on the system; the stomach will suffer almost constant oppression, and a sickening sense of tightness and burning will follow every dose of the tincture; there will be thirst, and feverishness of the skin; the pulse will be perceptibly harder and more frequent; and the head will suffer heaviness and a feeling of unpleasant tension. During the third week these feelings will steadily increase; and by the fourth week the appetite will be thoroughly depraved; the soreness of the stomach will be so great, that the ordinary weight of the clothing will cause suffering; there will be a feeling of weight at the praecordia, and a burning sensation very painful to endure; the whole alvine canal will be irritable, and a prostrating diarrhea, not unfrequently accompanied by blood, will almost surely arise; furred tongue, acrid or raw feelings in the throat, tenderness about the sockets of the teeth, and a wearying heaviness and aching of the head, will make up the general catalogue of symptoms. Instead of feeling

stronger, the vigor of the body will be decidedly lowered; the stomach will fail in digestion to such a degree, that the whole body will begin to show signs of emaciation; and, in the case of females, an almost continuous menorrhagia will arise, and further exhaust the victim. This latter result is due to the free acid finding its way into the blood, and breaking down the vital integrity of that fluid. Hemorrhage from the nose and lungs is a not unfrequent occurrence.

109. Wide as appear to be the differences in these effects between the first and fourth weeks, the briefest reference to physiological facts shows them to be precisely the same *in kind*. The dose being the smallest average medicinal dose, is yet found to irritate the stomach. This transient excitement is at first rather pleasant than otherwise — as the first drops of cold water falling on the head of the hampered criminal seem pleasurable. But by repetition the drops upon the convict's head become painful, and finally agonizing, till death itself would be preferable to the falling of another; and yet each drop gives but the same little blow which at first seemed so agreeable. In like manner the persevering use of the small dose of the iron tincture finally overcomes the system, which steadily sinks before the repetition; and yet the last dose in the fourth week, is but the same in kind and power as the first dose in the experiment. The final headache and burning are but a steady growth of the first glow and exhilaration. Appetite and digestion seem at first increased, so light is the irritation; but the membranes of the stomach steadily thicken, and its secretions become vitiated, under the dose, till at last the power of digestion is nearly destroyed, and the irritation becomes so great that nausea and vomiting may occur on the use of even bland foods. No man can, in such an experiment, point to the day when the above uniform dose ceased to have a beneficial effect, or the hour when each portion began to have a deleterious effect. No one dose differed from another, and the effect of each was precisely the same. What the true character of that effect was, may be seen in the fact that this tincture is a common application to warts. It will remove these dense growths by a *caustic* action; what, therefore, was its action upon the delicate membrane of the stomach, and what upon the blood? Evidently caustic, so far as each dose went; till finally the escharotic overcame the

vital integrity, and caused an irritable form of alvine congestion, actual destruction (as testimony proves) of the epithelial layer, a turgid or semi-apoplectic state of the brain, and that vitiation of the blood and the blood vessels which is not unfrequently followed by the most dangerous passive hemorrhages.

110. *Arsenic*. — Or let arsenic be brought under examination. It is currently quoted that the inhabitants of Styria, Europe, (where mines of arsenic are worked,) make daily use of this article. Beginning at one-fourth of a grain, they gradually increase the quantity till, in adult life, some take as many as five or seven grains at a time with apparent impunity. All authorities agree that no such observations can be made in England, France, or America; as the smallest dose continues to have the same effects, in these countries; and the stories from Styria are, as Prof. Wood says, greatly exaggerated. But accepting this testimony, let us trace it to its termination. It is said that the use of this mineral gives vigor to the stomach and plumpness to the form, and renders the women especially rotund and beautiful. Such effects would appear to be very desirable; and these accounts would seem forever to disprove the idea that small doses of a poison could be otherwise than beneficial. Indeed, the arsenic-eaters of Styria are quoted as positive evidence that even this virulent poison will, in small quantities, prove highly advantageous instead of harmful. But now gather in “the *whole truth*,” (§7,) and mark the finale. The above-named plumpness is always associated with an even and waxy paleness, the pulse is soft and slow, the digestion is very limited, parties using the article are noted by their neighbors as being capable of but little work, and they sink helplessly before disease of ordinary severity. The testimony upon the latter points is abundant; and that the habit is looked upon as degrading, even in Styria, is found in the fact that only a small number in the more ignorant class ever practice it. Dr. Pereira, in his elaborate *Materia Medica*, says: “The following is an abstract of the symptoms produced by the continued employment of *small doses* of arsenious acid: Disorder of the digestive functions, characterized by flatulence, sensation of warmth, or actual pain in the stomach and bowels; loss of appetite; thirst, nausea, and vomiting; purging, or at least a relaxed condition of the bowels, and griping; furred tongue, with dryness and tightness of the mouth and throat, or with salivation. Quick, small, and sometimes irregular pulse; oppressed respiration with a dry cough. The body wastes, the stomach being frequently so irritable that no food can be retained in it. Headache, giddiness, and want of sleep, are frequently observed. The limbs become painful, feeble, trembling, subject to

convulsions; occasionally benumbed, and ultimately paralyzed. Now and then the hair and nails fall off. Swelling is next observed; and under these symptoms the patient gradually sinks.”

111. The ultimate feebleness thus caused by the continued use of arsenic, is but a more decided presentation of the earlier effects of its use. While the latter were supposed to be beneficial because of the increased appetite and rotundity and smoothness accompanying them; the pathologist readily detects, in these be-praised charms, the positive evidence of a most grave constitutional malady — anaemia. In this affection, as Prof. G. B. Wood concisely says : “There is commonly universal paleness of the skin; the lips, tongue, and mucous surfaces in general are also strikingly pale; there is extreme whiteness of the conjunctivas, and the whole surface of the body appears bloodless.” To this succeed puffiness of the face, and dropsy of the limbs — which often advance so slowly as to give the impression of a healthy increase in fleshiness. But the bloodless, waxy look, the shining surface, the indisposition to exertion, all point out, in unmistakable terms, that the growth in size is not that of health, but of disease. And the physician can give this diagnosis infallibly months, or mayhap years, before the later symptoms of chronic anaemia are established; or if he can not thus detect the true nature of the case, he is an unworthy novice in his business. This anaemia is a condition of impoverished blood, where the vitalization is low and the red corpuscles consequently deficient: and which may be caused by bleeding, starvation, heart disease, insufficient air, and a number of other influences detrimental to health and to general nutrition.

112. Here, then, we have an anaemic condition caused by arsenic, developing itself long before the patient is supposed to be in any serious condition from his habit, and actually quoted as a desirable state by physicians who overlook their pathology in their anxiety to sustain a pet theory of poisons. The earlier and the later symptoms, are precisely the same *in kind*, namely, breaking down of the red corpuscles and consequent impoverishment of the blood — results well known to follow the administration of arsenic. There is no difference growing out of

the doses; except that the frame could not endure such a waste beyond a given limit, and sank when that limit was reached. But each dose contributed to the final catastrophe; and the first half-grain broke down red corpuscles, so far as it went, quite as effectively as the last five grains. At the use of every dose, the lever of destruction is always the same; and though, as in mechanics, a small power will not lift so much as a greater one, it nevertheless aids in the general result to the extent of its own ability. As Dr. T. R. Chambers (*Renewal of Life*, p. 613) says: “Let us do a sum. A person weighing 112 pounds, averages 512 ounces of blood; and of this blood, 60 ounces should be red disks. Now the careful analyses of MM. Andral and Gavaret show that in cases of anaemia of a marked character, we may expect at least three-quarters [or 45 ounces] of the red corpuscles to be wanting.” If, therefore, the continued use of even very small quantities of arsenic will thus break down any definite number of ounces of the red corpuscles, no “sum” can be more plain than that each grain of that arsenic broke down its own proportion. If one pound, taken at the rate of two grains day, broke down three pounds of red corpuscles; did not each dose of one grain break down its three grains of corpuscles? And when is taken into account the astonishing rapidity with which the vital power will labor to replace the corpuscles — unquestionably renewing 15 to 20 ounces in a month — it will be seen that a state of 45 ounces deficiency at the end of ten years occupied in consuming 1 pound of arsenic, must have caused a total destruction of at least 1,500 ounces of these disks. If one pound (7,000 grains) caused a waste of 1,500 ounces, or 655,250 grains of corpuscles; then each one-grain dose of arsenic caused a destruction of about 93 grains of corpuscles. The most careful and extended analyses of learned Allopathists, give the basis on which to do this “sum.” We can not question the accuracy of their observations; but by carrying them out to their legitimate consequences, it becomes a mathematical demonstration, that each and every grain of arsenic would destroy many grains weight (or the number of several thousands) of the red corpuscles of the blood; and hence it is most conclusively proven that each solitary dose wrought its own share in the production of the general anaemia.

113. As a still further proof of this destructive capacity of even an attenuated dose of arsenic, allusion may be made to the consequences of giving it in even Homeopathic portions. Under the hands of these physicians, when used in quantities of not more than the one-hundredth part of a grain three times a day, it steadily leads to low inflammation of the stomach and

bowels, a raw feeling in the esophagus, indigestion, painful and liquid stools, and emaciation; and then, the red corpuscles beginning to break down, dropsical and anaemic conditions supervene. In this city I have several times witnessed these results under the conduct (the leading Homeopathist here; and in each instance he candidly admitted that the dropsy was the consequence of the arsenicum used. A few years ago I visited, in consultation with a Homeopathist and Prof. A. Curtis, a little girl who had been under Homeopathic care for a few weeks. The original attack was frothy diarrhea; and for this a weak solution of arsenic pellets was given, "because these would make diarrhea." The practice was in strict harmony with the Homeopathic doctrine that "like cures like." We found the child in the cradle, waxy pale, to feeble to sit up, plump in form, but so nearly transparent that every bone could be traced in clear outline as a limb was held up to the light. It was the most extreme case of anaemia that it has ever been our misfortune to see. During the consultation the Homeopathic gentleman, (who is a scholar, and stands about at the head of his branch of the profession in the West,) frankly stated that this condition was due to the use of his dilution of arsenicum. On asking what course he proposed adopting for the relief of his patient, he shrugged his shoulders and blandly smiled, as he said, in his broad Prussian accent: "O, I would follow our motto, *Similia similibus curantur*, and give a little more arsenicum." The prescription was in strict keeping with the Homeopathic doctrine; but would have proven speedily fatal to the little patient — who recovered under the care of Doctor Curtis.

114. *Opium*. — But turn to the use of opium among narcotics, and examine the effects of a persistent use of moderate doses; and again it will be found, as already quoted from Prof. Stille, (§103,) that the large dose acts in the same manner as the small one, being merely "more decided." The blunting of nerve sensibility induced by half a grain, is of precisely the same character as the stupefaction following five grains. And when one has been addicted to the use of small portions for months or years, and then essays to abandon the habit, his irritation of brain, weakness of muscle, and general sense of prostration and agony, are but magnified representatives of the furred tongue, tremulous

limbs, lassitude, headache, nausea, and general irritability, which follow the use of even a single dose. (§86, 87.) The two extremes in the symptoms point to the same condition of secretions retained, circulation retarded, and nerve-centers weakened by narcotic depression. From the slight and seemingly transient inconvenience sequent to the use of half a grain, it is but a slow gradation to the terrible derangements of body, and mind arising from the habitual use of the drug. And even he irresistible mania with which the long-time opium-eater craves for his regular portion, is typified on a proportionate scale in the fondness with which the wearied nerves turn for another dose after rallying from the lethargy of the first one ever taken. (§93.)

115. An instructive lesson may be learned from a lengthy account of the consequences of habitual opium-using, furnished to Harper's Magazine for August, 1867. The steady advances by which this drug obtains its mastery over the system, are there depicted in all the fearful brilliance of their true colors by Dr. F. H. Ludlow. Reporting a case where a patient "had first learned its seductions, as happens with the vast majority of Anglo-Saxon opium-eaters, through a medical prescription," he portrays a series of facts that should startle into consciousness even the dumbest of that class of physicians who imagine that they can advise a narcotic "to ease the pain," and no harm ever come of it. The manufacture of drunkards by the retailer of spirits, presents no more fearful pictures of bodily, mental, and moral ruin, than are there shown to follow the "small doses" of the prescriber of opium. Had we space, it would be well occupied in quoting the whole of this burning article; but a few paragraphs are all for which room can be spared:

116. "Opium is the most complicated drug in the Pharmacopoeia. Though apparently a simple gummy paste, it possesses a constitution of no less than twenty-five elements. Five of these are opium alkaloids, which act generally upon the whole system, but particularly upon the brain. I mention them in their ascending order: Narcotin, Codein, Opiatin, Metamorphia, Morphia. The first of these the poppy shares in common with many other narcotic plants — tobacco the most conspicuous among the number. The remaining four act very much like morphia. Codein does not seem to congest the brain as morphia does; but its action on the biliary system is probably little less deadly than that of the most powerful narcotic. In practical action, opium affects as large an area of nervous surface, attacks it with as much intensity, and changes it in as many ways as its complexity would

lead us to expect. I have pointed out the existence in opium of a convulsive poison congeneric with brucia. The other chief active alkaloids, five in number, are those which specially possess the cumulative property. [§89.] Poisons of the strychnia and hydrocyanic acid classes are swifter agents; but this perilous opium quintette sings to every sense a lulling song from which it may not awake for years, but wakes a slave. Every day that a man uses opium, these cumulative alkaloids get a subtler hold on him. Even a physician addicted to the practice, has no conception how their influence piles up.

117. "At length some terrible dawn rouses the opium-user out of a bad sleep into a worse consciousness. He already knows the disorder which has taken place in his moral nature and his will. For a knowledge of his physical condition he resorts to his medical man; and what must the practitioner tell the patient in an average case? 'Sir, the chances are entirely against you.' If a powerful constitution have so resisted the drug as to leave some hope of recovery, an immediate entrance upon the hard road of denial is advised. If the case is found hopeless, the practitioner will tell the patient so, in something like these words:

118. "You have either suffered a destruction of membranes that can not be reproduced; or you have deposited so much improper material in your tissues, that your life can not endure the protracted pain of removing it. One by one, you have paralyzed all the excretory functions of the body. Opium, aiming at all these functions for their death, first attacked the kidneys; and you first experienced slight trouble in urination. As you went on, the same action (paralytic of organic life) involved the liver. Flatulence, distress at the pit of the stomach, irregularity of the bowels, showed the fitful action of the liver. Your mouth became dry, through a cessation of the salivary flow. The tear duct was parched, and your eye grew to have an arid look, in addition to the dullness produced by the action of the opium on the pupil.

119. "All this time you continued to absorb an agent which interposed between your personal substance and those changes by which alone life can be maintained. It has checked the fires of your whole system. It has not only

interposed, but in part has substituted itself; so that along with much effete matter of the body, there always exists a certain undecomposed quantity of this agent. When this combination became established, you began losing your appetite. The progressive derangement of your liver manifested itself in increased sallowness of the face and eye; the veins were not strained of that which is the bowels' proper purgative, and the blood's dire poison. You have sealed up all but a single excretory passage — the skin. Perhaps when you had opium first given you, you were told that its intent was the promotion of perspiration; but you did not know its *rationale*. The only way in which opium promotes perspiration, is by shutting up all the other excretory processes, and throwing their entire labor on the pores. (When the skin gives out, the opium-eater is shut up like an entirely choked chimney, and often dies in delirium of blood-poisoning.)

120. "For a while your skin sustained the work that should have been shared by the other organs — by violent perspiration. Then your palms became gradually hornier, and your whole body yellower; at the same time that your muscular system grew tremulous through progressively failing nervous supply. About this time you may have had some gastric disturbance, accompanied with indescribable distress, loathing of food, and nausea. This indicated that the mucous lining of the stomach had been partially removed by the corrosions of the drug; or that nervous power had suddenly come to a stand-still. The rest of your life must be spent in keeping comfortable, not in being happy.'

121. "Opium-eaters are not liable to be attacked by miasma in malarious countries, nor epidemics or contagions where they exist. They almost always survive to die of their opium itself. And an opium death is usually in one of these two manners: 1st. Collapse through nervous exhaustion, (with the blood-poisoning and delirium above-mentioned,) sometimes after an overdose, but oftener seeming to occur spontaneously. 2d. In the midst of physical or mental agony, great and irrelievable; and with a colliquative diarrhea, by which — in a continual, fiery, acrid discharge the system relieves itself, during a final fortnight, of the effete matters which have been accumulating for years. Either of these ends is terrible."

With such a fearful array of consequences from indulgence in this narcotic, how can any physician imagine that God ever designed such an article to be put within the human frame? or that he can be excused from blame, who lays the foundation for such a habit

by prescribing the least portion of the drug with the assurance that it is *good* for the system? How can he satisfy his conscience after handing the potion to a patient with a "This would kill me, sir; but you take it?" It is an extravagant presumption, to assume that God will hold him guiltless who offers such a poison to his neighbor's hand, in defiance of the vast array of evidence in its condemnation.

132. In a similar manner might every poison in the catalogue be scrutinized, and the same kind of testimony be brought against it. The subject is not a novel one, that a physician can excuse himself for being ignorant of it; for enough details have been published in connection with every article, to satisfy any reasonable man that the size of a dose makes no manner of difference with the quality of its action. As Prof. A. S. Taylor says, in his volume on Medical Jurisprudence, "the popular idea of a poison is, an agent that will kill in *small doses*." If the vital resistance is too great for it to kill the whole body, it kills I as much of it as it can act upon. That the patient does not die, is but a proof of the wonderful capacity that God has given to the life principle; and should incite our admiration at the beneficent provision thus made by the Creator. As T. K. Chambers glowingly says: "Mark the vigor of renewal with which the human body is dowered. Learn from this to have faith in its power, and to trust in it." Never, therefore, resort to destructive agents on the false plea that they may do good; for they only serve to war against and break down the very power on which existence depends. Never try to excuse the use of poisons on the plea that small doses differ from large ones; for, the assertion leaves you open to the charge that you are utterly ignorant of the simplest facts in your own profession and in Nature at large; or else that you resort to this sophism to soothe the prickings of your own conscience. And if you have the least doubt as to the true class to which an article belongs — as for instance, if you still feel uncertain as to the harmless nature of golden seal, boneset, catnip, lobelia, or any article commended by Physio Medicalists — proceed to test it by the use of *small* doses three times a day for a month. That test is infallible, (Rule 2, §74;) and according as it approves or condemns an article, should you employ or reject it. To refuse to abide by the consequences of such a test, is to deny the force

of truth, and to prefer your own prejudices above the approvals and disapprovals of Nature.

EXCUSES FOR USING POISONS

123. *They supply needed Elements to the Frame.* — Under the Physiology of a portion of iron being found in the blood, has grown up the therapeutical doctrine of supplying needed constituents through medical prescriptions. It was on this ground alone that the preparations of iron found their way into the *Materia Medica*. The addition of muriatic acid to iron, was considered a great step in advance, inasmuch as it would supply an element of gastric juice! Proceeding from this basis, various preparations of lime and phosphorus have been brought into use, to supply deficiencies of bone and lung; and the theory has grown till the Eclectic excuses himself for the use of lead, copper, zinc chloride, ether, silver, the cyanides, etc., on the sweeping plea that he can not be doing wrong while supplying the system with any of its elements! (See Scudder, King, and Paine, in their works on Practice.) The latter assertion simply proves that some Eclectics have too little knowledge of the human system to know what its components are; and that in this, as in many other instances, they out-herod Herod in the rashness with which they use Allopathic doctrines and practices that they do not comprehend.

4. Reverting to the idea as advanced by Allopathy, and a few facts will serve to show its falsity. Muriatic acid can not supply gastric juice; because that acid is not found in this juice till after its chemical destruction and rearrangement; and the testimony of all Physiology shows that man can not manufacture the first drop of this juice. Neither can man manufacture a drop of blood; or so much as tell how iron is combined in that fluid, or what part it plays, or whether it is an accidental or a necessary constituent — present when digestion can master strong foods, and absent when the stomach can use only paps and succulents. Nor can men tell when or how the foetus in utero obtained and arranged the inorganic constituents of its bones; neither can he make the first cubic inch of these the most earthy of all the structures in the frame. It is true that the body contains inorganic substances; but all science teaches that the Maker especially ordained the vegetable

kingdom to seize upon and elaborate these for their reception by the animal kingdom. But there is not one jot of evidence to prove that the animal stomach, and especially the human stomach, does or can prepare and assimilate any one of the inorganic compounds. The muriatic acid and iron offer the strongest support to this theory, if it be true; yet we have seen what havoc this prescription presently makes in the stomach and entire system. (§108.) The simple fact is, that man is a vital structure, and not a chemical laboratory, (§35;) and his food is worked into tissues under the control of a life principle whose operations can not be fathomed, and therefore can not be imitated. This argument of giving earthy and mineral substances to supply wastes in the body, sets aside God's own elaborating medium between earth and man — the vegetable kingdom; and essays to make the Chemist assume the prerogatives of the Vital Force. The utter futility of the argument can best be seen by going directly to the absurdities which are its sequences, namely: *1st.* It would give the Chemist the elements that his science says compose the human body, (the *Westminster Review* pertinently states them as five pails of water and forty-five pounds of saltpeter,) and expect him to form them — at his laboratory — into the living skin, blood, heart, bones, muscles, nerves, and all the other structures of a full-grown man. *2d.* It would make the physician's prescriptions read thus: For necrosis of the bones, insert upon the decayed part a suitable quantity of fresh lime and phosphorus; for caries of the enamel of the teeth, direct the patient to hold in his mouth fresh lime and fine-grained sand; for baldness, give a five-grained bolus of hair three times a day, etc.!

125. *The Minerals can be expelled and the Narcotics are never absorbed.* — This argument is advanced by both Allopathists and Eclectics. Calomel is claimed to be made safe by combining it with another cathartic; and every poison is pronounced capable of being so controlled as to be rendered perfectly harmless, merely by combining it with other articles. The combination, be it noticed, is nearly always of one poison with another — as of calomel with opium, opium with henbane, etc. Of course there are exceptions, but this is the rule. Now, there is no mineral but is liable to absorption into the body; and it is a current matter of therapeutical history, that this absorption will take place with equal certainty whether the agent be applied to the stomach, bowels, or surface. (§.66*.) It is true that certain conditions of the system may oppose such absorption; as when serous discharges from the bowels have reversed the action of the absorbents. This class of facts is largely relied on to prove that medicines act differently in disease from what they do in health,

(§157;) and indeed this position is the only one on which many educated and well-meaning Allopathists continue to cling to the use of poisons, and to sustain this practice by the authority of their example. But this proposition is based entirely upon a misunderstanding of the facts; and attributes to the poisons, effects that belong entirely to the vital force. It is quite true that the life power will resist injurious agents more vigorously at some times than at others; and if, in states of either existent or provoked excitement, it succeed in expelling such articles, of course they will fail to produce their evil consequences. And it is also true that many of the agents, especially a number of the minerals, are excitants; and arouse an early vital resistance that may secure their expulsion. In this way, such agents may fail to be lodged in the system; and they are never used now, except with the *expectancy* of their provoking that grade of resistance which will thus save the system from their effects. But this is merely an accidental result, and is by no means a fortunate consequence on which the physician can at all depend; and even when it occurs, the poison has still made an injurious impression, so far as it has made any impression at all. (§112.) These points have been thoroughly established in this discussion upon poisons; and it is because the very small doses of the Homeopathist rarely excite much resistive action in the organism, that they are so almost invariably absorbed, and hence are so likely to work greater than Allopathic mischief. (§105.) But in either case, it is not due to the poison, but to the vital force, that a poison is not always absorbed. And in sections 108-121 it was seen how steadily and surely a repetition of the dose would break down this power of vital resistance, and thus render absorption certain. Thus this whole plea for the poisons is merely one of vital ability to resist them; and when this power is absolutely insufficient to effect this, or when it is efficient but has been lowered by the depressing influence of such agents, there is no medical man but must admit that the absorption of minerals is then sure to take place.

(*Just as I am about to send this to press, (August, 1868,) the following unexpected facts occurred to prove still further that a poisonous application to the skin may be as surely fatal as if made by the stomach: A favorite and healthy

kitten, about 7 months old, had become infested with fleas. About 6 o'clock, one afternoon, I put nearly half a drachm of pure carbolic acid into a half pint of water, and gave the kitten a careful washing with this solution — of which about a pint was used. It killed the vermin immediately. I then washed the animal thoroughly in water, and dried her well with coarse cloths. She seemed very happy at being thus rid of her pest. At 8 o'clock, however, she began to be unsteady in her gait; at 9, the unsteadiness was great, and caused her to totter from side to side, as if partially paralyzed. In jumping for the seat of a chair, she would miss it in height, and even fall quite to one side of it. By 10, she could scarcely walk and the heart beat with thumping violence. She lay in a somewhat (but not entirely) helpless condition for two days, refused all nourishment, and then died — the hair being perfectly soft, and no smell of acid being perceptible about her.)

126. But the Eclectic, while admitting this in regard to minerals, denies it in regard to vegetable poisons. He claims immunity for his narcotics on the assumption that, if they do not kill outright, they are cast out of the system in a few hours, and never leave any sting behind. I am at a loss to know whether this assertion is made from ignorance of the facts, or from an intention to deceive. It seems altogether probable that the Eclectic Professors know better, but use it to satisfy students who have conscientious objections to the use of poisons; while the student himself is misled, and believes it to be the fact till years of study and observation have taught him better. But ere he finds out his error, he has served the purposes of the Eclectic Faculty, who sought his influence only through his tuition fees and his name on their list. This may seem a harsh and uncalled-for but it is, alas! too true — as I have had too much opportunity to know through my own education and early practice in that school. It took me five of the most vigorous years of my early manhood to unlearn the worse than Allopathic errors I was taught in an Eclectic college; and Eclecticism at that time was far purer and more reformatory than it is now. I thoroughly *know* that that school has no scientific principles, but is merely an agglomeration of glittering assertions to please the uninitiated; and I feel it my duty to state the fact, that young men may not waste their time and money in learning its reckless absurdities, as I once did.

126, a. It is not my purpose, any more than it is my right, to speak in this place as a mere partisan; but truth and science compel me to expose thoroughly the hollowness of these Eclectic pretensions — and the more especially as that school lives wholly by inveigling

students with the promise of teaching them Physio-Medicalism. Still, as above stated, it defends the use of narcotics — which we have seen have not even the negative merits that may be claimed for the mercurials (§77) — by the assertion that the vegetable poisons are not absorbed into the frame. No Eclectic author has ever, to my knowledge, offered any proof of this statement — for the simple reason that there is none to offer. It rests exclusively on *ipse dixit*; for not one fact can be presented to sustain it. On the contrary, there is an abundance of the most undeniable facts to prove that every one of the narcotics is freely absorbed; and that both before and after being absorbed, every one of them causes distinct lesions of nervous tissue. (§68, 90.) So far as relates to opium, the facts of its absorption and of the terrible lesions it causes, are sufficiently detailed in sections 116-121, especially in 119. Christison, in his volume on Poisons, gives numerous facts on this point. Upon the other narcotics, abundant evidence of their absorption can be found in such standard volumes as Christison, Orfila, Taylor, and others on Poisons. Among numerous facts of the kind, a single number of the London Hospital Reports, (that for January, 1868,) records two cases of poisoning from the external use of belladonna about the throat and breast — neither case, however, proving fatal. But the following brief extract from Headland on the Action of Medicines, is all that need be introduced here. After presenting many experiments made by Magendie, Sir B. Brodie, and others, in support of the position that various narcotics produced fatal effects under circumstances where they could not have acted otherwise than by absorption, he says: “Having tried to prove that they must pass into the blood, if we find that they actually do so, we shall establish a stronger case. Isolated observations on this subject have frequently been made. Thus, in 1847 Mr. Allen detected daturia in the urine of a man poisoned by stramonium. In 1824, M. Runge had discovered in the same way the principles of henbane and belladonna. Dr. Golding Bird observes that indigo, when given for epilepsy, has turned the urine blue. Krimer has detected prussic acid in the blood of persons poisoned by it. It would be easy to multiply such instances. The experiments of Tiedemann and Gmelin, and since them of Wohler, have definitely settled this point.” (§133.)

126, b). So far as any scientific argument is concerned, no ground now remains on which a man can rest his use of poisons. If truth, and law, and the great question of human life, are to have any weight with medical men, this class of articles must be excluded totally from the *Materia Medica*. The facts and arguments that have been adduced, can not be gainsayed; and he who intends to be guided by his reason — that great mental power which places man above “the beasts of the field,” but which has not saved him from resorting to poisons which the instinct of the lower animals has led them to evade — if, we say, a man intends to be guided by his reason rather than by his prejudices, he must submit to the plain teachings of Nature, and lay aside all destructive agencies. And he will find the greater inducement to do so, in the fact that there are offered to him a multitude of perfectly harmless agents, possessed of powers equal to the removal of the most severe forms of disease. These agents will bear the most rigid tests that can possibly be applied to them, according to the rules that have just been so elaborately discussed, and prove their absolutely non-poisonous character. And though it is by some asserted that they are too inefficient to meet the requirements of complicated maladies, this is a grievous mistake. Their power is immense; and as they act so uniformly in harmony with Nature, they possess a curative value unknown and undreamt of by those who have been accustomed to place their reliance upon poisons. Ten thousand times have they been put to the severest trial, in the gravest and most complicated forms of disease; and ten thousand times have they restored such cases to life, and health, and usefulness, after the most experienced Allopathists and Homeopaths and Eclectics had exhausted their skill and pronounced the sufferers beyond the help of man. Physicians have every thing to gain by learning the use of these agents; for he alone can hope to be successful, and to come to his death-bed with a clear professional conscience, who knows that he has always acted in concert with Nature, and has never given a prescription that would jeopardize a life.

ACTION OF REMEDIES

127. The classification of remedies, and the especial field for which each class is fitted, and to which it is to be applied, have already been detailed in sections 48 to 64. Proceeding upon the classification and the laws of application there laid down, we come now to a more detailed inquiry into the modes according to which agents act, and the rules by which they are to be employed. In all medical experience, it has been observed that each agent, whether a remedy or a poison, will exert more influence upon some structures than upon others. Thus, among poisons, opium acts mostly upon the brain, and reaches other structures by way of this nerve-center; calomel acts principally upon the liver; lead especially attacks muscular structures, tobacco the heart, etc. In the same manner, among remedies, it observed that leptandra expends its principal power upon the liver, asclepias upon the skin, eupatorium purpureum upon the kidneys, uva ursi upon mucous membranes, etc. The reason for this is beyond the comprehension of man; but the fact is universal, and must be accepted.

128. When a particular agent is found to exert an especial influence on one kind of tissue, it will affect that tissue similarly in every part of the body. Thus, uva ursi is known to manifest itself quite directly upon the mucous membrane of the bladder and urethra. While this is its characteristic, it is equally the case that it will exert precisely the same kind of influence upon the mucous membranes of the vagina, bowels, stomach, mouth, and conjunctivae. Cornus florida bark is an astringent tonic to mucous membranes; and, like the uva ursi, it will exert this same action upon every part of this structure. Lobelia relaxes fibrous tissue; and will similarly affect the motor muscles, muscles of the uterus and bowels, fibrous structures of the blood vessels, and even the heart itself. Caulophyllum is a nervine, prominently manifesting its properties in connection with the uterine nerves; but it will exhibit the same kind of influence upon the nerve tissues of the entire frame, apparently preferring their peripheries to their centers. Instances might be multiplied to any desired extent. So uniform are these facts, that they determine a rule which underlies the entire practice of medicine; and they readily account for the great variety of

maladies to which many agents can be applied effectually. They also open up a beautiful field for deductive philosophy; as, when it is known that an agent will relieve a certain condition of a given tissue at one point, it may safely be inferred that it will relieve a similar condition of the same kind of tissue at another point — though the organs may be remote, and the maladies receive different names, and the article has never been tried in the latter difficulty. It will require only to be sure that the two difficulties are of the same nature, as relates to the conditions of the tissues.

129. Organs that are similar in structure, or that have very intimate sympathies, will generally be affected by any agent that acts upon either one. Thus, the skin and mucous membranes are counterparts of each other; and it is found that asclepias will similarly affect both, and so will cornus florida and many other agents. The skin and kidneys have a peculiar intimacy in the correlation of their functions; and it is observed that serpentaria and some other agents will influence either. There is a close sympathy between the stomach and uterus; and agents that are truly tonic to the former, are about equally tonic to the latter. The stomach and liver also sympathize very intimately; and relaxants and stimulants to the one, will exert at least a considerable impression upon the other. This rule is not so uniform as the preceding one, and therefore occupies but a second place; yet it prevails with a considerable number of agents, and greatly enhances the value of many remedies.

30. From the last section it will at once be inferred that agents do not confine themselves to one kind of tissue. This is a correct inference. Many agents affect several tissues; and that, perhaps, in nearly equal degrees. Thus, lobelia affects the nervous system as such, quite as much (and perhaps rather more) than it does the fibrous; asclepias influences serous membranes distinctly, as well as cutaneous and mucous; serpentaria influences the circulation, as well as the kidneys and skin. In this way it is observed that some remedies apparently influence every structure of the body more or less, of which lobelia is one of the most prominent representatives; the great majority of agents influence more than one structure, and, through the compound nature of the organism, thus manifest a power upon several organs; while a few confine their chief power more distinctly to one structure, or to one or two organs. For the sake of convenience, the first of these classes may be called *general*; the second *restricted*; the third *local*. These terms will be used in these senses through subsequent portions of this volume.

131. Among agents whose action is most general, and those that are least restricted, it is still the case that they will each show a sort of preference to one structure above another. Thus, although *asclepias* influences skin, mucous membrane, and serous tissue, its action toward the skin is more decided, more prominent, than toward either of the other structures. And even among agents that are apparently most local in their action, it is not to be understood that *all* their influence is narrowed down to a single organ. *Leptandra* has a peculiarly prominent relation to the liver, which it slowly relaxes; but the long-continued sense of nausea that so many times follows the use of this agent, shows that it also directly and persistently relaxes the stomach and its nerves; and there is every reason to believe that it also affects the pancreas, duodenum, and small intestines. Yet its action is so much more marked on the liver, that it is chiefly valued in this connection; and its utmost circle of influence is still but a local one, compared to *lobelia* or *capsicum*. It will also at once be apparent that, through the medium of nervous sympathy, even a very local action may induce quite remote consequences; as when the action of *leptandra* on the liver improves the "bilious" form of headache, as well as secures catharsis by aiding the elimination of bile.

132. *First Impressions on the Nervous Structures.* — From what has been said in the last four sections, as also in section 52, it will at once be seen that the nervous structures are the first to receive the impressions of all remedial agents, as well as all other impressions. It is impossible to conceive of any action upon a living being, except as the nerves receive the impetus of the acting agent. This is the one grand purpose of the entire sensory system; and as a medicine can not act upon the dead, so it can not act upon the living except as the nerves recognize and communicate its influence. This form of communication is carried on almost exclusively through the medium of the sympathetic or ganglionic nerves. The simpler nerves of sensation any where will receive and convey impressions; but will not receive them so promptly, nor convey them so widely and rapidly, as will the ganglionic nerves. It is through the medium of the latter that agents given to the stomach are felt in remote parts of the system; and are

sometimes conveyed with a rapidity and power that are almost electrical in their instantaneousness. Thus, a drop of oil of *erigeron* exhibited to the stomach, may incite a prickling sensation over the entire surface in a few seconds; and a draught of *lobelia* is well known to diffuse a nauseous feeling throughout the frame, as soon as swallowed, and sometimes even before the first portion reaches the stomach. In like manner are the lungs, surface, kidneys, and other organs, reached by way of the stomach; and it is not at all necessary to apply an agent to an organ directly, in order to have it benefit that organ.

133. *Absorption of Medicines.* — But while the nervous system is the first and most important medium to convey the impressions of remedies, it is not the only one. Some agents transmit but very little of their power through it; and even of those which employ the nerves most, it is not probable that all their action is distributed through this medium. The absorbents perform an important work in this respect. Some articles seem scarcely to act at all, till they have been dissolved in the stomach and taken up by the lacteals; and some, as the resins, which can not be dissolved, or are scarcely absorbed at all, confine almost their entire action to the course of the alvine canal. The evidences of the absorption of poisons are numerous, (§125;) and those of the absorption of remedies are equally numerous. One of the most convincing testimonies in this connection is found in the fact that the external application of a medicine, if continued till it can be absorbed, will exert the same effects as when given internally. Thus, *lobelia* seed sprinkled upon an ulcer, will cause nausea and relaxation; and free vomiting will then ensue, on the use of stimulants to the stomach. (See Emetics.) A liquid preparation of *colocynth* or *jalap*, rubbed in sufficient quantity upon the abdomen, will lead to purging. It is partly on this account that poisons should never be applied externally, any more than internally; for they can never restore a normal condition of the parts to which they are applied, (§66, 69;) and are quite sure to be absorbed and lead to precisely the same constitutional poisoning as if they had been exhibited by the stomach. As Dr. Headland says: "Mercurial ointment applied by friction to the skin will produce salivation. Extract of *belladonna* applied to the temples causes dilatation of the pupil of the eye; and tincture of opium dropped on to the eyeball causes the pupil to contract. The breathing of the vapor of prussic acid is sufficient to kill. Solution of *aconitina*, applied to the skin, will produce numbness of distant parts. Injection of any powerful poison into the veins, is rapidly followed by symptoms of poisoning like those which would have followed its introduction

into the stomach. Thus contact with the stomach is not necessary, but introduction into the system any where is sufficient." Such facts, in multitude, show the futility of using poisons in eye-washes, and ointments, and inhalation, and hypodermic injections, and thus hoping to escape the evil influences of the deleterious agents. The poison can do nothing but harm at the part; and may, in addition, be first transmitted through the nerves and afterward by the absorbents, to the serious detriment of the body at large.

134. *Diffusive and Permanent Actions.* — Impressions made upon the nerves are conveyed with rapidity. Sometimes this rapidity may be so great as almost to resemble a shock. Hence agents that are principally conveyed by the nerves, manifest themselves speedily; while those that act principally by absorption, are more tardy in working their effects. A great many agents act through both media, and that in every conceivable ratio; hence these may first manifest a prompt, sudden action, which will apparently have passed away, and subsequently will be absorbed, and make a renewal of the original impression in a less intense but more persistent manner. Agents acting principally by the nerves are, therefore, more *diffusive* and transient, while those relying upon the slower process of absorption are more *permanent*. These terms are, of course, merely relative; for some agents which are absorbed (as capsicum) may first make a diffusive impression through the nerves, and follow this by an influence of a slower and more persistent kind through the entire frame. But, while this nomenclature is not absolute, it is sufficiently explicit to warrant its general use — employing the terms only as referring to *time*, and not to *extent*.

135. *Expediting and Retarding Action.* — An axiom growing out of §132-134, is this: The form in which an agent is presented to the system will either hasten or protract its action. It is easily to be understood that, if the nervous system is to be impressed, the more extensively and speedily any nervous expansion is reached, the more speedily will that impression be made; and if an effect is to be obtained by absorption, time will be gained by presenting the agent in such a form that the absorbents can act upon it readily. Hence it is that medicines in a dilute

form act in much less time than when in a solid form — and that whether they act through the nerves, or the absorbents, or both. If a given quantity of asclepias is digested in four ounces of water, and the whole taken at a draught, it will be brought in contact with the entire surface of the stomach almost immediately; and hence will commence its action at once, and make its impression with decision. But if the same quantity were taken in the form of a powder, it would act upon but a few fibers of the stomach at a time; and hence its impression would be slow, and also feeble. This article acts also through absorption; and in the diluent form, it would be taken up readily and conveyed to the surface early; but in a powdered form, it could not be absorbed till it had been dissolved by the juices of the stomach; hence it would nearly have expended its strength before it was taken up, and might then scarcely impress the surface at all. Every agent is to be considered in the same light; for even the slowest and most permanent, as leptandra, may have their action materially hastened or retarded, according as they are exhibited in a dilute, or a powdered, or a still more concentrated form.

136. *Diluents — Concentrations.* — These differences in the modes of prescribing an agent, make great differences in a practical point of view. They in no sense or degree alter the character of an article; but do materially vary the time and extent of its action. Bearing this fact prominently in view, the physician should exhibit his agents according to the objects before him, or the requirements of the case in hand. If he have a febrile patient, where it is important to relax the entire surface, it is not sufficient to select asclepias, but the remedy must also be given in such a form as to accomplish its work at the surface most effectually. This form is known to be that of warm infusion. Should the article be exhibited as a powder, or in the shape of resinoid asclepin, it will be circumscribed; and nearly its whole influence will be expended upon the mucous structures. If he have a case of parturition, and conclude that the well-known parturient action of myrica is needed in the case, it will be necessary to choose some diluent form of administration; as the powder would confine its main action to the stomach and bowels; and the small portion that would eventually find its way to the uterus, might be too late to do any good. If the case were one of uterine hemorrhage, life might be jeopardized, or even lost, by not using the appropriate agents in a diluent form. The form of sirup is well suited to sub-acute or chronic cases; and pills may be selected when it is desirable greatly to retard the action of an agent. If, for instance, the physician is treating a case of rheumatic fever, in

which he wishes to secure the gently relaxing impression of lobelia, he would probably find that small doses of an infusion needed such frequent repetition as to be burdensome; while a single pill might be given at intervals of several hours, and continue its impression gradually as fraction by fraction of the bolus dissolved in the stomach. If he had in his care, however, an acute pleurisy, the pillular form would, to say the least, be a remarkably dissatisfying one to the patient — relaxing the serous tissues too slowly to give the desired ease. The concentrated resinoids and alkaloids belong to the very slowest class of pharmaceutical preparations; are dissolved very tardily by the juices of the stomach and bowels; and hence are appropriate only when a very slow, permanent, and rather central influence is required. To give asclepin for its action upon the surface in a febrile case, is scarcely to derive any benefit from it; and to use cypripedin during acute hysterical convulsions, would amount to nothing at all. Hours would pass before these concentrations could be dissolved; and then they would be more disposed to act upon the central portions of the organism, than to diffuse themselves to remote parts where they were so absolutely needed.

137. *Rule for Administration.* — The form for using any agent, therefore, depends upon the nature of the case in hand; and is a question of the plainest scientific accuracy. If the case is *acute*, and demands that agents shall act speedily and remotely, the form of infusion, or decoction, or other liquid, must be chosen. If the case is *chronic*, and impressions are required slowly and steadily, the form of sirup, powder, pill, or concentration, may be chosen, according to circumstances. It is not necessary to select the form of infusion when a *central* action is desired from a certain remedy in an acute case — as from leptandra; but even then, the infusion will act most promptly, and a smaller relative quantity will be sufficient. Yet if an *early* catharsis, or biliary or renal flow, is important, no concentrated form of the agent used is admissible. It is by strictly observing these rules — so palpably based upon the laws of Physiology — that the Physio-Medicalist has met with such remarkable success over others who attempted to use his remedies. His “warm teas” in acute cases are not the crude whim of a grandmother, as some would have the public

believe; but are in harmony with the best principles of true science, and hence prove so powerful in relieving cases otherwise so hopeless. The powders, pills, and concentrations have their places, and should be given accordingly; but when the physician forsakes these principles in order to pander to his patient, and becomes a dawdler at the sick-bed for the sake of a fee, he renders his medicines almost inert by using concentrations for purposes to which they have no application; and in like proportion he fails in promptly overcoming disease. It is desirable to make pharmaceutical preparations as pleasant as possible, and there is great room for improvement in this department; but when the principles of science are sacrificed to attain that end, the result will be a lamentable failure in efficiency and in the saving of life.

138. *Directing Influence of the Vital Force.* — It is a fact of peculiar interest that, when an agent which acts on many structures is used in a form more or less diluent, it generally expends most of its power on that structure which is most in need of it. Thus, in using lobelia, it will be found that quite small doses of its infusion will speedily and effectually secure relaxation of the os tincae, when that part is rigid during labor; and it will do this without exerting any marked influence on the remainder of the system. A similar local relaxation by this agent will be noticed when it is used in spasmodic strangury, spasmodic croup, and many similar affections. Also when this agent is given in high inflammatory excitement of the liver, or of the peritoneum, or of the pleurae, it will secure a marked degree of relaxation in these parts; and if quite free quantities are used, that localized action will be prominent, and the general effects of the article remain limited, till the affected portion is brought to a nearly equal state of pliancy with the remainder of the system. Capsicum, also, will be found to arouse the uterus greatly in lagging parturition, or stimulate it to vigorous contraction in hemorrhage, without for a time making any material change in the pulse; and according as the loss of capacity is at the kidneys, the bowels, the skin, or other organ, the effects of capsicum will be most visible in the sluggish part. Cimicifuga, again, will manifest most of its action upon the uterus, the general nervous system, or the serous membranes, according to the organ at which its influence is most needed.

139. It is to be observed that the peculiarities named in the last section, extend only to agents whose natural influence relates to several structures; and then mostly when the article is given in some form where its action will be free, and not in any localizing or restrictive form. (§138.) Neither should it be forgotten that *some* of the

action is expended upon other parts, though such a great preponderance of its effect is thus directed to the most needy point. The facts illustrative of this feature of remedial action are very numerous and well known; and stand out in bold relief to the contrary class of facts which pertain to the use of poisons. When poisons are given, the parts that need treatment most are the more likely ones to suffer from the poisonous effects; for being the least healthy, they are the least resistive, and therefore the poisons can (as a general rule) the more easily overcome them. (§79.) But true remedies are *friends* to the system, and “act in harmony with Nature;” and therefore are the more cheerfully directed to the suffering parts by the vital force, and work their best relief there. And there is in this nothing mysterious or anomalous; for it is the counterpart of that intelligence with which the life principle directs an additional supply of nourishment to a wounded surface, or a broken bone, or any other point of structural lesion. And this guidance of remedies to especial organs, is but another form of the facts so well known in regard to agents which act only on a very few structures; for it is on the same principle of a ruling vital intelligence, that uva ursi cures catarrh of the bladder at one time and leucorrhœa at another; that convallaria strengthens the mucous membranes of the uterus in one case, and those of the lungs in another, etc. These facts are resorted to in every-day practice; and their recognition and use give the physician immense advantages, and wonderfully multiply the power which he can obtain from a limited number of agents. It is not necessary to have the entire *Materia Medica* at hand, in order to influence the whole system in any manner that may be desired.

140. *Cooperations of Art.* — The duty of the physician being to cooperate with Nature, he will find it quite within his power to aid the directing efforts of the vital force which have just been explained. Thus, if it is desired that serpentaria shall act on the skin and not at all upon the kidneys, the patient should be surrounded with a warm atmosphere, and plenty of bed-clothing; and if its effect upon the kidneys is sought, then a cool atmosphere should be advised. All sweating remedies may be greatly influenced in their outward or inward action, by the same means, as well as by the special form in which the article is given. (§135.)

For the present, it is merely desired to make allusion to this fact; and the topic will be renewed hereafter in connection with the rules for compounding remedies.

141. *Pathological Obstructions.* — But while Nature thus uniformly attempts to direct an agent to the part upon which it shall act, pathological conditions may arise under which it will be impossible for her to succeed in this endeavor. It is true that the remedies themselves will most generally restore the conditions, so that the vital force can act at its pleasure; yet this is by no means a uniformity. In severe cases of croup, where the full action of lobelia may be imperatively demanded upon the respiratory passages, there may arise such an obstruction in the spinal axis, that impressions made upon the stomach can not be reflected to the seat of disease. The same thing may occur in tetanus. Most generally, the stomach itself is at fault under such circumstances; and will be so obtuse in its sensibilities as not to recognize the presence of any agents that may be presented to it. Occasionally cases are met with, in which occlusion of the esophagus may prevent any thing from being swallowed. The presence of a heavy coating of such viscid phlegm as not unfrequently collects in the stomach, may line that organ as effectually as if it were dry-varnished; and medicines can not make the faintest impression upon the system at large, till this viscid obstruction has been removed. One of the most common of all impediments is the presence of unnatural acid in the stomach, usually spoken of as “sourness,” but often present to an inconvenient degree without being recognized by the patient. This state is particularly inimical to the action of the relaxants; and such articles as lobelia, cimicifuga, leptandra, and others like them, may produce none but the most meager impressions, in consequence of this sourness — which will need to be neutralized before the effects of the remedies can be fairly obtained.

142. *Applying Remedies to the Skin.* — Mention has already been made (§132, 133) of the fact that an agent applied at one part may, both by nervous impression and absorption, affect parts quite remote from the point at which they are applied. Advantage is taken of this fact, under the circumstances mentioned in the last section; so that the physician, instead of standing powerless before every obstruction that arises, can employ the resources of his art in such a diversity of ways as will give him immense power over disease. The *skin* is one of the most important, as it is also one of the most extensive, of all the points of application. Its immense congeries of nerves and blood vessels offers a surface upon which remedies can be brought to bear

with vast power; and the results in many cases are of really vital importance. In the case of croup above alluded to, where impressions can not be transmitted by way of the stomach, a very concentrated decoction of lobelia may be applied about the throat, over the chest, and along the upper portion of the spine, (especially with some capsicum as an associate,) and through this means life be saved. In a large number of acute maladies, and especially in *every one* of the internal inflammations — as pleurisy, pneumonia, dysentery, hepatitis, peritonitis, etc. — it may be almost impossible to diffuse the action of agents with sufficient vigor to secure an outward determination of blood. Agents given by the stomach may be directed to the inward trouble, where the principal danger lies; and yet it will be next to impossible to present to the stomach enough medicine to overcome this, and to restore the outward circulation also. But if this outward circulation is not thoroughly restored, the patient may inevitably die. It is under such circumstances that the skin can be made use of to the very greatest advantage; and by the repeated application of the most powerful stimulants over the seat of difficulty, the internal accumulation be relieved and the patient be saved. Or in such a malady as cholera, where the sympathetic nerves are greatly depressed, and the action of the absorbents is reversed and they become exhalants, the internal use of remedies may be quite ineffectual. External appliances then become of the very first consideration; and without their aid, it might be utterly impossible to save the patient.

143. *Exhibition of Remedies by the Bowel.* — The rectum offers another most important channel through which to bring to bear the power of remedies. The bowel is too seldom thought of for such a purpose, except it be merely to secure a dislodgement of fecal materials. This is many times a necessary measure; and one which must be resorted to as greatly preferable to the too long use of cathartics. But this is only of insignificant importance, compared with other results that may be accomplished through this channel. The great number of small ganglionic plexuses that lie around the rectum — each one of which is a reflecting center nearly as vivid as the single plexus that is connected with the stomach — at once suggests the deep

impression that may be made through them upon the entire frame. An injection of either a stimulating or relaxing nature, will exert a much more powerful effect than the same amount of the remedy would exert through the stomach. It is well known that vomiting may be effectually induced by a full injection of lobelia; and by such injections, a depth and promptness of relaxation may be secured in strangury, spasmodic and membranous croup, puerperal or other convulsions, tetanus, and similar spasmodic conditions, as it will probably be impossible to obtain by five times the amount of medicine given to the stomach. Medicines applied thus to the bowel, are also strongly diffused toward the surface; whence this mode of administration becomes of the first necessity in meningitis, phrenitis, typhoid fever, and many similar circumstances, where outward relaxation is of vital importance, while central stimulation must be more or less vigorously sustained. Stimulants may also be used in the same manner in cholera, shock of injury, and other cases of threatened collapse; and the effect of a grain or two of capsicum given thus, will be found astonishingly great. (For methods of preparing remedies for use to the bowel, see Injections and Suppositories, in the department of PHARMACY.)

144. It is not the province of this volume to do more than point out the means and modes for applying medicines; while the special application of these to particular forms of disease, is left for works on Practical Medicine. But it is due the practitioner to urge upon him a careful consideration of the facts so briefly alluded to in the last two sections. When Nature has rendered it possible for him to bring remedies to bear so effectually on such different surfaces, it is evident that the widest possible provision has been made for the reception of their friendly influences. It is the duty of the medical man to study these several provisions; and to acquaint himself thoroughly with the means he can best employ, and the power he can bring to bear through each of them. It is an almost universal fact that the stomach alone is the grand recipient of drugs; and that the skin is little used except for the application of water, and the rectum squeamishly avoided except when urgent necessity dictates a cathartic enema. This is all an error. The stomach very many times needs rest from medicines, and must have it, even in the course of treating acute disease, (§47;) but more frequently it can not be used to one-fourth the extent needed to save the case. The energetic physician will not let his patient die for lack of suitable medication by the bowel and on the surface. And one great advantage enjoyed by the surface is, that the quantity that can be employed upon it is immense. Indeed, even with the physicians who

resort to it, they too commonly apply not more than half as much as they should. Several times in my professional life I have treated cases of the most serious forms of disease, solely by the skin and bowel, (not being able to give more than a moiety of medicine by the stomach,) and saved patients who would otherwise have been hopeless. The judicious physician will lose no opportunities; but will employ *all* his resources vigorously, and in time, when dealing with severe maladies. It is not then enough to do well in a few things; but to attack the enemy at every possible point, in every possible way, and in the most vigorous manner.

FUNCTIONS NOT PRODUCED BY REMEDIES

145. In sections 29 and 53 it was seen that it is needful to discriminate between the action due to remedies, and that produced only by the vital force. The inclination to confound the two, is much greater than is at first supposed; and the physician who would make solid progress in his researches, will be continually required to keep himself under watch, lest he attribute to the one effects that are due solely to the other. Allopathy has many times committed this error; and her votaries accredit to her poisons, cures that were effected wholly by the life power, in spite of the poisons. It looks very natural to conclude that, recovery taking place after the exhibition of a given article, *therefore* the agent expedited the convalescence. If there were at work no force except that of the article in question, this conclusion would be legitimate; but “when it is remembered that the natural curative power is not one that operates merely occasionally or feebly, but one that is always present, always active, and possessed of sufficient force to cure the great majority of diseases without any extraneous assistance,” (Sir J. Forbes,) it will be seen that the best forms of extraneous aid can never be other than secondary to this power. The present fashion in medical matters makes this discrimination the more necessary; for Allopathists, Eclectics, and Homeopathists seem to vie as to which shall outstrip the other in disregarding the life principle. The palm probably belongs to the Eclectics; for they make it an especial merit to “throw aside all theory,” and to inquire only as to whether the patient gets well during their treatment. This is equivalent to denying that the laws of reason or the principles of science have any thing to do with their system; and that they are not concerned whether the patient recovers by their help, or in spite of their interference, so long as they get the credit and the fee. The conscientious physician can not be content thus to strike at life in the dark, especially with such a terrible array of poisons as are used by the above systems. (§106.)

146. Turning now to inquire more specially into the action of remedies, it will be noticed that they never *produce* any *functional* result whatever. They influence the tissues, (§51;) and

in proportion as they bring these nearer to the standard of health, the vital force makes the more perfect use of the structures; but as tissues can not be influenced except as the life principle is present to take cognizance of the impressions of agents, (§132,) . so no function can be performed by any other agency than the life principle. It is not the leptandra that purges, or the asclepias that sweats, or the lobelia that vomits; but those agents restore certain tissues to a desirable condition, and then the life power employs these tissues with accelerated activity. This distinction is not a mere play upon words, but is a scientific principle of much importance; and the physician must recognize it, and discharge his duties in subservience to it. To ignore it, or attempt to pass it by as of no consequence, would be equivalent to ignoring vitality; and the next step would be into the absurdity of substituting leptandra for liver, or juniper for kidneys, or electricity for the life principle; or into an attempt to keep man alive forever by maintaining the proper status of caloric. The latter proposition (or its essential idea) has actually been made, by Broussais; and is quite as reasonable as the other absurdities just named. All such paradoxes come from attributing to material agents, or to other motor powers, functional actions that belong to the life power alone. The materials and the motors may and do have substantial influences upon tissues; but then the use of these tissues in the performance of secretion, absorption, respiration, circulation, and all the other functions, belongs once and always to the vital force only. (§35.)

147. The recognition of the above fact in his practice, is a grand step toward enabling the physician to apply his remedies with distinctness, and therefore with accuracy. It will save him from falling into the Homeopathic fantasy of prescribing for *symptoms*; when it is so well known that many symptoms in common, arise from quite different *conditions*. It will also save him from confusion and doubt in relation to the value of his agents, when he sees them followed by apparently opposite functional results. It is familiar to all physicians, that some (not all) cathartic articles are useful in arresting diarrhea and dysentery. The case is an apparent paradox; and would really be one, if functional results were due to agents. But a looseness of the bowels often comes from impure bile — the condition of the liver not being favorable to the secretion of healthy bile. Any hepatic that will restore the liver tissues to a healthy standard, will enable the vital force so to use this organ as to make pure bile; and then, this particular provoking cause of the diarrhea or dysentery being no longer present, the looseness of the bowels that arose from it will probably cease. The

irritation of the alvine canal was but a symptom; the state of the liver was the true disease. Had the symptom been “doctored” by astringents, (or narcotics,) no cure could have resulted. As it was, the restoration of the liver by a so-called cathartic, (as leptandra or juglans,) arrested the too frequent discharges. (§130.) But now continue the cathartic so that an excessive flow of pure bile shall be invited, and increased action of the alvine canal will follow; but it will not be either a diarrhea or dysentery.

148. The instance above presented, is but one out of hundreds where apparently opposite results follow the use of remedies. Thus, when the skin is cold and shriveled, capsicum will secure a stimulation that will lead to perspiration; but when the skin is lax and perspiration too free, capsicum will incite a contractility that will probably arrest the excessive flow. When the bowels are passively discharging watery stools, astringents will usually arrest such passages — provided that the liver is secreting a normal quantity of good bile; but if the bowels are irritable, astringents will increase the irritability; and if costiveness have arisen from semi-paralytic laxity of the muscular fibers, astringents may sometimes lead to the contraction of those fibers and thence to the expulsion of any solids that have lodged in the alvine canal. An instance is seen in the catharsis sometimes following cinchona. When the stomach is sensitive and excited, relaxants will restore the proper condition of the tissues, and an improvement in the appetite will follow, but if the organ be already much relaxed, the exhibition of relaxants will be followed by a loss of appetite. When the stomach is much excited, and vomiting arises as a sequence to mere irritability, *very small* quantities of lobelia infusion will soothe it; but the same article is a nauseant and a promoter of vomiting under nearly all other circumstances.

149. Here is a series of opposite functional results, following from the use of agents. At first sight, it would appear that an agent could not be relied upon to exert a definite influence. (§64.) Such facts have led the Allopathist to speak of agents as acting differently, according to the state of the system, (§125;) and the Homeopathist to exclaim that “like cures like.” Both these deductions are false, and arise from confounding the action of vitality with the

action of the agent. The nosologies of these systems class as the disease itself, all vital efforts to get rid of disease. Hence inflammation is a disease with them, though but a vital effort to remove obstructions; and fever is a disease, though only a vital struggle to cast out morbid materials; and dysentery is a disease, though only Nature’s attempt to wash away offending substances; and cough is a disease, though only designed by the life principle to eject some oppressive material. The moment these efforts are classed as diseases, the attempt is made to prevent their continuance; and hence poisons are resorted to. The Allopathic doctrine and practice have already been examined. The Homeopathic doctrine *seems* to be supported by the facts named in the last section; for, says that school, if the emetic lobelia will arrest emesis, and the cathartic leptandra check catharsis, and the diaphoretic capsicum suspend diaphoresis, does it not logically follow that what will cause the disease will also *cure* the disease?

150. We have no disposition whatever to evade the above query of the Homeopathist. If his conclusion is correct, it is our duty, as investigators of science, to lay aside all favorite tenets and adopt this principle. But we deny the correctness of the conclusion. In the *first* place, the emesis, diarrhea, colliquative perspiration, etc., are not diseases. They are a warfare against disease; but are not themselves the disease. They are but functional efforts to free the system from some offending substances. Remove the grounds of offense, and the unduly excited functional efforts will subside. Such functional efforts may be induced by poisons — as when sulphate of zinc provokes vomiting, and veratrum excites bloody stools, or opium leads to a clammy perspiration. Under such circumstances, the poisons are provocatives of disease; and Nature’s efforts to get rid of them are so ineffectual as to be alarming. (§96.) But when lobelia invites vomiting, or leptandra secures catharsis, or capsicum induces perspiration, the exaltations of function following their use manifest no injurious impressions. Hence these agents, in relieving certain excesses in emesis, diarrhea, and perspiration, do not cure disease *because* of their power to *make* a similar disease, as they make no diseases whatever. (§53, 139.) In the *second* place, the Homeopathic conclusion is not correct, because it attributes to the agents what belongs wholly to the vital force. (§145.) The agents in illustration do not check the secretions named, but merely put the tissues in a better condition; and then the excessive secretions cease, inasmuch as the vital force is no longer interfered with, but has recovered full control of the organism. The action of remedies on the

tissues, therefore, is forever uniform; and the action of the vital force must not be confounded therewith.

151. The necessity of this discrimination is made still more apparent, by what may be termed the *indirect* functional results of using medicines. These are sequences remote from the seat of medical action; and are the counterparts of symptoms that so often arise remotely from the seat of disease. The headache that arises from torpidity of the liver or bowels, is familiar; and it is relievable only by reestablishing the proper secretions. The oppressed breathing incident to crowding of blood upon the lungs, in pneumonia, is a prominent symptom; and can be relieved only by restoring an outward circulation. But how commonly is it noticed that the skin will arouse to a free perspiration, after the operation of a mild cathartic, (§175;) and that expectoration will become free, after a bath that relaxes the pores and invites a free outward circulation; and that the uterine organs will improve, after the use of some agent acting upon the kidneys. If we attach the idea of any functional effect to the remedy, we can not account for these remote consequences; for we well know that the cathartic does not act directly upon the skin, nor the bath upon the lungs, nor the diuretic upon the uterus. But if perspiration is checked because of faecal accumulations in the bowels, the gentle removal of these accumulations (by means that do not irritate the alvine canal) will leave the circulation and pores free, and the pent-up sweat will flow abundantly. If the lungs have become deficient in mucous secretion, in consequence of an excessive accumulation of blood retarding the capillary flow; the restoration of a due amount of blood to the surface will loosen the distended and oppressed capillaries, and the mucous secretion of the respiratory organs will become abundant. If the uterus has sympathized, through the pelvic ganglia, with a turgid and sluggish state of the kidneys; a reestablishment of the renal flow will relieve this sympathetic oppression, and the tone of the entire generative system will be improved.

152. Instances like those in the above section, can be cited in large numbers, and are well known to the practicing physician. It will readily be seen that the indirect functional results are

due entirely to the vital force, and not to any impression made by the medicine upon the part. The one part became deranged, merely through sympathy with, or from the necessities of, some other and more seriously diseased part. Restore a healthy condition to the latter, and, in nearly all recent cases, the vital force will at once restore the function of the former without any assistance. If the case have been of long standing, the organs that suffered through sympathy (or necessity) will probably have become so deranged as to need medication — *after* the original seat of the trouble has been attended to properly. But in either case, the medicines acted only by restoring the tissues to their healthy standard, and the vital force then used these to reestablish the interrupted functions.

153. Let us suppose, for a moment, that the technical point here raised is but a speculative quibble, and therefore is a thing to be ignored. The facts alluded to in §151 can not be ignored, and now conclusions must be drawn from them. These conclusions would then stand about thus: Cathartic medicines increase perspiration; baths increase expectoration; diuretics are the best uterine tonics! With these generalized statements, the young practitioner goes forth to his duties. His first case may be one in which the habits are sedentary, the bowels costive, the skin feverish, and the patient thirsty. Let podophyllum, or jalap, or aloes, or gamboge, be prescribed; and the catharsis will be followed by greater, instead of less, dryness at the surface. Why? Because these agents irritate the bowels in a case where a soothing laxative is required; they do not, then, restore the alvine canal to a normal condition; and an improved state of the skin is dependent — not on the mere forcing of a stool, but — upon the bringing of the inner tissues to a healthy state. His next case may be one of dry asthma, in which the surface is bedewed with a cold perspiration during the paroxysm. Let a tepid bath now be given, and the respiration and dryness in the lungs will inevitably become worse; for the reason that such a bath was not appropriate to the condition of the surface. His third case may be one of partial prolapsus and slight leucorrhœa; which might not be at all improved by the use of a stimulating diuretic to kidneys that were already irritable. And if a dry surface were hectic, with colliquative stools, any kind of cathartic would make it worse by debilitating the patient; if the lungs were dry from excessive perspiration, no form of bath should be given; and if the uterine organs were themselves directly at fault, and not suffering from any degree of sympathy with the kidneys, the most choice diuretics would prove worthless.

154. The illustrations adduced, are familiar to every experienced physician. He has learned them by years of patient observation; and thoroughly understands the necessity of searching out and removing the primary conditions, ere he can hope to succeed with any medication directed against the secondary troubles. But while the *facts* are known, the *reasons* for them can not be understood so long as functional results are in any degree attributed to the remedies. I have no doubt but a failure to appreciate this result, has led many an Allopathist to cling to the use of poisons; for he was all the time seeking to *compel* the performance of certain functions in a certain manner, instead of studying the conditions of the tissues and restoring them — leaving the vital force to regulate the functions according to its own needs. This view leads to a nosology founded wholly on symptoms; lays the basis of the Homeopathic treatment of disease by symptoms, and inevitably carries one forward to the use of poisons as the best compulsors to the performance of functions. Hence the old practitioner who studies Therapeutics from the standpoint of agents being Cathartics, and Diuretics, and Sudorifics, etc., adopts an Allopathic nomenclature that confuses his own mind, and renders the very richest of his experience of no avail to others. By studying this whole question from the scientific standpoint of remedies affecting only tissues, and the vital force alone producing functional results, a new light will be thrown upon the whole field of Practical Medicine. It will be seen that disease is not to be studied by names, but by conditions; that remedies are not to be described by a nomenclature that attaches to them the power of producing a function, but of influencing the tissues in certain ways; and that agents are to be applied only with reference to their ability to restore the tissues to conditions from which they have departed. (§54.) Approaching the subject in this light, prescriptions would become matters of the clearest scientific accuracy; poisons would be seen to have no place in the Materia Medica; and this science would advance with rapid strides, because each could explain his experience with a lucidness that would at once make every item in it available to the whole world, instead of smothering it and rendering it worthless under the present unmeaning method of therapeutical description.

SCIENCE OF PRESCRIBING — SPECIFICS

155. From the facts and illustrations given in the last general division, the inference will directly follow that medicines should not be prescribed as *specifics for disease by name*; but always selected and administered with reference to the *conditions present*. This is, in general terms, the exact contrary of the usual course in studying disease and applying remedies; but our business is not to follow precedents merely because others have done so, but to acquaint ourselves with natural principles and follow them.

156. The practice of prescribing for disease by name grew up in the “dark ages.” The state of scientific knowledge at that time led medical men to look upon disease as a bodily substance — a personal, although intangible, existence. A disease was to them as much a material thing as would be a stone or a fluid to the physicist, or a vapor or gas to the chemist. This personal substance was as a demon warring upon the body; and the symptoms were, correctly enough, the signs of its work; but the thing itself was to be driven out by agencies stronger than itself, and to which it was inimical. The prescription was thus against the personal, though unseen, material — as much so as when the chemist decomposes a compound by introducing an element which liberates one of the components by seizing upon the other. As each chemical substance has its stronger and its weaker affinities, and as certain substances can be separated only by the introduction of another substance with an affinity for one of them greater than that which existed between them, so it was argued that each disease was to be routed by certain articles which had the power to dethrone it by seizing upon the tissues which it held. It was to be an act of ejection, as bodily as the putting out of doors of one man by a stronger; the stronger then to have possession. This view of the nature of disease, and the character of the processes by which it was to be removed from the frame, laid the foundation for the entire practice by poisons — the poison to be given that it might “substitute its own action” upon the tissues formerly held by the disease.

157. In the present advanced state of knowledge, we can but smile at the ancient conceit. For it is now known that disease is not a personality, nor a material, nor an individual substance; but that it is an abnormal condition of the tissues, brought about by various influences that have interfered with the free action of the vital power. And it is also plain that, in treatment, the first requisite is to relieve the frame from the continuance of these influences; and that the second, or remedial care is, to restore the affected tissues to their natural condition. (§25.) Yet, absurd as was the old-time opinion about the nature of disease, that opinion still has a strong bearing in the current systems of medical practice, even though it is not openly recognized. The use of poisons, introduced in conformity to that notion, still continues in all other than Physio-Medical schools. The idea that an agent acts differently in health from what it does in disease, (§125,) was another direct outgrowth of the same old dogma; and this idea is still clung to fondly by Allopathists and Homeopaths, and forms the one grand, staple argument by which they essay to maintain the use of poisons — though the doctrine on which this idea was based has been swept away as rubbish, and the idea never had any thing but that antiquated doctrine to rest upon. And the entire practice of prescribing for disease by name, of searching for specifics against isolated maladies, of running after information as to what agents and what recipes will cure this or that malady, also grew out of that dogma. So general is this practice even yet, that it might almost be pronounced universal. It pervades every department of our science. It presents itself as the one grand object in all Allopathic, Homeopathic, and Eclectic works on Theory, on Practice, on *Materia Medica*. It causes the medical profession to furnish the scientific world with the anomaly of a body of men discarding the old absurdity about the bodily character of disease, and yet searching for specifics against disease in conformity to that discarded absurdity! In my opinion, this whole course is a perfect dead-weight upon all scientific advancement in medicine; and serves to keep practitioners bound down to a sort of mechanical stupor in following “authorities,” and in sinking into a routine practice which dwarfs the reasoning faculties and abases the judgment.

158. Far be it from me to attempt the depreciation of any really good work that has been done by any man, however much I may differ from him in some opinions. But I recognize no “authority” except God, as exhibited either in Revelation or in Nature. His laws alone are eternal and unchangeable; and therefore they alone are authority. The opinions of man are as chaff, unless

they conform to those laws; and it matters not how long certain opinions have been held, if they are found in conflict with the laws of creation. Indeed, the very age of an error is its stronger condemnation; for in this period of increasing knowledge, he has no excuse who is so wedded to preconceived notions that he will not learn the unerring facts which prove his notions to be but empty bubbles. The study of, and prescription for, disease as a question of *specifics*, is one of those bubbles of which so many in the medical profession need abruptly to be shattered.

159. The study of disease by name, however, has become so deeply ingrafted upon the profession, that it is not probable that the use of names and of a classified nosology can practically be laid aside. But the investigation can be made simple and accurate by due care, when expressing ideas, to state the facts in words sufficiently definite to cover the full meaning. It is not the object of this volume to enter upon nosology, but to present the facts of therapeutics in a correct manner. Recurring, therefore, to the subject here in hand, let us proceed to a closer analysis of the failures growing out of the present mode of stating that a given agent is good for certain named maladies; and then inquire into what method should be adopted to give clearness and comprehensiveness to therapeutical descriptions.

160. If it be stated that leptandra is a valuable agent in typhoid fever, the information is too indefinite. The article is indeed of great service when the torpor of the liver is then connected with a wiry pulse, a hot skin, a dry and furred tongue, and torpor or early looseness of the bowels. In such cases, the liver needs, indeed must have, a relaxing influence such as few agents can furnish so well as leptandra. (§147, 152.) But if the pulse has become extremely feeble, capsicum should by all means be added; else the liver may be so relaxed by the leptandra that, lacking the power of ejection, it will reabsorb the viscid bile already in the hepatic tubes, and then the patient will feel worse instead of better. And if the liver have been sufficiently acted on, and a free flow of bile secured, leptandra would be a very inappropriate agent for the colliquative diarrhea that may supervene. For the diarrhea that arose

from a turgid and occluded liver, it was excellent; but for the diarrhea that is caused by ulceration and too great laxity of the alvine canal, (the liver being no longer at fault,) it is quite out of place. And even in the conditions for which it is appropriate, it must be combined with suitable measures for restoring the circulation toward the surface; otherwise the laxity it will cause in the hepatic fiber, will but leave this organ subject to the greater distension by accumulation of blood. It is but a deceiving statement, therefore, to remark upon the great utility of leptandra as a hepatic for typhus; for it is necessary to point out in what conditions it is of service, and to what ones it is inapplicable, ere the information can be of its full value.

161. Again, capsicum is pronounced to be a remedy of sovereign powers in all typhoid and typhus forms of disease; and it is indeed an agent of remarkable efficacy. To arrest the putrefactive tendency, to maintain the acting power of the whole organism under the depressing load of poison, to sustain the heart and capillaries and thereby support life at its very citadel, capsicum is without an equal. The real danger is likely to be, that the inexperienced physician will be troubled at the *frequency* of the pulse, (forgetting its lack of *force*,) and thence fail to give a sufficient quantity of this agent. (§57.) And yet, when the fur begins to leave the tongue, and this member to become glassy, and the bowels to feel extremely tender, capsicum is an agent that would prove entirely out of place. Unless the account of the article embraces a description of the conditions in which it is good, the mere assertion that it is valuable in typhoid fever would be a very unsatisfying statement, and under some circumstances a very incorrect one.

162. In the same manner, lobelia may be pronounced of great efficacy in typhoid cases; and if it is given freely by the bowel till vomiting of the degenerate bile is secured, and is accompanied by diffusive stimulants to the stomach, and afterward continued by the bowel in suitable quantities, it is indeed a most valuable remedy, and many typhoid cases might prove almost unmanageable without its liberal use in this way. And during the first day or two of typhoid, emesis may be secured by an abundant use of lobelia by the stomach, and even a state of quite profound relaxation be induced, with great benefit to the patient. But if the disease have been in progress for several days, and the mind and pulse have sunk under the combined influence of capillary congestion and accumulating putrescence, any material quantity of lobelia by the stomach will relax the heart at a time when it needs

most vigorous sustaining, (§55;) and hence this mode of exhibiting it would be quite injudicious. And though it will give such powerful relief when administered by the bowel, (in company with stimulants to the stomach;) when the liver has been unlocked, and a fair perspiration established on the whole surface, and the kidneys are free, a soft pulse and a colliquative diarrhea would forbid the use of any lobelia at all. Unless these varying conditions are properly observed, and the remedy given or withheld accordingly, it will be a poor satisfaction to tell of the value of lobelia in typhoid fever.

163. Again, myrica bark (or indeed any other astringent) may at once be set down as quite unfit to use in a typhoid condition. It is true it stimulates, and stimulants are then good; but it also astringes, and thereby closes the emunctories, and tins shuts up in the system the very morbid materials which are so gravely endangering the patient. (§56.) By its use, a typhoid patient may be kept with a dry skin, and with a wandering mind, and in a perfectly restless state of the body, almost indefinitely. And yet if colliquative diarrhea arise toward the latter stage of the malady, or if hemorrhage from the bowels suddenly arise upon the verge of convalescence, myrica is a valuable agent, a very valuable one; and may be used in enormous quantities by injection, while the danger lasts — especially if combined with liberal portions of capsicum.

164. Turn to any remedy, and turn to any form of disease, and the same method of study must be pursued. Most practitioners resort at once to astringents in dysentery, to arrest the discharges. Yet every case of true dysentery will show an occluded liver, an unsecreting skin, and a turgid and sensitive state of the bowels. The alvine discharges are the natural (though still only secondary, §152,) consequences of these conditions. Under such circumstances, astringents only excite the bowels the more, do not restore the functions of the liver and skin, and therefore aggravate the whole difficulty. Yet after suitable measures have opened the secreting organs, and restored the blood to the surface, a very passive state of the alvine canal may be benefitted by a moderate use of astringents. Even then, however, the value of any astringent is the exception — as seen in the utter failure of that mode of management to

relieve most cases of chronic dysentery and diarrhea. In the early stages of a pleurisy, *asclepias tuberosa* with a moderate quantity of lobelia would constitute a most valuable prescription; for then the skin is dry, the pulse firm, and the serous tissues in a state of intense excitement. But if the malady had been unsuccessfully treated till serous effusion had taken place, and the skin had become cold and perhaps clammy, and the pulse small and feeble, such a prescription would be futile. The latter condition of prostration wants quite positive stimulation, (§57;) and two such relaxants as lobelia and *asclepias* could not fill the indications. In this manner irritated and “dry” conditions of the lungs may require lobelia as an expectorant; but if the respiratory passages were loaded with mucus, and were sinking under this oppression together with laxity of tissue that could not eject the “phlegm,” lobelia would be much out of place, while *boneset* or *liriodendron*, combined with *serpentaria* or even *capsicum*, would meet the expectorant requirements readily, though these in turn would be wholly unsuited to the conditions first named.

165. The experienced physician will at once appreciate the correctness of these illustrations; and will have many others suggested to his mind. The practical duties of every medical man will, sooner or later, lead him to an understanding of the same facts. But the advancement of science can not be content with a votary here and there attaining this knowledge after years of toil; but requires that each and every one shall be acquainted with such facts, and shall learn them at the very threshold of his professional career. It is poor satisfaction for the medical student to spend his time and money to qualify himself as a physician; and then to be told that the nature of his calling is such, that one who knows it thoroughly can not convey it to another, but that each man must grope onward in the dark and learn these practical facts as best he can. Too many, we know, never succeed in learning them at all; but, becoming weary of the uncertainty they meet at every step, go shuffling on through all their days, and prescribe at the blindest random for the most complicated maladies. A large share of this blundering grows out of an inaccurate method of observing and recording the actions of remedies. When studied from the standpoint of their being specifics for certain maladies, experience in their use will be too indefinite to be reliable. An agent described after this fashion, will as often be applied at the wrong time as at the right one; then it will work no good results whatever, but may even favor the advance of the disease; and thus one body of men may be praising an article almost to the skies .for its curative powers in certain maladies,

and another and an equally respectable body may be pronouncing it utterly worthless in any such cases. The entire history of Therapeutics is full of just such contradictions in relation to really excellent agents — the agents having been used at the appropriate time by one class, and at a very inappropriate time by the other.

166. In studying the properties, of an agent, therefore, its curative power, or specific action, on disease by name, must at once be dismissed from the mind. It must be set down that names of disease are used only for convenience, (and they are indeed very necessary;) but that no clear conception of the course of management can be obtained, till the exact *present condition* is thoroughly understood. Diagnosis is of the first importance for distinguishing the character of the case in hand; but unless that diagnosis be pushed far enough to determine the actual condition of the organs at the hour of examination, the physician is still left without much real knowledge of the especial duties required of him as he makes his daily visits. (§26.) In a corresponding manner must his therapeutical knowledge be made definite and accurate; to do which, each agent must be studied as to its exact influence upon the tissues — both as to the character, the force, and the duration of that influence. This is the only *specific* action that remedies have; but this action is indeed specific and reliable. (§127.) By making such close inquiry into the existing conditions of each case before him, the physician will learn precisely what kind and amount of influence his remedies will be called upon to exert; and then he can select his remedies with a nicety of discrimination that will adapt them to the case with the certainty of mathematical principles. This course requires diligence and reflection; but in no other way can the physician hope to make his art the embodiment of scientific accuracy.

167. *Classification.* — In now proceeding to classify remedial actions more definitely, the current nomenclature of the profession will compel me to employ the general functional terms in vogue, as Cathartics, Diuretics, Diaphoretics, etc. While this is done as a matter of convenience, the details connected with each class will be made sufficiently plain to harmonize with the requirements discussed in the present and the last general division.

CATHARTICS

168. The term *cathartic* is applied to those agents that aid in securing an expulsion of the contents of the bowels. They have commonly been divided into *laxatives*, which act mildly; *cathartics* proper, which act more fully; and *drastics*, (or hydrogogues,) which induce liquid stools. This division is arbitrary, and defines nothing as to the seat or manner of action of the agent; and the quantity given would sometimes vary the classification — the bark of fraxinus passing as a laxative in small doses, and a quite brisk cathartic in large ones.

169. *Nature and Requirements of Constipation.*

— The harmonious performance of defecation is dependent upon quite a variety of functional combinations. Leaving out the important influence exerted thereon by proper mastication and digestion, the excretory act is directly dependent on: 1st. The secretion of good bile in proper quantity. 2d. The regular escape of that bile from the gall cyst into the duodenum. 3d. The lubrication of the alvine tube by due mucous secretion. 4th. The peristaltic movement of the muscular fibers of the bowels, 5th. A full portion of nerve sensibility throughout the alimentary canal. The failure of any one of these requisites, will aid in establishing costiveness; and if the failure be considerable, any one of them may lead to quite decided constipation. The fifth condition named, in one sense may be said to override all the others, as it constitutes a greater or less degree of paralysis: but either one of the others may exist by itself, and develop costiveness with a series of symptoms peculiar to itself; or any one, two, or more of them, may exist at the same time.

170. Of the first four locations of disturbance, each one may in turn depart from the standard of health in either one of the general ways already named. (§51.) The liver may be too tense to eliminate bile, or too flaccid; the gall-ducts may be closed by a spasmodic condition, or be too much relaxed to expel the contents of the gall cyst; the mucous membranes may be dry through too much sensitiveness, irritation, or from a lack of secreting power; the muscular fibers may be passive in their action, or irregularly contracted, (as in most colics.) The study of practical medicine makes us

acquainted with the symptoms by which the deranged organ may be determined, and the particular manner of its derangement accurately distinguished.

171. It now becomes perfectly evident that to prescribe for these several conditions under the general name Costiveness, would be a most crude practice. (§160.) To advise measures that acted on the muscular fibers when they were not at all disturbed, the whole difficulty lying in the mucous membranes, might secure forced evacuations; but this course would merely unload the bowels for the time being, while the original trouble would remain as before, or perhaps even be aggravated. To employ articles that expended nearly their entire power in relaxing the gall-ducts, when the trouble consisted of a flaccid state of the intestinal muscles, would be to fail in the attempt to afford relief. To prescribe agents that hastened an increased secretion of bile, when the seat of costiveness lay in an occluded condition of the gall-ducts, would be to make the patient feel worse at every dose. And yet every one of these misapplications, is very common in the profession; and the correct regulation of this most important act, is too often dependent upon the physician resorting to some compound which accidentally contains an ingredient applicable to the case — one suitable agent being associated with several articles which act upon organs that do not require any medical action whatever. The great mass of popular pills are thus compounded — and hence are seldom of any other use than to *force* (not *invite*) movements of the bowels, and to leave behind an increased costiveness because of the exhausted condition they induced in organs that should not have been stimulated. Even among careful physicians, it is almost universal to give agents that act upon the liver, when the biliousness did not result from an insufficient secretion of bile, but because that which was secreted had to be reabsorbed from the inability of the gall-ducts to cast it out.

172. *Proper Classification of Cathartics.* — The correct division, therefore, of this class of agents, must be, 1st. According to the organs on which they act; and, 2d. The character of their action. Capsicum, from its great power of stimulation, is of general importance in all forms of costiveness resulting from a semi-paralyzed condition — especially of the gall-ducts and intestinal fibers. Lobelia, from its general relaxing power, is equally valuable in constipation caused by a rigid or spasmodic condition of any of these structures. These two agents, though in no proper sense cathartics, are many times available for such purposes; and may often be used in combination with suitable cathartics, to

great advantage. *Leptandra* and *euonymus* are relaxants to the liver, and facilitate the secretion of bile. *Apocynum* is a stimulant to the gall-ducts, not increasing the amount of bile, but hastening its discharge. *Juglans* is a stimulant to the gall-ducts, liver, and intestinal muscles. *Rheum* is a very mild stimulant to the intestinal muscles and the gall-ducts, but subsequently astringent to the mucous membranes. Oil of *ricinus* is a stimulant to the mucous membranes; *senna* is stimulant to the mucous membranes, and muscular fibers; and *eupatorium perfoliatum* is relaxant to the whole series of the alimentary and hepatic structures, while *podophyllum* is stimulating to the whole series.

173. In this manner every cathartic is to be classified, some acting on a single one of the organs concerned in defecation, and others acting on more than one of them. The place of action of a cathartic being known, and the character and time of its action being also known, the case for which it is appropriate at once becomes definite. Its correct application is then dependent solely upon the correct diagnosis of the case of costiveness under treatment. That diagnosis considers both the organ concerned, and the direction in which that organ has departed from the healthy standard. Thus, it is requisite to know that jaundice, and the great majority of cases usually called "bilious," arise from an inability of the gall-ducts to discharge the bile, and not from an inability to secrete that fluid. That knowledge calls for agents which act upon the gall-ducts, and not for those which expend their power upon the liver. But as the gall-ducts may be either too much relaxed, or too rigid, a clear discrimination must be made in the selection of either a relaxant or a stimulant to these passages, as each particular case may require. In like manner must the condition of each of the other parts be studied; and the cathartics prescribed according as they are relaxing, or stimulating, or both together, upon the part at fault. When we consider the number and difference of the several organs in question; and remember that each one may be deranged in at least either of two directions; and take into account the varying degrees to which these several departures from health may be commingled, it will be seen that not only are the pathological consequences of costiveness

numerous, but that its treatment requires much careful discrimination, and that a *correct* exhibition of cathartics demands the exercise of very careful judgment. But when such analyses in diagnosis and in therapeutics have been made with due care, the selection and administration of the right agents become labors of demonstrable certainty.

174. *Uses of Cathartics.* — In general terms, articles of this class secure a dislodgment of solid and offending substances from the liver, gall-ducts, and alimentary canal. Those that especially act thus upon the liver, are spoken of as *hepatics*; those which more especially influence the gall-ducts, are *cholagogues*; while those which act upon the bowels directly are *evacuants*. When remedies obtain an increased secretion and discharge of bile, this fluid is usually sufficient to stimulate the bowels to direct defecation. But if the intestines have been deranged, hepatics may exert their influence upon the biliary apparatus, and yet the discharge of bile not be sufficient to move the whole intestinal tube. The faeces may then pass to the lower bowel, and lodge there; under which circumstances it is generally preferable to stimulate the rectum by an injection and thus procure a stool, than to follow the hepatic by stimulating evacuants. Very slowly relaxing hepatics and cholagogues, are more likely than the stimulating ones thus to leave the faeces in the lower bowels; on which account, when the case admits it, it is a good practice to combine such an hepatic with a small portion of capsicum.

175. In relieving the system of the above-named materials, cathartics favor a more ready equalization of the blood, and also of nervous action. For it is well known that obstructions in the liver and gall-ducts, strongly predispose to inward recessions and congestions; to headache, nervousness, febrile excitement, convulsions, and a great variety of less prominent disturbances. In all such cases, therefore, when any form of failure in the defecative process is present, a suitable cathartic is indicated. And the neglect of this class of agents, would inevitably protract such cases, or perhaps render all other medication comparatively ineffectual. A striking instance of this may be seen in some cases of fever, where the best directed sudorifics, emetics, baths, and injections, fail to maintain a suitable perspiration; and this function is not reestablished till the desired hepatic or cholagogue has removed the impediment to vital action which all the other measures combined would not reach. The indispensable necessity of appropriate cathartics as a first remedy in the treatment of all agues, is another illustration; and it is well known that an enormous use

of stimulants, diaphoretics, and antiperiodics, proves of almost no effect in the congestive chill, till a full dose of an hepatic has begun its operation. The relief given to some forms of headache, and to piles by relieving the blood vessels from pressure, also illustrates the value of removing intestinal and biliary obstructions by cathartics. By a similar removal of pressure from the veins, as well as by freeing the hepatic apparatus, suitable cathartics promote absorption in some dropsies. Most skin diseases are also incurable unless hepatics are used in due quantities.

176. Evacuants that are stimulating to the muscular fibers of the bowels, are liable to cause griping; which may be obviated by combining the cathartic with some diffusible stimulant, as zingiber or even capsicum. (Any discharges of acrid bile may cause griping, as it passes over irritated surfaces; and a little alkali is then a most appropriate addition.) In chronic cases, it is nearly always best to use slowly-acting cathartics, and to give them at bed-time; as they will expend their power while the system is not occupied with the operation of other medicines, and will secure evacuations the following morning — the early part of the day being the most natural for alvine movements. In acute cases, when evacuants have been used, and a mild hepatic and cholagogue action is to be sustained, the same course of one nightly dose is usually best; though if this should not prove sufficient, a morning dose may also be given. If the first dose does not operate, the second one should be given before the first has expended its whole strength, for then the second dose may be much less than the average quantity; but if the physician delay till all the power of the first dose have been spent, the second dose will need to be even larger than the first one. When the liver is to be acted upon, slow agents are preferable, and intervals of from eight to twelve or even more hours, should usually be allowed between the doses; as the natural function of this organ is performed slowly, and its exhaustion can readily be secured by too rapid doses of hepatics. The gall-ducts may be acted on at intervals of six to eight hours, if necessary; as they naturally evacuate the contents of the gall-cyst at about such intervals; yet *active* cholagogues should not be continued long at such intervals. In acute cases, and under

circumstances of emergency, it may be of great consequence to evacuate all the passages from the liver onward very quickly. In such cases, more prompt cathartics are to be selected; and as these may expend their power in three or four hours, the dose may be repeated at such moderate intervals. It is better to give such quantities as to make not more than two doses necessary, if that can be sufficiently determined; for under any circumstances, the system does not call for the use of any such agents at short intervals further than till the emergency can be met. It is an injudicious use of cathartics to continue them from day to day every few hours, even in small quantities; and especially so, to add a cathartic to diffusives that require frequent repetition. (§186.) One *free* stool every twenty- four hours, is enough to secure under the continued use of any cathartic; but an emergency may require two, or even three, full stools, before the cystic and alvine accumulations will be removed.

177. *Abuse of Cathartics.* — Probably no. class of remedies has been so much abused, as cathartics. Their misuse and over-use are among the reprehensible failures of too many in the profession. Probably the majority of physicians are in the habit of giving larger quantities of physic than the frame ever requires; and a great many of them act upon the liver and bowels with such force and frequency as to suggest that they think the procurement of large and violent stools to be the wisest thing a physician can do. Instead of contenting themselves with imitating Nature, and of securing those moderate and steady evacuations that are physiological, they thrust cathartics upon the frame in excessive quantities; and pride themselves on inciting as many discharges in twenty-four hours as the system requires in a week. Such practice shows great ignorance of medical science; and is decidedly reprehensible under any and every circumstance, even of great emergency.

178. All excessive evacuations are weakening; and cathartics are decidedly exhaustive, when used immoderately. The excitement caused along the bowels (especially by stimulating agents) will aggravate some forms of disease, as all irritations of the brain and spine; and may provoke hydrocephalus and convulsions in infants, and sometimes hysterical convulsions and uterine and renal irritation in females. Violent purges are prostrating during the early stages of bilious fever, bilious remittents, erysipelas, scarlatina, diphtheria, puerperal fever, and all similar affections; and may readily depress these patients into a typhoid condition. Dryness and darkness of the tongue will soon follow the induction of three or four

sudden stools, at such times; and I am thoroughly satisfied that many severe typhoid cases have been brought about by the too free use of exciting cathartics in the incipient stages of cases that otherwise would have had no typhoid condition. This is particularly the fact in the West and South-west — where typhoid tendencies are stronger, and the use of drastic cathartics greater, than at the East. Protracted irritation of the bowels will presently extend to the peritoneum; and by an over-use of cathartics of the exciting grade, peritoneal dropsy will be increased, and all forms of dropsy will be aggravated by the debility induced. This, I know, is contrary to received opinions and practice, which consider watery catharsis a potent measure for causing the serous effusions to be evacuated by the bowels. But this is merely one form of depletion; it was adopted in times past as but a local variation of abstracting blood — of which serum is such a large constituent; and was practiced by resorting to epsom salts and similar agents, which are known to take the serum directly from the venous circulation. Such a course is a war upon Nature; and Physio-Medicalism has no use for such a doctrine and practice, any more than it has for calomel and lancets.

179. The bad consequences that may follow the excessive use of cathartics, have led some to discard them altogether. This is an extreme in the other direction, and is wholly untenable. The agents selected being in themselves harmonious with Nature, (§139,) they are to be used at such times as the system requires them, but only in such quantities as are required. When the liver or bowels are deranged, they can not be restored by agents that act on other organs but not upon them; and even in the very cases above named, where hyper-catharsis will be so peculiarly inappropriate, to neglect a full and fair action upon the defecative function, would be highly injurious to the patient. The rule for the exhibition of cathartics is the very simple one of employing the proper agent in such quantities as will obtain an action harmonious with the natural performance of the function. Thus used, this class of agents, when selected according to the foregoing considerations in this general division, are among the most valuable and indispensable remedies.

DIAPHORETICS

180. The term *diaphoretic* is commonly applied to those agents which secure an increased perspiration that usually is not great nor visible; while those which induce a very abundant and visible perspiration are denominated *sudorifics*. Many sudorifics, as antimonials, induce a cold and unnatural perspiration; while a visible perspiration may be induced by a sufficient use of a sanative diaphoretic. This latter term, therefore, is more in keeping with a physiological nomenclature; as the only perspiration that harmonizes with Physiology is both mild and warm — never clammy, and never inducing any greater coolness than is compatible with the natural lessening of surface heat by the perspiratory process.

181. The majority of diaphoretics act directly upon the *sweat glands*, and that chiefly by relaxation. They thus are followed by an increased evacuation of the watery materials and saline constituents of perspiration; and by their aid great quantities of offensive and irritating materials are cast out of the system. A few of those which act on the sweat glands, are stimulating; among which may be named polygonum and zingiber. All this class of agents act more or less upon the capillaries, and induce a greater outward flow of blood; and while their principal action is on the sudoriferous glands, it is not probable that the *Materia Medica* furnishes a single diaphoretic article whose action does not at the same time embrace the circulation and nervous system to a visible and important extent. (§131.) A goodly number of these articles act so largely upon the circulation, that the sudoriferous flow is but a sequence to the increased hurry of the blood. Of such a character are serpentaria and capsicum — the former seeking first the capillaries and then advancing inward to the heart, while the latter commences at the heart and gradually advances to the surface. The diaphoretics of this class are always stimulating. The distinction in their use is of much importance; for the first class is to be selected when the skin is both warm and dry, and the action of the heart excited; while the latter class is appropriate when the skin is cold and harsh, and the heart's action deficient in strength. *Asclepias tuberosa* would be quite out of place

for a cold surface and a sluggish pulse, though capsicum would meet the requirements of such a case; and, on the other hand, capsicum would be utterly unsuited to a hot and dry skin with a large bounding pulse, while *asclepias* would then be one of the most useful remedies. Thus it is not sufficient merely to say that an agent is a diaphoretic, as that naked description would not cover any indication of the times for employing it or withholding it; but careful discrimination needs to be made as to its *mode* of securing diaphoresis, as then only can we understand its true reference to pathological conditions.

182. Besides capillaries and sudoriferous glands, the skin contains a large number of sebaceous or oil glands. These give to the surface its natural softness and pliancy. They sometimes become quite deficient in action; and then the skin becomes harsh and chaffy, and no amount of watery sudoresis can restore its oily elasticity. As instances of this failure may be named scarlatina among acute affections, and salt rheum among chronic maladies. A very small class of diaphoretics expend their main influence upon these sebaceous glands. The seeds of the *arctium lappa* are among the best diffusives of this class; and the roots of *arctium* and bark of *celastrus scandens* among the permanents. Heretofore, this therapeutical distinction has been entirely overlooked, and I have no where met with any allusion to this class of actions; but a number of years of close observation have convinced me that several agents do act largely and peculiarly on this set of glands. I wish it were in my power to give a more extended list of sebaceous diaphoretics; but trust that the attention of the profession will hereby be called to this class, and closer observations be made upon it.

183. *Uses of Diaphoretics.* — As the most immense masses are made up of small particles in aggregation, so the minute portion of materials transuded by each one of the seven million pores which open upon the surface, is part of a total that is truly great. Hence a closure, or a partial closure, of these exhalents, quickly causes a vast load of unwholesome material to accumulate within the frame. This material is far more poisonous than is generally supposed; through the medium of the extensive network of nerves upon the surface, its impressions are quickly conveyed to other organs; and hence the retention of perspiration makes itself felt more speedily and more extensively than almost any other secretion. A complete suppression of this function may cause death in a few hours; from which fact the vital importance of its regular continuance may be inferred. In addition to this, all acute disturbances of the skin also disturb the

circulation, and interrupt the equal flow of blood more or less; and the evil impressions made upon the nerve peripheries can not but make a strong disturbance throughout the nervous system. Through such an association of facts it is, that obstructions to the perspiration are among the most fruitful sources of disease, especially in acute but also in chronic forms. To maintain a steady action upon the surface, therefore, is one of the leading requisites to good health; and when that action has been in any degree repressed, its early and free restoration is imperative. So powerful, indeed, is diaphoresis in relieving acute maladies, and especially those with a febrile accompaniment, that sweating remedies have always been in the highest repute among the people. From the very earliest periods of medical history, to promote perspiration has been a most popular resort in families under at least one-half of the acute attacks which are suffered; and the great relief afforded thereby, and the number of lives that this measure has unquestionably saved when all measures without it would have failed, attest its wonderful efficacy. It is one of the most powerful instruments of cure that the physician can wield; and its purely physiological influence, and the wide variety of agencies provided for its induction, account for the remarkable success with which Physio-Medicalists have employed it.

184. Among the difficulties to which diaphoretics are especially adapted, are febrile excitement of all grades and forms. From the intense synocha to the low typhus, all fever and heat of the surface call for this class of agents. When the pulse is firm and the capillary circulation free, those relaxants that act on the sudoriferous glands are indicated. When the pulse is enfeebled, (a very frequent and small pulse denoting one form of extreme feebleness,) the diaphoretics that sustain the circulatory vessels are most demanded. Between the two extremes of intense vital effort on the one hand, and prostrated effort on the other, febrile cases present every imaginable grade of variation; and the relaxing and stimulating will be required in correspondingly various proportions. In a true synocha, (perhaps never seen in the great valleys of the Ohio and Mississippi, though common in the middle and New England States,) such pure relaxants as asclepias or

corollorrhiza, with lobelia, will fulfill most of the requirements, so far as the skin is concerned. In rheumatic fever, measles, foreign viri, and similar conditions, the case will require some proportion of zingiber, polygonum, or other mild stimulant, added to the relaxants; while in severe typhus, typhoid pneumonia, and the recession of any exanthem, such stimulants as xanthoxylum and capsicum must be added with freedom. If the diversities of vital strength in febrile cases is great, the scale covered by the list of diaphoretics is equally great; and a beneficent Creator has assuredly provided a most liberal variety of this class of remedies to meet the numerous conditions for which they are needed.

185. The relief of fever, however, is but a single benefit obtained from diaphoretics. Promoting the action of the surface by a combination of relaxing and stimulating agents, is imperative in all "colds" — or in other words, in all congestions, whether trifling or extensive, whether merely in the capillaries of the surface or upon the lungs, peritoneum, liver, spleen, kidneys, or other organ. The more purely relaxing diaphoretics, combined with very light and diffusive stimulants, are equally powerful and indispensable in all internal inflammations, whether of the brain meninges, lungs, serous tissues, or other structure. By enlarging the diameter of the superficial capillaries, and sustaining a full flow of blood, the circulation must of necessity be equalized and all internal engorgements be relieved. By the same influence, many excessive internal discharges are relieved; and stimulating diaphoretics, with a modicum of relaxants, are the most powerful and reliable of all measures for checking any form of internal hemorrhage — whether from the lungs, uterus, or bowels. The more relaxing agents of this class are equally necessary in acute dysentery, to divert the blood from the bowels; and combinations to suit the case are of the first consequence in diabetes and nearly all dropsies. The maintenance of free (but not excessive) cutaneous action, greatly promotes absorption in dropsies, chronic abscesses, pleuritic and peritoneal effusions, etc. In such cases, the internal diaphoretics generally need to be aided by stimulating baths and friction. The nervous system, also, is often much relieved by diaphoretics — mostly, it is to be supposed, by the recrementitious material being eliminated so as no longer to irritate the nervous extremities.

186. The action of all diaphoretics is greatly influenced by surrounding circumstances. Warmth and moisture are needed to aid them; and hence these agents should always be given as warm infusions. It is nearly futile to

employ them in any other form; and to prescribe diaphoretics as powders or pills, unaccompanied by abundance of warm fluids, will be to forsake all the known principles of Physiology and Therapeutics. (§140.) A warm atmosphere, and especially in company with tepid or warm baths, greatly expedites their action; so do warm broths and gruels; and the quiet relaxation of sleep always favors perspiration. A cold atmosphere, prescription by cold infusion or in some concentrated form, and cold drinks between doses, retard their action; and many agents of this class will, under such circumstances, expend their influence through the kidneys, and some of them through the bowels or lungs. Stimulating cathartics, by inviting an inward flow of blood, may greatly retard diaphoresis; though the action of sweating medicine will be much freer after a proper physic has operated. (§175.) And in all cases, the greater freedom that other suitable remedies give to other organs, the more readily and perfectly will diaphoretics manifest themselves; hence in all the above cases, these agents are useful so far as they do their own important share of the required work, but must be associated with such other measures as each particular case may require.

187. *Abuse of Diaphoretics.* — These agents may be misused by giving them when the skin is already too free in its action, or by continuing them in such quantities as to maintain excessive perspiration for many hours. They are sometimes abused in this way. Such profuse surface transudation leads to exhaustion, with a sense of oppressed breathing, nervousness, and a tremulous hurry of the pulse. It is especially necessary to be watchful of this in bilious remittent, typhoid, and hectic fever; as in some of these patients exhaustive perspiration may be maintained for the purpose of “breaking the fever,” whereas the provocative obstructions existed altogether in central organs. Where the use of any relaxing diaphoretic is followed by a cold perspiration, its continued use would be very inadvisable.

DIURETICS

188. *Diuretics* are agents which so act upon the kidneys as to favor the elimination of increased quantities of urine. As urine is made up of solids dissolved in more or less fluid, diuretics may be classified according as they influence one or the other of these constituents — some favoring an increased flow of water, with little impression on the solids; others being followed by a larger proportion of solids, with but a small perceptible increase of the fluids; and still others influencing the excretion of both these constituents.

189. While the kidneys have their own independent action, they are peculiarly influenced by changing conditions of the body. Thus, as the exhalations of the skin diminish, the watery discharges by the kidneys increase; and any influence, whether of temperature or medicine or disease, that diminishes the functions of the surface, will soon be followed by an augmented renal flow. The state of the nervous system, also, will exert a marked influence upon these organs; and large discharges of limpid urine will usually follow any sudden nervous excitement — as fright or hysteria; while anger or shock or other nervous depression, will be accompanied, or soon be followed, by a notable diminution of this secretion. The state of the female generative organs correspondingly affects the state of the kidneys; and it is an anomaly to find irritation or depression in the former, without observing a similar condition in the latter. A turgid state of the liver and occlusion of the gall-ducts, throw an increased burden upon the renal apparatus; and are sooner or later followed by a diminution in the amount of water and an increase of solids in the urine.

190. The above current facts indicate the additional fact that agents which can not be said to act directly upon the kidneys at all, may yet have a decided influence over their secretion, at times. Thus, whatever will improve the action of a dry surface, will diminish the sum of the urine — as is peculiarly observed under the action of a warm atmosphere, relaxing diaphoretic infusions, light friction, tepid sponge baths, and vapor baths. These various measures are, therefore, resorted to with the greatest efficacy in all cases where the

renal flow is so excessive as to be exhaustive; and instead of then, as is generally done, seeking diuretics with the intention of giving tone to the kidneys, a far more physiological course would be, first and principally to restore the action of the surface, and thereby allow the kidneys rest from their double labor. On the other hand, whatever lessens cutaneous exhalation is followed by an increase of urine — as a cool atmosphere, brisk friction when the skin is moist, and cool baths or baths with astringent remedies. Probably it is in part from the same kind of influence, that nearly all the lighter astringents — as *uva ursi*, *hamamelis*, *rubus*, *populus* — are followed by a moderate advance of micturation, when they are used internally. Prompt relaxing nervines, when used during nervous agitation, are soon followed by a flow of (usually) limpid urine; diffusive stimulants, as *zingiber*, are accompanied by the same results when nervous agitation is associated with depression; and the general arterial stimulant, *capsicum*, secures a renal discharge in cases where the nervous depression is great and the action of the kidneys almost suspended. Where derangement of the kidneys is largely dependent upon the hepatic apparatus, a proper regulation of the latter will be the first, and many times the only step required for their restoration. Some tonics, as *liriodendron*, *hydrastis*, and *helonias*, increase urination by imparting general tone to all the system — the kidneys being thus strengthened indirectly.

191. Thus it will be seen that diuretics, as such, are not the only means for benefitting the renal organs; but that a large variety of remedies and measures which can not be classed under this head, are of power and benefit in the management of these structures. Their sympathies with the nervous system are extensive and peculiar; and they can in a corresponding degree be influenced by agents that reach them only through sympathetic action. So important are these facts, that no discussion of diuretics would be complete without their mention; and no physician need hope to treat derangements of the kidneys skillfully, or to employ the real diuretics effectively, till he has first sought out and duly regulated the other functional derangements which may be exerting so great an impression on these organs.

192. My experience and observations upon the use of diuretics, have led me to the belief that different agents exercise an influence not merely upon the amount of solid or fluid excretion; but that of those which secure an increase of the solids, some do so chiefly with one set of these constituents, and some with another set. Thus, when urea is chiefly retained, or when the urates

arc inclined to become decomposed and leave behind the insoluble uric acid to form a calculus, such agents as eupatorium purpureum and aralia hispida seem to secure a fuller flow of urea, to render the urates less liable to decomposition, and to forestall the tendency to uric (or lithic) acid gravel. When uric acid is most deficient in the urine, juniperus and diosma seem most effective in securing its increase. When there is a tendency to a decomposition of the phosphates, and a formation of phosphatic or oxalic deposits, such articles as arctium seeds, uva ursi, epigea, and parthenium integrifolium, seem to be altogether most appropriate. These several variations are known to occur in the urine, both in acute maladies and in chronic troubles; and each one gives its own peculiar character to the urine, and symptoms about the renal apparatus, and general symptoms on account of its blood poisoning. Pathology makes us acquainted with these facts and symptoms; and now it remains to be seen if therapeutics can classify its diuretics so as to meet the changing pathological conditions. I feel well convinced that the above suggestions, so far as they go, are correct. My observations in this direction have extended from the earlier years of my practice; and I have found as much disappointment in giving eupatorium for phosphatic gravel, or juniper for retentions of urea, as would be found in administering leptandra for jaundice or castor oil for insufficient bile. (§172.) At present, however, I can but indicate briefly the direction in which my experience has led me to a classification; and would respectfully invite the profession to test these observations closely, that they may be laid aside if wrong, but extended and perfected if correct.

193. As already intimated, the mass of agents that influence the kidneys at all, lead to some general increase in the watery portion of the urine. This is the case even with those remedies which exert their principal power in securing a greater diminution of the solids. There are many times, however, when the proportion of solids is correct enough; and all that is required is an increase of water to dissolve them so that they can be eliminated from the blood, or that they may not be deposited in the bladder. Under all such circumstances, the first resort must be to that general management indicated in section

190, for increasing the watery flow. Yet this alone may prove too slow, as in febrile cases; or it may be insufficient. Then we can resort to those articles which manifest a peculiar action in augmenting the water of the urine, such as spearmint, nepeta, galium, parsley, etc.

194. From what has already been said, it will be inferred that agents may influence the kidneys strongly through impressions upon the nervous system, without being absorbed at all. This is unquestionably the case; and the extensive manner in which these organs sympathize with all parts of the body, and the very marked regulative control which the spinal cord has over their action, show that they can be most effectively reached through impressions made upon the nerves. Some diuretics, however, are absorbed; but it is my opinion that only the smaller number act thus, and that these are not always the best in their action. The turpentine, nitric ether, and saline diuretics of Allopathy, are unquestionably absorbed before they make much impression upon the kidneys; but all these act in a manner not at all congenial to the sanative principles of Physio-Medicalism. Of truly harmless agents that are more or less absorbed, may be mentioned parsley roots, buchu, various mints, and most of the demulcents — especially althea officinalis, flaxseed, and ulmus. 1

195. *Uses of Diuretics.* — In general terms, we speak of these articles as useful when the kidneys are not sufficiently active; but there are a great many occasions on which the practitioner may not sufficiently recognize their need, when they are nevertheless called for. In the majority of febrile cases, the urine is noticed to be scanty; but its restoration is usually left to general measures. My own experience warrants the belief that nearly every fever, and especially all typhus and typhoid cases, require some specific influence on the kidneys. The retention of any of the elements of urine is a source of much detriment to the entire frame; and the nervous centers are peculiarly liable to suffer from the depressing influence of such retentions. This is, in my judgment, often an occasion of aggravating and prolonging typhoid attacks; and also many cases of inflammatory rheumatism. In nearly all uterine and ovarian affections, whether acute or chronic, it is very necessary to watch the condition of the kidneys than is supposed. Poisoning of the blood by retained urea, is known to lay a foundation for the provocation to convulsions on slight occasions; and many times hysterical, epileptiform, and other spasmodic tendencies, require due attention to the kidneys.

196. The above are the more commonly neglected uses of diuretics, and are mentioned first on that account. A larger use of them is made in all those aching of the back and general nervous uneasiness which so often proceed directly from deficient renal action; in scalding of urine and aching through the bladder; in prostatic affections of a chronic character; and in gonorrhoeal poisoning. In all forms of calculus, of sandy or mucous sediment in the urine, and in dropsy, these agents are resorted to. Like any other articles that act particularly on one organ, their employment constitutes only a part of the treatment in any case; but that part is often of very decided importance. Like other structures, the kidneys may require relaxation, or stimulation, or varying combinations of both these influences, at different times. I have particularly found that typhoid cases require some stimulation of the kidneys; and that purely relaxing diuretics, of any kind whatever, do not always serve the best purposes. It has already been intimated that many of the milder astringents exert a moderate impression upon the kidneys. (§190.) These are chiefly available in mucous discharges, albuminuria, and irritability of the bladder and urethra. By taking together these three kinds of action on tissues, and the influence that different articles exert over the character of the secretions as hinted at in section 192, it will be seen that diuretics are, a somewhat peculiar class of agents. This has always been realized by practitioners of all schools; and the precise times and places for the employment of any particular article of this class, have been questions of much vexation. The facts that have been pointed out in these few sections will, I hope, render their applicability more definite and reliable.

197. *Abuse of Diuretics.* — This class of agents is often misused in a most ridiculous manner, and to the great detriment of the system. There has been too much reliance placed upon turpentine, iodides, and spirits of niter; for although these are followed by an increase of urine, their action is of that provocative character which soon wearies the organs; and then any increase of discharge is obtained as the result of a goading process which exhausts, while the quantity of solids then eliminated is notoriously diminished below the normal standard. So well are these facts known, and so

frequently also do these two agents induce a state of exhaustion which may never be rallied from, that the true Physio-Medicalist must at once discard them from his list of agents. In the same category must be placed acetate of potassa, nitrate of potassa, (saltpeter,) and the whole catalogue of neutral diuretic salts. These quickly secure an increase of urine, and a lessening of renal excitement; but they do it by provoking an elimination of blood-serum through the kidneys, precisely as epsom salts do from the bowels. (§178.) It is but another form of depletion; and the system at large soon feels the exhaustive consequences of any such diuretics. They lead to a peculiar sense of exhaustion throughout the nervous system; greatly check the function of the skin; are followed by slow but certain emaciation; and not unfrequently become direct causes of albuminuria, Bright's disease, and other grave and incurable maladies of the kidneys.

198. But diuretics which are in themselves excellent are many times pushed so inordinately as entirely to overwork the kidneys. This is particularly liable to be done in dropsical cases and in the treatment of gravel. The common doctrine in the treatment of dropsy is in this wise: Dropsy is an effusion of serum; certain diuretics will force a discharge of serum from the kidneys; by thus acting on the kidneys, the dropsical effusion of serum will first be checked and then reabsorbed. This is but another form of applying the Allopathic proposition to bleed for the arrest of hemorrhage. In both cases it is a depletion of the blood, and weakens the grand pabulum of life; and the folly and inefficiency of this injurious action on the kidneys, are equaled only by the corresponding folly of provoking serous discharges from the bowels in dropsy. Such practices have no foundation in natural laws, and therefore are contrary to Physio-Medicalism: and though our sanative diuretics will not induce evacuations of serum, any attempt to use them on the above wild speculation about the treatment of dropsy, will still prove an exhaustive failure. The practice is altogether too common, without its origin or its consequences being sufficiently understood. A better understanding of the nature of dropsy would show that diuretics could never be of use, even in cases where the kidneys are at fault, only so far as they maintained a normal flow of urine; and that if pushed beyond that, they would weaken the frame at a time when the maintenance of full tone is of vital consequence, and diminish action at the surface in a malady where free outward circulation and cutaneous function are of the greatest possible importance.

199. In the same manner, excessive elimination of water by the kidneys can have no manner of influence in dissolving calculi, which are as insoluble in water as would be so much granite. A due proportion of water is needed; but it is much more important to secure an elimination of the proper solids. (§192.) In general, the character of renal solids can be influenced more largely by the articles of food than by any diuretics whatever; but in that part of the service which diuretics can effect, it shows an utter misunderstanding of the physiology of the kidneys, to push the most suitable articles of this class to such an extent as to tax the normal action of these organs. As to dissolving stone in the kidneys or bladder by chemical solvents given to pass through the kidneys, the attempt will prove as unsuccessful as it is unscientific. And in all febrile cases, where the function of the surface needs especial and large attention, the use of diuretics must be pushed only far enough to sustain a natural amount of urination; as otherwise a too prominent impression on the kidneys would greatly retard the establishment of perspiration. And in such cases, the practitioner need not hope to see the full effect of any rational use of diuretics, till other agencies have at least partially restored the functions of the skin, liver, and bowels. In the anxiety to establish a thorough renal flow, these parts are sometimes overlooked in febrile cases, and the diuretics pushed in too large quantities.

ALTERATIVES

200. The term *Alterative* is applied to agents which are found capable of *altering* the condition of the blood — that is, of restoring this fluid to a more healthy standard by removing from it impure accumulations. As all such impurities arise from a defective action of one or more of the secretory organs, which fail to carry out their due proportion of waste material; and as the purification of the blood, in this particular sense, depends upon reestablishing and steadily maintaining the function of the faulty organs; it is naturally inferred that all agents which promote any secretion, may prove alteratives. And such is, in a certain measure, the case; yet a secernant which expends its whole action in a few hours, barely does more than disgorge the organ of what has accumulated in or near it; while a purification of the entire blood by means of a better general secretion, requires the maintenance of that mild secernant influence which can be sustained for a long time. Hence the term alterative is properly applied to agents which act slowly, moderately, and steadily, in bettering the condition of the circulating fluid.

201. In the days when pathology was a blind speculation, blood-impurities were supposed to be certain intangible myths, which required personal ejection by something absorbed directly into the circulation. From this came the habit of classing as an alterative any agent which seemed to make the fluids better in some unknown manner. The whole class was supposed to act mysteriously, and to be quite beyond comprehension or control. This entire idea is well illustrated by the character attached to the mercurials — which Allopathy has long classed among her very best alteratives, “but of whose action, or *methodus medendi*, we know nothing,” said her leading writers. Fortunately, those days of blindness are gone; and the manner and means for securing a purer condition of the blood, are now as definite as any other therapeutical action.

202. *Sources of Impurity.* — In order to a rational understanding of the uses of alteratives, it requires that a few moments be spent in considering the sources of the blood impurities. As already intimated, these are found mainly in the failure of the secernant organs. The number

of these, and the injurious effects wrought by the retention of each one, indicate what varied and profound consequences may be embraced under these several excretory failures. The liver, the kidneys, and the skin, embrace the leading channels for depurating the body of worn-out and waste materials. Should either one of these cease, even but in part, to perform its share in this general class of duties, the blood at once becomes contaminated with the offensive elements. A small quantity of these may at first cause no particular inconvenience ; but as the torpor continues the accumulation goes on, till presently the whole mass of blood is laden with these unwholesome substances. Circulating throughout the body, they contaminate all the structures, more or less; till, sooner or later, every structure feels the weight of the offensive accumulations. Where two or more of these organs partially fail at the same time, the general effects of the impurities are noticed so much the more rapidly and extensively; and no one can thus obstruct the general process of purification, without almost surely (through the well-known law of correlation of function) so throwing the burden of its duties upon some other organ, as to overburden it and thereby add a second to the list of secernant failures.

203. Another source of impunity, but one not always included in this enumeration, is to be found in a failure at some portion of the assimilative process. This has already been sufficiently considered in the sections upon Food, (39 — 41,) and need not be repeated here.

204. Each one of these several organs may fail either from its condition of too great laxity, too great chronic rigidity, or insufficient acting power. (§51.) And each particular retention will induce, its own particular class of consequences — that of the liver being different from that of the kidneys, that of the kidneys from the skin, etc. And even under different circumstances, and in different constitutions, these effects are subject to considerable diversity — retention of bile giving indigestion and sluggishness in one case, and various cutaneous eruptions in another; retention of the urinary elements now predisposing to typhoid prostration, and again laying a basis for puerperal convulsions, etc. The pathologist studies these in their multiform and complicated aspects. To the therapist, the practical question is then at once answered, that his alteratives must be selected according as they act upon the organs affected, and overcome the present abnormal condition of that organ. Whatever have been the remote or proximate influences which induced that condition, his specific duty lies in regulating the condition itself, (§166;) and

no rational selection of remedies can be made, except as the cases of impurities are thus studied through the state of the various secernant organs.

205. *Classification and Uses of Alteratives.* — From the above considerations it will at once be seen that no definite idea is conveyed by merely pronouncing an agent to be an alterative; but that it is necessary to designate the particular organ on which it acts, and the manner of its action. Some expend their principal power on the liver, others upon the skin, some upon the bowels, etc. And in each instance, it requires to be stated that the article is relaxant or stimulant to the organ it affects, as the case may be; and if it at the same time exerts a general tonic impression, that fact is of significance. By being thus careful in obtaining a clear understanding of the precise power of each article in question, the times and places of its applicability will become clearly understood; and it can then be prescribed with definiteness and precision. Thus, when a scrofulous case is connected with the torpor of the liver and great laxity of the general system, it will not be sufficient to direct such relaxant promoters of sudoresis and urination as arctium and celastrus; but such hepatics and tonics as menispermum and gentiana become necessary. When cutaneous eruptions arise almost exclusively from the liver, a cure can not be expected from rumex or smilax alone, however effectively they act upon the skin; but such hepatics as apocynum, leptandra, or euonymus, will be required. In like manner may every case be analyzed; and when traced to the actual condition of the organ or organs concerned, the proper class of alteratives to meet it will become apparent.

206. In the use of this class of agents, it is probably a too common practice to place the chief reliance upon alteratives of the relaxing kind. Except, perhaps, in the solitary class of syphilitic affections, the great tendency is to employ almost exclusively the relaxants. This practice will answer very well under some circumstances; but the majority of cases unquestionably demand some portion of stimulants, or stimulating tonics. The very presence of any animal waste in the blood, suggests a depressing poison; and in by far the greater number of instances it will be found that

the impurity of the blood is connected with more or less general languor of action. Relaxing alteratives may then act upon the proper organs; but while they make a way of escape for the morbid material, there may not be in the organ enough vigor to eject that material, till tone is given to the whole frame (as well as the part concerned) by a modicum of capsicum or a due portion of hydrastis, gentiana, or other tonic. In most instances, the proportion of stimulant or tonic needs to be quite limited; in other cases, a larger quantity may be required; but in all cases, the physician must be guarded in his prescription of alteratives, lest he make them too entirely relaxing for the good of the system. In a few instances, even astringents with stimulants seem absolutely necessary to secure enough of the general bracing of all the tissues to enable them to act with sufficient thoroughness in removing impurities and sustaining the tone of the system. An instance of this kind is met in those scrofulous cases, and also in goiter and in some cases of secondary syphilis, where the extreme flaccidness of the lymphatic system can not be met by any thing less than some astringing stimulant like the bark of myrica. And in cases of scarlatina, after the acute symptoms have passed by, the peculiar virus of the malady may saturate the system and produce the most grave sequelae, unless such articles as myrica and capsicum are used liberally to force out the poison, while asclepias or polemonium maintains an open surface. The same is the case with a large number of animal poisons — the pores of the skin being the grand channel for their ejection, but a full internal use of astringents with stimulants being required to effect their dislodgment among the tissues. The ordinary Composition Powder is one of the most efficient preparations under all such circumstances — acting, in such a condition of the tissues, a part that is properly to be called an alterative tonic.

EMETICS

207. *Emetics* have been used in the practice of medicine from the earliest periods of its history, and by all schools of physicians. Their employment no doubt arose in direct imitation of Nature; for the stomach always inclines to eject any substances that make an unfavorable impression upon it. As this organ is the great center of supply, the entire frame is more or less tinged by whatever enters it; and when it becomes cloyed by indigestible materials, and especially when the partial decay of food (§39) results in an unwholesome mass, or when offensive articles have been accidentally swallowed, the susceptibilities of the system are aroused against the danger, and the stomach is made use of to seek their expulsion. If this can be accomplished, a great sense of relief is at once experienced. If it can not be accomplished by the unaided powers of the system, it is the duty of art to aid Nature with such measures as will favor the act of emesis. For if the unwholesome substances are not dislodged, they will at least depress a portion of the frame through nervous sympathy, and are likely to be more or less absorbed and thus to contaminate the whole system; and a very large number in the catalogue of diseases, have their germs planted and sprouted in derangements of the stomach. Promptly and thoroughly to aid the system in casting out such impurities by emesis, is therefore one most powerful method of entirely cutting short a number of affections at their very outset; many maladies are greatly shortened in their course, if not wholly checked, by such a measure; while some affections are utterly incurable without the aid of this most powerful treatment.

208. *Physiology of Emesis.* — The immediate physiological cause of vomiting, is a sudden contraction of the diaphragm and the abdominal muscles upon the stomach — the stomach itself contracting at the same time in its own muscular structure, as well as being greatly compressed by the action of the muscles above and around it. By a sudden and strong action of this kind being brought to bear in and upon all sides of this organ, its contents must of necessity be expelled; and the situation of the muscular fibers of the diaphragm and cardiac orifice is such, that these parts alone remain uncontracted during the general shortening of

the fibers; therefore the upward channel of escape is the only one left open. This freedom of the cardiac orifice is a necessity during inspiration; and this same pre-arranged freedom becomes the means of escape, and therefore of safety, in the many cases that call for the induction of emesis. (In the horse and a few other animals, a cartilaginous valve within the cardiac orifice prevents vomiting.)

209. The compression of the stomach must of course be considerable. No slight lessening of its volume will expel its contents. If the materials present are of considerable bulk, their expulsion will begin at a limited state of contraction; but when the organ has been so nearly emptied that only a few drachms of any thing remain in it, this debris can not be cast out except by a compression of the organ to an extreme degree. In most cases, vomiting probably still leaves a portion of solid or fluid contents in the stomach; but the act can undoubtedly be carried to the almost complete obliteration (for the time) of any gastric cavity, or in other words to the expulsion of the last ounce of whatever may be in the organ; and in numerous instances it is important to remember that induced emesis *must* be carried to this extreme point of ejection, ere the offending substances will be dislodged and the source of disease be removed.

210. The act of vomiting, therefore, is the very opposite of a relaxed condition. This is shown not only by the condition of the structures in the act itself, but by the facts that, *first*, no vomiting takes place during the full operation of any strong relaxing influence; and *second*, that vomiting ensues when the relaxing impression passes off and prompt reaction follows. Thus, when any mechanical violence has produced concussion, and the patient lies prostrate and pale, no effort at vomiting takes place so long as the state of extreme depression lasts. The patient is then profoundly relaxed; but when this relaxation begins to pass away and the tissues to rally from the state of depression, vomiting is likely to ensue. The longer the prostration lasts, the longer will all efforts at vomiting be delayed: the more sudden and vigorous the reaction, and its consequent contraction, the more sure and forcible will be the emesis. We see in this familiar instance that it is the *sudden* transition from one extreme to the other, that determines the vomiting; for if the relaxation pass off very gradually, and the organism recover its tone slowly, the contraction will not be likely to prove sufficient to cause any upward evacuation of the stomach. Again, if a person is slowly brought under the full relaxing influence of lobelia, he will not vomit while that influence continues. The constitutional effect of this

agent is in fact *utterly opposed to emesis*; and so long as its impressions are profound, no ejections from the stomach will take place. But if sudden relaxation have been induced by it, and then the structures return suddenly to a state of contraction, this contraction will be inclined to pass as far beyond the true medium in the one direction, as the lobelia had carried it from that medium in the other direction; and then vomiting will take place quickly and effectively. But if the relaxation pass off gradually, and the contractile function return slowly, it is not probable that any vomiting will take place.

211. In the above case of prostration from the accident, reaction can be hastened by stimulants, and especially by stimulants with astringents. These of necessity arouse and consolidate the overwhelmed and relaxed fibers; and as they do so, the tissues return to their contractile state so suddenly as to carry them beyond their normal standard for the moment, and this quick momentum in oscillation makes vomiting certain. Were no stimulants used, (by stimulants in my writings, I never mean any form of alcoholic liquor, §52,) few cases of concussion would react with sufficient rapidity to cause much vomiting; but in proportion as stimulation is liberal and the response to it vigorous, will the reaction be speedy and the vomiting forcible — though perhaps but transient. In like manner, if stimulants and astringents are used freely while a person is profoundly relaxed with lobelia, contraction will be hastened and thorough vomiting induced. And in cases where a person is prostrated by carbonic acid gas, or by a large dose of a narcotic which has not yet been absorbed, or by the presence in the stomach of food which is rapidly passing into a state of putrefaction, a large dose of almost any stimulant or stimulating astringent — in the form of fluid, so as to act instantly — will generally procure emesis in a short time. In all such circumstances, capsicum, myrica, polygonum, serpentaria, and other agents of the same stimulating character, may be followed by prompt vomiting; while lobelia, boneset, camomile, or ipecac, would induce no vomiting whatever, but rather make the relaxation worse and the patient more uncomfortable. In the case of any narcotic poison and putrefying food, the exhibition of a

relaxing agent would favor the more rapid absorption of the poison, and thereby increase the danger. (§55.)

212. Again, in cases where the stomach is extremely sensitive and vomiting occurs repeatedly and persistently in consequence, the relaxants are among the most potent of all agents in checking this distressing symptom. A very weak infusion of spearmint, or catnip, or camomile, or lobelia, given in small doses, at short intervals, will quite surely allay the excitement and put an end to the vomiting — providing that acidity of the stomach has first been relieved. The infusion must be quite weak, and the dose quite small; as otherwise the strong and sudden relaxing impression would be followed (in the then tense condition of the stomach) by such a sudden return to contraction as to cause more violent vomiting for the time, though pretty large doses of lobelia at short intervals would ultimately relieve the tension and put an end to the unnatural vomiting.

213. From these well-known facts, it would appear as if all relaxants were anti-emetics, while all stimulants were emetics. But this conclusion would be entirely too general; for the experience of ages shows that vomiting can but seldom be induced in practice without the cooperation of relaxants; while in all but a few conditions, stimulants would be a vain dependence in securing this act. The fact simply is, that emesis is a compound physiological action, resulting through a rapid transition from two opposite conditions — a *sudden* change from considerable relaxation to an equally considerable contraction. If a due grade of relaxation is already present, stimulants are all the extraneous aid that the system may need in any effort to eject the contents of the stomach. If there is already a high grade of excitement with tension, relaxants only may be required for the purpose. But in the great majority of instances, it will be necessary to give a goodly portion of relaxants to loosen the structures; to follow these quickly with stimulating astringents to invite a rapid oscillation to contraction; and by this alternation of impressions, the act of emesis will be brought about. By examining the subject in this physiological light, and by remembering that remedies act only on tissues while the vital force produces all the functional results, (§146,) the complexities and anomalies that appear to surround emetics, will be made plain. And it will also be understood that no relaxant, as such, is, in any sense, directly emetic.

214. *Procurement of Emesis.* — From the above considerations, when properly examined in connection with the points elucidated in sections 145 — 153, it will

be seen that the course to be pursued in procuring emesis, must vary according to the circumstances in each case. Taking an ordinary case of depression, and the subject may be studied in three general steps. 1st. Diffusibly stimulating and somewhat astringent articles are to be used, in the form of warm infusions; and continued at moderate intervals till the system has been pretty well aroused, and an outward flow of the circulation secured. The stimulants put all the structures into a state of general activity and firmness, arouse the susceptibilities of the frame, and incline the circulation to an equalized action; while the astringents consolidate the mucous accumulations in the stomach, and give solidity to the coats of that organ. 2d. A full portion of a relaxant is to be used, (and we look upon lobelia as the most potent article in this connection,) for the purpose of loosening all the tissues, and also of favoring the separation of the now consolidated mucous substances from the coats of the stomach. 3d. Stimulating astringents are again to be used, much more frequently and at shorter intervals than before; and these now induce a rapid contraction of the structures from the relaxation that had been given by the lobelia; and in this the act of vomiting takes place. All the lobelia does not expend itself at once, and so the act of emesis is not likely to be completed at once; but as the last drinks arouse to an act of contraction, this may be followed by a further transient relaxing impression from the partially unspent lobelia; and to this will again succeed contraction and vomiting from the further use of the drinks. In this way, these two conditions may slowly alternate for an hour or two from the use of a single draught of lobelia; and at each alternation, the detachment of the viscid mucus from the stomach will be more complete, and the impression upon the system at large will be greater. Between each oscillation, the true anti-emetic character of lobelia will be manifested in a period during which the relaxation it induces puts an end to all attempts at vomiting and all feelings of nausea.

215. It is necessary, in such case, to use stimulants and astringents previous to inducing relaxation, for then the oscillation of the relaxant will cause the tissues to pass through a wider range in their changes, and thence the subsequent reaction will be more

marked. Besides, when the system is already depressed, an immediate dose of lobelia would relax it deeply, but leave it unsusceptible to the after impression of the stimuli; whereas previous stimulation secures this susceptibility and then the relaxant makes but an ebbing wave, while the further use of stimulants will, as it were, catch the momentum properly belonging to the first stimulants, and thus complete the action. Hence, when the system is profoundly depressed, ordinary stimulants will not answer; but quite strong preparations must be used, and these continued for hours before any lobelia is given. A tea of the officinal composition powder meets all ordinary cases; but must be made pretty strong for very bad cases, or even receive an extra equivalent of the capsicum; and in some chronic maladies, even this may need to be used for several hours, ere the lobelia is administered. On the other hand, when the system is in a great state of excitement, only the mildest stimulants and astringents are required, and these in but small proportions with some cutaneous relaxant — as two parts of zingiber and geranium, with six parts of asclepias, continued at intervals of twenty or thirty minutes, and even aided by a tepid sponge bath, so that a gentle perspiration shall be secured before any lobelia is given.

216. In the case first suggested, (§214,) two drachms of powdered lobelia herb infused in a suitable quantity of tepid water, may be given in two doses ten minutes apart. After that, the patient would need no more lobelia, especially if he had not vomited even when full quantities of tea had been given subsequently. Acting upon the impression that the lobelia is the emetic, and that all the vomiting now comes by its influence, there is a strong temptation to repeat the lobelia unless the vomiting take place promptly. But we have seen that the *full* impression of lobelia is contrary to the act of vomiting; and hence its repetition now would but delay the emesis indefinitely. A regular use of the composition drink, in quantities of two fluid ounces or more every fifteen minutes, is usually all that is required; although, as above, cases of extreme depression may require an additional portion of capsicum. If the stomach is in a state of acidity, the action of the lobelia will be almost neutralized, (§141;) and then it will be advisable to give five or ten grains of the bi-carbonate of soda in a portion of the tea, which will at once liberate the lobelia and be followed by vomiting in a short time. But in cases of fever of a high grade, or in any form of arterial and nervous excitement, it is usually preferable to give the lobelia by small quantities with the relaxing diaphoretic named in the last section. By this measure, the system is slowly

brought under its influence; and then a full draught may be given as before, and the same tea used afterward. This is called using lobelia in "broken doses," and is a plan very suitable to the above circumstances; or small pills of lobelia seed or extract may be used at intervals of an hour, with the relaxing and moderately stimulating diaphoretics between. In most typhoid cases, on the contrary, the stomach and heart may be so relaxed that no lobelia should be given by the mouth; yet the small bowels, gall-ducts, and tubuli of the liver, be obstructed by degenerating accumulations that imperatively demand the action of an emetic. The bowels then may first be unloaded by a cathartic injection, suitable stimulating drinks be in due time followed by a drachm of lobelia powder in mucilage as an injection, (to be retained,) and the stimulating drinks then continued. This method of securing emesis is of immense value in such cases, and also in others where the central organs of circulation are much prostrated.

217. From the manner in which the first two steps in giving an ordinary emetic may thus be varied, it will be seen that the procurement of vomiting is not a blind and bungling routine, but a process of the clearest and most philosophic accuracy. While Allopathic and Eclectic practice has made this act a piece of crude empiricism, the Physio-Medical system thus makes its different steps so many movements of scientific demonstration. And while the first two steps can thus be varied so greatly according to the condition of the case in hand, (§166;) the practitioner can also vary the third step in the process, according to the particular end which he wishes to accomplish. If he want to leave all the fibers of the frame pretty thoroughly relaxed with a soft pulse and a tendency to free perspiration, as in any case of ordinary fever or recent cold, he will make his last drinks mainly of asclepias, with moderate quantities of zingiber and polemonium, and but limited portions of the mild astringents. If the case is one of bilious or bilious-remitting fever, where the liver especially needs relaxation, he can add a fair portion of eupatorium perfoliatum to the articles last named. If the case is a typhoid one, where little astringency is allowed, but considerable stimulation needs to be left as a permanent impression, he can use equal portions of asclepias and zingiber, with

suitable quantities of capsicum. In chronic maladies, where a general flaccidity of the tissues needs to be remedied, the usual composition powder answers every purpose; but if the laxity is great and the depression extreme, an additional portion of myrica and capsicum may be put to this. In this manner, the practitioner can leave behind any impression upon the tissues that varying conditions demand; and by hurrying the operation of an emetic, he can confine its principal effects to the stomach and the contiguous parts, or he can retard the operation and thus make an impression on the most remote structures of the frame.

218. *Purposes Served by Emetics.* — From the above sections, it will at once be inferred that emetics may correctly be applied to a wide range of conditions, and to a great variety of circumstances. The first and most direct use is for the evacuation of the contents of the stomach. For this purpose they may be given in the case of recent ingesta causing colic, cholera-morbus, chills, spasms, etc.; or when partially decomposed food induces a typhoid condition, relapse in any form of fever, or the aggravation of any acute form of disease. In sub-acute and chronic cases, they serve to remove those accumulations of viscid mucus which form a prominent difficulty; secure a better secretion of a better quality of gastric juice; and so extend their influence to the liver and gall-ducts as to secure the dislodgment of that degenerate bile and even gall-stones which so often mark a large class of chronic difficulties. Hence their repeated and persistent use is almost indispensable to the cure of severe dyspepsia with indigestion and acidity; of chronic dysentery and diarrhea; chronic liver complaints, and intermittent difficulties, with other forms of disease dependent upon these conditions of the stomach and hepatic apparatus. In all obstinate cases of this kind, suitable emetics exert an influence upon the organs in question, which it is impossible to obtain by tonics or hepatics alone. The multifarious forms in which troubles from this origin present themselves, at once suggest how wide a field emetics may here occupy. And their repetition at moderate intervals is then often called for by the fact that, when the foul contents of the system have thus been removed, the unwholesome materials that so often saturate the entire frame will soon find their way to the stomach, and again call for ejection. In this way, emetics are the most universal and effective of all known *depurators*.

219. But their action is by no means confined to these central organs. Largely by the influence of the diffusives employed, partly by the freedom secured

through the ejection of morbid materials, but mainly through the peculiar contractions of such large muscular expansions upon the central blood vessels in the direct effort of vomiting, emetics are most powerful promoters of an outward circulation. The act is directly accompanied by diaphoresis ; and if the internal obstructions are fairly removed, (for which purpose a cathartic should sometimes precede an emetic, §175,) the skin is thereby left with its circulation much improved and its functions exalted. By this means, a great advantage is gained over internal congestions; and this equalization of the flow of blood, though not taken into sufficient consideration by all physicians, is in some cases of even more value than the ejection of the morbid materials themselves. Every tissue of the body is thereby embraced under this general influence ; and the secretions of the bowels, lungs, and kidneys, are as much promoted and improved as are those of the skin. As a consequence, emetics always promote expectoration and urination; often facilitate catharsis in a decided manner; give liberty to the menstrual flow, when it has been suddenly and violently obstructed; arrest uterine and other hemorrhage by distributing the blood; aid in a remarkable manner in relieving pneumonia, bronchitis, pleurisy, dysentery, hepatitis, puerperal fever, and all other internal congestions; and rid the system of animal and other poisons, and greatly promote the absorption of dropsical effusions. They also at once relieve asthmatic and other forms of difficult breathing, expel eruptions most vigorously in exanthematous maladies, put an end to all febrile excitement by casting out the provoking causes of fever, and frequently allay spasmodic contractions. To one who is accustomed to look upon emetics as being useful only to evacuate the contents of the stomach, this broad summary of their influences may appear somewhat enthusiastic; but whoever has not employed them with reference to their thus equalizing the circulation, breaking up congestions, restoring nervous equilibrium, and giving freedom to all the secretions, has lost what may properly be considered among their principal virtues.

220. *Improper Uses of Emetics.* — It is not a pleasant thing to take an emetic; physicians like to please their patients, when possible; and therefore it often occurs that emetics are

avoided, or even ignored, in conditions where their use would surpass any and all other measures in decisive benefit. Evidently this procedure has been used many times when it was unnecessary and its marvelous efficacy in such a wide range of maladies, has led some to resort to it as if it were the central remedy in every case. This has begotten a strong popular aversion to emetics, and to the Physio-Medical system; and our opponents have not been backward in spreading the impression that the giving of emetics constitutes nearly the whole of this system — just as the exhibition of calomel for so long a time constituted the brain of the Allopathic practice. Among physicians who are more ready to fawn than to do right, emetics have thus come to be held in much disrepute; and many now avoid them when the very safety of a patient depends upon their timely use.

221. Both these courses are wrong. Emetics have an astonishing power in removing the causes of disease and arresting a variety of dangerous maladies; but even at their best, they constitute only one part of treatment, and can never be made to take the places of baths, cathartics, diaphoretics, or tonics, when agents of either of these classes are called for. On the other hand, it is absurd for a physician to deprive himself of an instrument of such wonderful efficiency; and humiliating for him to yield his own scientific judgment to the whims of a patient. And this is not the wisest course for the patient himself; for it would indeed be criminal to trifle with his life by resorting to inefficient means at a time when all knowledge proved that an emetic was absolutely demanded, and to dally with light pleasantries till the hour of hope had fled forever. When an emetic is not needed, on no account let it be given. When it will be of small efficacy, and other and more agreeable measures will accomplish the work effectually and without any risk to the patient, do not resort to this procedure. But when it is indicated, and when disease would be aggravated and precious time be lost by “trying” other methods of cure, then resort to the emetic at once and vigorously, and bring in other remedies after this one has accomplished the work for which it is designed. The duty of the physician is not to tinker with a patient, and let life ebb out before his eyes while he neglects one-half his work till it is too late to do any thing but sum up his bill. His business is, so to understand his profession that he shall be able to determine clearly as to when an emetic is needed and when not needed; and when he can thus scientifically discriminate in the cases intrusted to him, it is for him to attack disease with any and every and the strongest forces at his disposal, and to insist on having obeyed thoroughly any prescription he may make, or else to

withdraw from all responsibility in the case. The medical man who has not sufficient firmness of character for this, is not at home in this calling; but will surely bring discredit upon his profession and disgrace upon himself.

222. It is not necessary to name each case where an emetic should not be given. Such a task would be futile; for in the changes that occur during any form of disease, a certain course would be eminently proper at one time, but equally improper at another. (§155, *et. seq.*) The intelligence of the physician should enable him to distinguish these changes, and then to give or withhold an emetic according as it will or will not answer a necessary purpose. From the foregoing sections, the precise indications that an emetic will fulfill can be readily determined. Its use, then, may be summed up under some such general rule as this: *Give them when the stomach and liver are oppressed with unhealthy secretions and morbid materials, which are not likely to be removed in safe season by other measures; and when accumulations in these organs are not only weighing upon other portions of the frame, but when they are oppressing the nervous system and are proving decided obstacles in the way of an equalized circulation.* In all conditions that may be classified under this rule, the employment of emetics is positively indicated; but under all other conditions, they are not indicated. They are not required when the stomach and liver are free from foul substances; when their secretions are healthy in kind, even though not sufficient in amount; when depression of the nerves is not at all dependent upon the unwholesome condition of the digestive and hepatic organs; when a cold surface and unbalanced circulation do not spring from these organs; and when there is organic disease of the heart. These conditions embrace a wide range — including also all cases in which emetics have at first been indicated, but have accomplished their work. By possibility, emetics may be given in many of them, and do some good; but that would be making an unpleasant and inappropriate measure accomplish work that could be done far more pleasantly and effectively by other means. In many of the cases — as for instance, when emetics have done the full measure of their work in a typhoid case, or in a case of indigestion in a patient of delicate frame, and

others of the kind — their continued use would prove a source of decided exhaustion.

223. The idea is many times suggested that such and such a patient is *too weak to take an emetic*. We have no hesitancy in denying unqualifiedly that this is ever the case, when the conditions point to the need of this agency. The idea is based upon a misapprehension of the cause of the weakness and of the nature of vomiting. Let the patient be of a feeble constitution, sinking rapidly on the tenth day of a typhoid fever during which no emetic has yet been given, or (if given) no evidence obtained that the liver has been effectually emptied and a flow of wholesome bile obtained. Or let it be a delicate woman in the third day of puerperal fever, in whom the lochia remain suppressed and the stomach unrelieved. Two more prostrated and rapidly sinking patients need not be sought for. When the cause of the sinking is inquired into, it will at once be found in the semi-putrid condition of the stomach, liver, bowels, and whole frame. Unless the corrupting mass is cast out speedily, and effectually, death will be inevitable. A strongly stimulating emetic is superior to any and all other measures to do this; it is indeed the one grand measure for both cases, and to which all other measures are but second. It is absurd to suppose that the frame can not now endure the very thing it needs. That idea belongs to Allopathy, and has no place in Physio-Medicalism; and perhaps in no one thing are the consequences of the two systems of practice more plainly seen than in this. An emetic of tartrate of antimony would certainly destroy the patient; but a lobelia emetic helps cast out the one great source of danger, sets the circulation free, and at once places the patient on the way to health. It is an utter mistake to imagine that, when an emetic is needed, any patient whatever is too weak to take it. Lobelia emetics then bear up the frame, and do not cast it down; and the great danger lies in not giving such an emetic with sufficient promptness and vigor, and in company with sufficiently powerful stimulation.

224. In sub-acute and chronic cases, it is advisable to give an emetic in the evening, and to allow the patient nothing to eat that night. The earlier practitioners of this system were in the habit of allowing food of a pretty solid character, soon after the completion of vomiting; but wider experience has shown this to be unwise, as the stomach is not then in a good condition to digest. Diluent foods are at such a time very likely to sour upon the stomach; and a night's rest from aliment will be a decided advantage. Circumstances may dictate an emetic at some other time of the day; but even then, food should be abstained from for several hours,

though the patient might yet feel hungry and find himself inclined to use a liberal meal. In acute cases, the same general rules should be observed.

225. When apoplectic or epileptic symptoms, or croup, has been excited by the recent use of too much food, an emetic should be given in a form to secure vomiting in the shortest possible space of time. In cases where no such emergency exists, a slower method should be followed. In all febrile and chronic cases, an emetic that operates and is completed within an hour or so, extends its influence scarcely beyond the stomach; and then the patient enjoys probably not one-half the benefit he might otherwise obtain from it. When a profound impression is desirable, the whole operation should cover a period of at least three hours. Hence, in fevers, the diaphoretic treatment should be pushed steadily till the skin is moist, before the full emetic is given; and the stimulants in chronic cases should be used moderately for several hours. After the lobelia has been administered, the use of stimulants at intervals of five or eight minutes is too rapid; and fifteen minutes are better, till an hour or more has passed, and then the draughts may be given oftener. If the patient complain of chilliness and sighing, the lobelia is predominating in its influence; and then stronger stimulants should be used, and be given rapidly.

226. When an emetic is to be given in phrenitis, meningitis, or any other acute or chronic accumulation of blood upon the brain, (and the same remarks apply to acute turgescence of the lungs,) the greatest care must be taken first to obtain a good circulation and functional action over the whole surface. Unless this is done, the outward determination of blood caused by the emetic is so forcible, that, the vessels toward the head being the only ones freely open to it, a strong and detrimental pressure may thereby be thrown upon the brain. The same facts pertain in every case, even in chronic ones, and when the brain is suffering no irritation; but then the determination causes merely a little headache, though it is *always* best to obtain an equalized circulation (to at least a fair extent) before giving an emetic. On this same account, an emetic must not be given in any case of sanguineous apoplexy or threatened

extravasation of blood; nor in jaundice, dropsy, distressing symptoms of indigestion, etc., if caused by organic disease of the heart or its valves; nor in large central aneurisms.

227. All acids interfere with the diffusion of lobelia, (§216;) hence any preparation of this article on vinegar is of no value as a general emetic. It will excite rather sudden emesis, and may be of service in hooping-cough and a few cases of croup; but its action is confined too much to the stomach, and vomiting thus secured will be of insignificant power in promoting the general distribution of blood and freedom of the secretions which are so valuable in emesis. (§219.) Indeed, vinegar lessens the secretion of the skin, and probably that of the kidneys also. Lobelia in tincture is too diffusive, as well as too irritating to the nerves, for emetic purposes. It may be a preferable form for some antispasmodic purposes; but is certainly not equal to the infused herb or seed for emetic uses.

228. The *frequency* with which emetics are repeated depends entirely upon the nature of the case. In acute difficulties, one every twenty-four hours, for two or three days, will be quite sufficient. Sometimes one alone will answer. When a system saturated with poisons (as in typhoid, scarlet, or puerperal fever) causes a re-accumulation of deleterious substances in the stomach in a few hours after an emetic has been given, (§218,) it will have to be repeated oftener. The abatement of perspiration, quickening of the pulse, increasing heat of the skin, and advancing delirium, all show that the morbid obstructions have not been removed, and that further emesis is demanded. Sometimes, in such cases, not more than twelve hours should pass till the procedure is repeated; in some desperate typhoid cases, I have induced light vomiting by enema once an hour for fourteen hours, before the green ejections gave way to natural bile and the center of the difficulty thus yielded; and I have known practitioners, in the most terrible cases of scarlatina, give six powerful stimulating emetics in twenty-four hours, before the patient could be made secure. Truly extreme cases demand such vigor. In chronic maladies, once in three or four days may be often enough. The trouble here is, that this treatment will not always be persisted in. In acid dyspepsia, chronic liver complaints, and similar maladies, the emetic treatment may require to be carried on perseveringly and evenly for some weeks; without which it will accomplish but little, but as a result of which the physician and patient will have the satisfaction of seeing the most utterly intractable of such cases finally yield.

229. An emetic always requires to be associated with and followed by other treatment. The nature of the case will determine what this should be. For purposes of depuration, it has been usual to follow an emetic with an injection to unload the bowels; and then, after a rest of one or several hours, but while the diffusive impression remained, to give a vapor or a tepid sponge bath. This association of measures was called a "Course of Medicine," and this term should not be applied to one or two of these means, but to the whole three. Such a "course" is of immense power in breaking up sudden obstructions, and cutting short acute attacks; and in many thousands of instances has its *timely* use interrupted and terminated the onset of colds and fevers which under any other management would have run a protracted term. The discoverer of this "course" — Dr. S. Thomson — would have deserved the highest honors due a benefactor and a man of genius, had he never performed any other labor for his race. In febrile cases, suitable diaphoretics are to follow an emetic; while in all chronic cases, proper tonics and cathartics (usually hepatics) are required. The action of the emetic is never to be left unassisted, as its impressions will pass away in a few hours; but the advantages it has brought to the organism, are promptly to be secured and sustained by other suitable agencies. Let it be added that Prof. A. Curtis greatly improved on Dr. Thomson's method of giving emetics.

EMMENAGOGUES AND PARTURIENTS

230. *Emmenagogues* are agents which promote the catamenial flow: *parturients* are those which stimulate the expulsive efforts of the uterus. Although the two are technically different, the same agents will usually promote both ends. A great many remedies influence the uterus and ovaries either sympathetically or through the beneficial impressions made upon the body at large; and the number that can be said to act specifically upon these organs, is not very large.

231. In seeking to promote the menstrual flow, the practitioner must duly consider the conditions which have led to its suppression. In chronic cases, the monthly function may cease from general prostration, with indigestion, deficient assimilation, torpid liver, feeble outward circulation, etc. In such cases tonics, hepatics, emetics, stimulating diaphoretics, and similar general measures, must be mainly depended on, according to varying circumstances; and direct emmenagogues used after these measures have accomplished their work — and then but sparingly. In more recent cases, uterine congestion may follow sudden exposure; and then a tepid sponge bath, with such relaxing or stimulating diaphoretics as the skin may require, will usually restore the catamenia. Uterine atony is often accompanied with general atony of the pelvic structures; and then the stronger tonics, with a full share of permanent stimulants, and stimulating applications outwardly, will be the best emmenagogue course. Strong resinous evacuants — as aloes, jalap, podophyllin, etc. — usually excite the uterus by their stimulation of the lower bowels; but any resort to them for such a purpose is bad practice, although mild cathartics and cathartic enemata may sometimes be used to advantage.

232. But the uterine structures may themselves be at fault. Like other portions of the frame, these may depart from the natural standard in different ways, namely: The muscular fibers may be too rigid or too much relaxed; the nervous tissues may be chiefly at fault, either by lack of susceptibility, or from too great sensibility, with feebleness; or the circulation

may be deficient or engorged. Of course the judicious attendant will carefully determine which particular condition is present, before he attempts to treat any case; though too generally the plan is blindly to select any article that is pronounced a “powerful emmenagogue” — by which compulsory management serious mischief and suffering for life are sometimes engendered. The delicacy and extensive sympathies of the female organism demand the utmost carefulness in all circumstances.

233. Most beneficently has the Creator provided means for restoring this important function, and furnished remedies for the varying conditions. Thus, camomile is the best of relaxants for all cases of feebleness with irritability; leonurus is a superior tonic for feebleness and non-irritability; myrrh meets most atonic conditions; caulophyllum is of the first efficacy in nervous feebleness with cramping tendencies; cimicifuga is at once adapted to insufficient circulation; while the large list embracing such articles as polygonum, angelica, senecio, hedeoma, etc., furnishes means to remedy engorgements and congestions. By applying the several agents to the conditions for which they are designed, or combining them in such forms as individual cases require, the practitioner can influence this excretion in a most efficient and sanitary manner.

234. These same facts are applicable in cases of parturition; although even more decided care in discrimination, if possible, is needed here than in the use of emmenagogues. The several parts of the uterine substance may be similarly at fault; in addition to which, labor may be retarded on account of extreme rigidity at the os uteri. Manifestly it would be foolish to use compulsory measures upon the body of the organ, while such local rigidity existed; and in like manner it would be out of place to use a nervine relaxant when the entire muscular fibers were flaccid, or to give a muscular stimulant when the pains were not attended with a due interval of relaxation, or to use any of these when cold extremities and irregular and ineffectual contractions indicated that a viscid state of the stomach was a bar to all proper expulsive efforts. Under the latter circumstances, a very prompt emetic will give instantaneous relief, and probably be followed by the most sudden and satisfactory uterine efforts; nothing will prove such an effectual parturient in rigid os tincae, as a few small doses of lobelia infusion; while the bark of myrica — or its combination in the composition powder — probably has no equal for cases in which the whole system is in a state of laxity, and the uterine fibers especially feeble in their contracting force. In like manner caulophyllum, polygonum,

senecio, uva ursi, and other agents of this class, have their appropriate places; and if each is administered at the proper time, its influence will be reliable; but if an agent suitable only for certain conditions is exhibited when quite different conditions are present, it can accomplish no good result, because it can not give the kind of assistance that the frame requires. It is worthy of especial mention that various astringents have a marked parturient action upon the uterus. Myrica, already spoken of, is one of the most powerful of all the stimulating parturients; uva ursi is also an excellent one; while trillium, leaves of rubus strigosus, hamamelis, and others, are equally valuable. These are not applicable when the vagina is dry and hot; but are to be employed when the parts are moist and soft, and even a trifle flaccid. They are usually combined with some nervine relaxant, as cypridium, when the united effect becomes quite stimulating. If to this some xanthoxylum or other stimulant be added, or if the astringent is combined with asarum or a very small quantity of serpentaria, the stimulating action is sudden and vigorous. Such parturients anticipate flooding in flaccid and leuco-phlegmatic females. They are not emmenagogue, but the contrary; yet in amenorrhoea with atony, astringent stimulants like myrrh and myrica, or trillium and viburnum with capsicum, will prove emmenagogue.

NERVINES, PARODYNES

235. We use these terms as meaning agents which relieve the nervous structures from pain. Our Allopathic neighbors chiefly employ the term *Narcotic*, to express the same idea; and *Sedative* and *Anodyne*, as classes of Narcotics. A scientific phrase should represent an idea clearly. The true action of a Narcotic was fully discussed in sections 86–93; and as no Physio-Medicalist can possibly accept such a method of assuaging pain, neither can he accept the terra Narcotic as applicable to any class of his agents. Dunglison defines *sedatives* as agents “which directly depress the vital force;” and hence this word is equally objectionable with narcotics. It has been the custom for our people to use the word *anodyne*; but the above author defines an anodyne as an agent which “acts by blunting the sensibility of the encephalon, so that it does not appreciate the morbid sensation.” Thus these three Allopathic terms describe only those articles which mitigate suffering by destroying the natural sensibility; and as the idea of such an action is not consonant with the laws of life, we can not accept either the agents or the words that describe their action.

236. The word *Nervine* answers a very good purpose; for as all pain is apprehended by nervous tissue, all relief must be obtained by suitable action on that tissue. Yet many articles expend their power largely upon the nerves, without being especially available in relieving suffering; while on numerous occasions relief is obtainable by articles which do not particularly act upon nerves as such. Thence the term *nervine* is not sufficiently exact; though usage has attached to it a very clear purpose, and it will therefore answer very well. Nevertheless, I would respectfully suggest to the profession an entirely new term in this connection — *Parodyne*. This I derive from the Greek prefix, *para*, “contrary to;” and *odyne*, “pain.” The compound word would thus apply to agents that acted contrary to pain; and in the light of Physio-Medical principles, would present the understanding that they afforded relief by remedying the conditions on which the pain depended, without impairing nervous sensibility.

237. Looking upon pain as a physiological warning of danger, it follows that different forms of danger will occasion different grades and characters of suffering. As each particular condition of disease is a departure of the structures from the healthy standard, and as the duty of the physician lies in giving such agents as will restore the normal standard, no corollaries can be more clear than: 1st, That marked differences in pain indicate differences in the condition of the part; and, 2d, That these various conditions can not be met always by the same agent, and therefore that pain can not at all times be relieved by the same remedy.

238. Pain may arise: 1st, From acute irritation; as of crude substances passing through the bowels and exciting inflammation, a superficial burn or scald upon the surface, etc. 2d, From sudden accumulation of blood upon a part; as in pleurisy, the colic following exposures, chilblains, or other achings of the skin following sudden changes from cold to heat, etc. 3d, From a grade of local congestion that will presently be followed by suppuration; as the throbbing of an abscess. 4th, From the approach of gangrene; as in phlegmonous erysipelas, lacerated wounds, carbuncles, etc. In each of those general classes of cases, the suffering has its own peculiar acuteness and other characters, and a corresponding state of the pulse and the secretions. The conditions being widely at variance, the symptoms will vary also; but in one and all of them, the patient endures pain — and the dull, deep anguish of threatening mortification in class fourth, is usually more prostrating and unendurable than the more sharp and lancinating suffering of class first.

239. Conditions so widely dissimilar as are here grouped together, can not possibly be met by the same agent; nor even by the same class of agents. In the first class of cases, demulcents and the most diffusive relaxants will be called for; while in the fourth class, the strong stimulants will be required, and these in considerable quantities. Every physician knows how necessary it is to distinguish between a colic and a case of inflammation of the bowels; and an ordinary abscess requires a very different course of management from that which would cure a decided carbuncle. The man who would attempt to manage them all alike, would soon learn his utter inability to relieve his patients. His demulcent drinks, and weak spearmint or catnip tea, would do well for the inflammation; but would be powerless to relieve a severe colic. The colic might be abated speedily by a strong composition tea, or some compound tincture of myrrh; but the use of these in the case of inflamed bowels, would further excite the

sensitive membranes, and exasperate the suffering. A lobelia and elm poultice perhaps could not be surpassed for the relief it would afford in a superficial burn, or a gathering breast; while a carbuncle would obtain no ease till treated with ginger, or perhaps considerable quantities of capsicum. Reverse, now, the order of appliances, and the ginger with a very little capsicum would greatly increase the suffering in the bum or the abscess; while the lobelia and elm to the carbuncle would be followed by a deeper grade of suffering and more profound general prostration. Indeed one of the most common errors of the young practitioner is to seek the cure of gangrenous forms of disease by the use of too much relaxation — which course will steadily increase the misery, and favor the absorption of the decaying juices in the part. (§55.)

240. In the eagerness with which medical men search for means to abate suffering, these facts are too generally overlooked. While they are seen and remembered with sufficient distinctness in a few cases, they are not recognized in the mass. The ruling passion is, to relieve pain; and when an article is found to answer in one case, or in one large class of cases, there is a tendency to accept as a conclusion that it will be equally appropriate to all other cases. For instance, when it was learned that lobelia made a superior application in a very large number of local cases — relieving pain and arterial excitement — it was too generally concluded that it would always relieve suffering. This led to its employment in many cases where it would be of no use whatever; and in some cases where its relaxing influence was not at all wanted, and where an increase of suffering would follow its employment. Again, cypripedium was found to be an excellent nervine; and from this it came to be almost universally relied upon in every class of nervous difficulty. But decided feebleness, as in putrid conditions, finds far surer relief to the nerves in such diffusible stimulants as ginger and prickly ash — while the deep prostration of advancing gangrene will have its peculiar form of nervous agitation decidedly increased by cypripedium, and will be improved by such stimulants as the composition powder, serpentaria, or even capsicum.

241. Such observations as these teach the physician that it will be futile to set down to the credit of any agent that it will relieve pain, and then attempt to use it under all circumstances. Unless he will carefully distinguish the conditions that have given rise to the pain, and then adapt his measures to the necessities of the case in hand, he can not rationally hope for success. For as pain arises when the tissues have passed into unhealthy conditions, and as these conditions may vary to such an extent as to be the very opposites in separate cases, ease can not be secured till the healthy condition has been restored. (§84.) If the pain result from too much irritation, sensitiveness, tension; relief can come only by relaxing and diffusing. If the suffering have been provoked by stagnation, and incipient putrefaction; relief can be secured only by stimulating, sustaining and invigorating. This is why the opium and nightshade of the Allopathist, and the aconite and veratrum of the Eclectic, do not cure pain. They do not restore a natural condition, in any case. They merely stupefy; and they do not do even that, till Nature has struggled against them until she can struggle no longer. When their effects have worn off, the nerves are left weak and sensitive, and are more easily provoked to suffering than they were before. (§93.)

242. It is often charged against Physio-Medicalism, that it can not relieve pain as effectively as can be done by the narcotics of Allopathy and Eclecticism. This is a mistake. Our agents can secure more effective relief than theirs; for they are calculated to restore the tissues to a healthy condition, and then there can be no pain; while the narcotics never do and never can bring the tissues to a healthy standard, and hence their relief is but an approach to the stupor of death. (§87.) But Physio-Medicalists have not yet learned all the resources of their own system in this direction; nor the proper places and modes of applying those that are known. We have too generally confined our attention to lobelia, and cypripedium, and skullcap, and a few others. But our Materia Medica is, without question, supremely rich in this class of agents. We can not imagine that the Creator, who has provided such an abundance of sanative agents, and given them such a wonderful power over the simplest and also the very severest forms of disease, has left suffering man with insufficient means for quieting his aching nerves. If there is any deficiency, it comes from man's lack of diligence in research; and from his failure to study the rules for justly applying each agent, so as to have it so used that it will act in harmony with the requirements of the system.

ANTISPASMODICS

243. The term *Antispasmodic* is applied to agents which prove serviceable in relieving muscular irritability with excessive contractions — as in all forms of spasms, cramps, and convulsions. In every such case, the muscular irregularity is dependent upon the fact that the nerves will fail to respond to the vital force with freedom and smoothness; and hence the life power reaches the parts in weakened and interrupted waves. This fact covers all spasmodic affections, whether manifested through voluntary or involuntary muscles. Thence it will at once be apparent that a large variety of conditions may serve as inciting causes for such deranged nervous response; and that the nerves themselves may be in a state either of excessive tension — as in tetanus; or excessive irritability with feebleness — as in hysteria; or extreme feebleness — as in subsultus tendinum in a typhoid case. In any rational attempt at cure, the physician must consider these facts and determine the state of the tissues in each case.

244. Of course the first step in treatment is the removal of any provoking cause — as when faeces in the middle bowel cause cramp in the legs, or worms in the stomach excite general spasms, or irritated gums are the cause of infantile convulsions. And if a turgid state of the brain is the exciting condition; or cerebral or spinal irritation, or the irritation of a stone in the bladder, is the provoking cause, these must be met by agents suitable to their several natures. Thus it is that antispasmodic treatment is largely of the kind that may be called *revulsive* — the turning away disease from its original seat, and thereby giving relief to the dependent and remote parts. All such treatment is of a character that scarcely aims at the nerves and muscles directly, but reaches them secondarily. (§151.)

245. And of agents that do act directly upon the nervous tissues, no one class can possibly fulfill the requirements at all times. In the majority of instances, the nervine relaxants are the most powerful antispasmodics — as lobelia, cypripedium, cimicifuga, etc. Of these, lobelia is altogether the most direct and powerful; and in all spasmodic cases, some one or other of the relaxants will be required. But mere relaxation

can not always suffice — indeed that alone would sometimes be worse than nothing, as when subsultus came from sheer exhaustion with cerebral congestion. In the case just suggested, an outward determination of blood, with full stimulating support to the arterial and nervous systems, is positively demanded. Relaxants alone can not fill these several indications; but while they will serve to prepare a way for better vital action toward the surface, that action itself must be sustained by diffusive stimulants, such as polygonum, or zingiber with capsicum. In a case of severe shock of injury, when the blood has receded strongly toward the centers, large doses of most powerful stimulants, with some relaxants, would be required to diffuse the circulation and allay spasmodic action. The same may be said of the spasms of cholera — a case in which lobelia alone, by relaxing further the parts which were already too much relaxed, would be followed by an increase of the crampings. In hysteria, and general nervousness, the lightest diffusive stimuli are again required; and tonics that combine some stimulation with relaxing power — as camomile, liriodendron, leonurus — become necessary in any measures designed for permanent relief. On the other hand, when uterine or intestinal irritation accompanies any form of spasmodic irregularity, no form of stimulus must be used internally, but such pure relaxants as lobelia, or cypripedium, with demulcents, are used by the stomach, while stimulants may be applied on the outside.

246. Thus it will be seen that the term antispasmodic is a very indefinite one, and embraces both relaxants and stimulants, tonics and alterants, the most diffusive agents and the most permanent. It is always a mere relative term; and while relaxants in some form and to some degree will be needed in all muscular contractions, the vast majority of cases will require some stimulation, and cases of extreme and sudden depression will call for the very strongest stimulation. The majority of the best antispasmodics combine within themselves both stimulating and relaxing properties, in varying proportions — such as caulophyllum, scutellaria, polygonum, asafoetida, etc. The most powerful agents of the two classes are often combined, as in the compound tincture of lobelia and capsicum.

COMBINING REMEDIES

254. Allusion has been made, (§52,) at different times, to the fact that the tissues frequently require a combination of influences. It is only on rare occasions that the isolated action of any one class of remedies — whether relaxants, stimulants, or astringents — will meet all the requirements of the frame; while the great majority of maladies call for a combination of at least two of these, in some proportions. Thus, a true synocha may at times be managed almost exclusively with the relaxants asclepias, lobelia, and leptandra, and these may also be used to much advantage in almost any febrile case; yet an ordinary “cold” (congestion) requires in addition some such mild stimulant as zingiber or polygonum, a typhoid case some capsicum at certain of its stages, (§161,) a case of common scarlatina a more liberal use of capsicum with zingiber, while malignant scarlatina and diphtheria, and similar strong tendencies to putrescence, would need large quantities of capsicum compared to the amount of the relaxants. (§260, 267.) Such illustrations might be multiplied almost indefinitely; but this proposition is the natural outgrowth of the points discussed in sections 159 to 166, so we will at once pass on to an examination of the rules according to which the physician must meet these requirements.

255. The Maker, in his munificence, has bestowed compound properties on by far the greater number of the agents he has placed at our disposal. Only a moderate number can be said to possess one property only — asclepias, lobelia, and leptandra being the most pure relaxants, and capsicum the nearest to a pure stimulant, while the true astringents are most numerous. In very many instances, one property is so predominant that the agent is valued chiefly for it, though possessing other properties — as in boneset and euonymus among the relaxants, xanthoxylum among the stimulants, and hamamelis among the astringents. Taking in the vast number of our *true* remedies, considering the wide range of properties they occupy in this scale, and further remembering the diversity of organs on which they act and the diversity of times occupied in their action, (§131, 134,) and the mind will at once be astonished at the surprising sum of powers that have been provided for the relief of

human suffering. This system is sometimes accused of being deficient in means; but when we observe that not less than 250 agents are already known to us, it is but a plain example in arithmetical progression to learn the influences that may be brought to bear for good by that number of remedies, presenting three general classes of properties in endless diversities of proportion, and each capable of entering into combination with the others. Let any man ring the arithmetical changes that may be made on 200 simples, and multiply these by 10 as a rational figure to express the diversities made by combination, and it will be seen that the extent of the instrumentalities possessed by Physio-Medicalism is somewhat astounding.

256. When different properties are associated in an agent, they maintain a fixed order in the exhibition of those properties, namely: The relaxant influence diffuses itself first, the stimulating influence comes second and usually lasts longer, and the astringent influence follows last and is sustained the longest. This holds uniformly true, whether the total action of the article is prompt, as zingiber; or slower, as polygonum; or quite slow, as podophyllum. It is not to be understood that there is a distinct interval of repose between these actions; for usually they as it were overlap one another — the one commencing before its predecessor has been fully expended, so that they measurably act in concert. The great advantage of this order is at once seen in secernent agents — as where the relaxing properties of fraxinus loosen the tissues of the gall-ducts and liver tubuli, and are followed by a secretion of bile and a separation of the viscid secretions already present, and the subsequent stimulating properties impart to these structures an energy of action which results in the dislodgment and final ejection of these materials. In very many cases, the bile would not be cast out without the aid of a stimulant, as in such conditions a relaxing influence would fill only one of the requirements of the structures. The same facts certain when stimulating relaxants act upon the stomach, uterus, circulation, or other parts. And when an astringing influence follows stimulation, the final impression is that of consolidating the fibers somewhat, lessening their secretion, and leaving them in a state of higher activity resembling tonicity. Where the three influences follow one another in due order and in fair proportion, the results are first depurative and then stimulating tonic — as is the case in the action of the composition powder, where the tonic impression (from the nature of the articles used) is extended throughout the system rather than confined to the stomach. A reversion of this order, as in making astringing quinine precede relaxing

and stimulating secretions, is a reversion of Nature.

257. In the majority of instances, the different properties of an article are expended upon the same series of tissues. But this is not universally the case; for the relaxant quality sometimes is diffused largely to the surface, while the stimulating is expended more internally; and astringency is most likely to manifest itself upon the more central organs, while the accompanying stimulation is more distributed. These facts are, however, true only to a limited extent; as no agent, nor any one property of an agent, is confined to a single part or set of tissues, however prominently its chief action may be expended there. (§131.) Hence it is possible for an agent to combine in itself all three of the acting properties of relaxation, stimulation, and astringency. It is only by judging this to be the case, that we can understand the full action of the bark of xanthoxylum, which is prominently stimulating to the capillary and arterial circulation, relaxing to the skin and serous tissues in a smaller degree, and ultimately somewhat astringent to mucous tissues. The leaves of hamamelis furnish an instance in which prominent astringency is combined with gentle relaxation to the nervous peripheries and stimulation to the kidneys; and the same may be said, in varying degrees, of the root of trillium and the bark of populus tremuloides. But in all such cases the requirements of the system, (§165,) or the influence of a combined agent, (§264,) may determine the united properties of the article upon some one organ. Its action then will be exhibited with an energy that the agent had not been supposed to possess, simply because all its strength is concentrated upon one point. An instance in point is seen in the excellent parturient action of uva ursi when given under suitable circumstances.

258. But the combinations made to our hands by Nature, though so perfect in themselves and so powerful, will not meet all the requirements of a medical practice. Thus, serpentaria is a relaxant and stimulant, reliably sustaining to the capillary circulation, promotive of sweat, and warring against putrescence. Such qualities would seem exactly to fit it for all typhus conditions; but the moment we add the further fact that this agent also excites the

alvine canal and promotes forcible evacuations, it will be seen that it can be used in only a limited number of typhus cases. We are then called upon to make such a combination of other agents as will meet the requirements of the case. Asclepias is a relaxant, and a decided promoter of perspiration; zingiber is a diffusive relaxant and stimulant, sustaining capillary circulation; capsicum permanently sustains the heart and larger blood vessels, and arrests putrescence. In these three agents combined, we find the very qualities needed in some stages of nearly all typhus cases. One case may require but little relaxation by asclepias, and another one much; one may scarcely require any capsicum, and another one need a free portion. (§159, 162.) By striking a balance between these several requirements, the physician can increase or lessen the proportion of either of the agents in combination, and thus meet the changing conditions of the case in hand. Other agents may be used in lieu of asclepias and zingiber, though none really fills the place of capsicum.

259. Leptandra is one of the best of all relaxants to the liver; and directly favors the secretion of more bile, and the loosening of bilious accumulations in the hepatic tubuli; but in numerous cases where the liver needs just such an impression, the leptandra alone would induce so much relaxation that the bile could not be ejected after it had been secreted and loosened, unless some capsicum, gentiana, or similar article were used to arouse the expulsive action. In cases of sudden and extreme prostration, capsicum is one of the most valuable agents for its action on the heart and arteries; but the prostration of the nerve centers may be so great that its impressions can not be distributed, but will remain in the stomach almost unexpended till associated with some lobelia or other nervine relaxant to precede it, and as it were open the way for it. This is very effectively done in the third preparation of lobelia. Similar illustrations might be suggested at great length.

260. The shades of difference that will present themselves in the shifting conditions of the system, are very numerous. The detection and proper appreciation of these are subjects to be treated of in works upon Practical Medicine. Having decided upon what varying proportions of stimulation and relaxation or stringency are required, the physician has it in his power to combine them at his pleasure; and he can also direct them to the same part, or to different parts, according to the requirements of each case. Relaxants being most diffusive, thereby secure a more prompt and more widely distributed action from any stimulant with which they are combined — provided that the relaxant

is naturally more diffusive than the stimulant used, as when lobelia is connected with capsicum. If the relaxant is naturally low and local in its action, it will still secure great promptness and intensity of action upon the part from a similarly slow stimulant, as when leptandra is combined with capsicum. Thus relaxants both hasten and intensify the action of stimulants; so that the results of their combination will be more marked than from the *same quantity* of stimulants given alone. Much the same facts pertain to a moderate portion of stimulants combined with relaxants — the impressions made by the latter being more forcible than if used alone, as when zingiber or xanthoxylum sustains the fullest diaphoretic action of asclepias. The physician will need to bear these facts well in remembrance, when prescribing agents in combination; as he can thus secure a vigorous impression from a compound, and save much precious time by a suitable association of remedies, which he could not gain if he failed to unite them. The quantity of either one that shall be given in concert with the other, will depend entirely upon the requirements of the case in hand — it being customary to employ much less stimulation than relaxation, especially if using such stimulants (as xanthoxylum or capsicum) as have a great deal of acting power in a small bulk. Even when especially seeking or the peculiar influence of a powerful stimulus, it is rarely necessary to have it in excess of (or even equal to) the relaxant with which it may be combined.

261. The particular *kind* of stimulus used to sustain the tissues that are influenced by relaxants, and the relaxants to open the way for the better distribution of stimulants, will depend materially upon the condition of the patient and the objects to be obtained. In the case of using *relaxants* to which stimulants are to be added, the following suggestions will need to be observed: 1st. If diffusives are employed for the purpose of chiefly influencing the surface, diffusive stimulants should be selected, as zingiber, polygonum, polemonium, xanthoxylum, etc. If it is at the same time desirable to sustain the heart and larger arteries, or to secure an ultimately strong vascular action, or to counteract a putrescent tendency, a moderate portion of such a permanent article as capsicum should further

be added, (or myrica may be used, if the case admit of an astringent;) but it is rarely proper to add capsicum to a diaphoretic relaxant without occupying the intermediate position with some of the diffusive stimulants just named. 2d. If slow agents are given for the purpose of influencing some particular organ, then a slowly acting stimulant like capsicum is to be selected in smaller proportions, or some tonic peculiarly stimulating to that structure may be used — as when gentiana is added to leptandra for the benefit of the liver, or hydrastis to rheum for the better effect of the latter upon the gall-ducts and bowels. When *stimulants* are being used, the same general course is to be followed — using diffusive relaxants like lobelia or asclepias when it is desirable to distribute the impression through the system at large, and local relaxants like eupatorium or verbena when the impression is most required upon more central parts. The employment of chelone or eupatorium with senna, is an illustration of the advantages to be obtained from combining a relaxant tonic with a stimulating evacuant.

262. Unless in cases of extreme tension of all the structures, (a condition very rarely observed,) it is injudicious to combine too many relaxants. Thus, a compound of lobelia, cypripedium, eupatorium, and camomile, would be so nearly a pure and general and permanent relaxant in its influence, that its use would also most surely occasion a feeling of languor and sense of exhaustion. (§54, 55.) However much the system might require relaxants, such a combination would quite assuredly carry the impression too far; and the patient might feel the worse instead of better for treatment, by thus overdoing one kind of medication and not sustaining the relaxed organs properly with stimulation. The same remarks would hold true if a tonic compound were made up of such nearly pure relaxants as eupatorium, verbena, liriodendron, and cypripedium; or if an alterative preparation were made from arctium, celastrus, euonymus, and leptandra. In all such instances, the system will have its wants far better satisfied by a combination of two, or at most three, of the relaxants with a small quantity of one or two stimulating articles of the same general class, according to the second suggestion for the use of relaxants in the last section. The same general facts pertain in the administration of stimulants. A combination of xanthoxylum, caryophyllum, capsicum, and guaiacum, would be almost unendurable to the human stomach, so local and intense would be its impression; a tonic association of hydrastis, gentiana, sabbatia, and jeffersonia, would soon overexcite the stomach and cause misery and

oppression; while an alterative sirup of guaiacum, stillingia, podophyllum, and menispermum, would prove equally objectionable. In all these several cases, mild and somewhat diffusive stimulating relaxants (usually called *aromatics*) will be requisite in order to secure uniformity in the remedial impression, and to be at all grateful to the stomach and system. There is a great tendency to make up *strong* tonic mixtures, and *strong* cathartic preparations; and some physicians deem it almost puerile, and a detraction from good remedies, to put orange peel or coriander with such tonics as gentian and sabbatia, and anise or fennel or ginger with such evacuants as juglans and apocynum. But such gentlemen are wholly mistaken, and are liable to weary the organism of their patients by a too forcing use of otherwise really good agents; for the principles of harmonious physiological action unmistakably prove that therapeutical science must dictate the balancing of all intensely stimulating and local remedies, by associating with them some of the diffusive aromatics as adjuvants.

263. *One Agent Influencing Another.* — All physicians are familiar with the facts that a diffusive relaxant given in warm infusion, will secure perspiration more speedily and surely than if given in any other form; and that certain relaxing tonics, (as camomile, eupatorium, and verbena,) by being exhibited in warm infusion will act as diaphoretics. (§136.) Warm water of itself is a relaxing diaphoretic; and in addition to presenting the medicines in a more diluent form, seems to carry them along with it to the surface. Capsicum of itself has but a limited tendency to act upon the blood vessels of the surface, preferring to manifest its chief power upon the central circulation; but when combined with warm water, it will manifest a decided impression upon the skin first, and upon the heart after the influence of the warm water has passed away. Lobelia combined with honey or sugar, exerts its power mainly upon the respiratory passages; and such a preparation is a largely relaxing expectorant, but will exert only a meager influence upon the circulation in any febrile case. The saccharine substances are themselves expectorants of the slightly stimulating order; and by associating lobelia with them, they seem to influence the expenditure of the remedy upon the air

passages. If lobelia is prevented from diffusing itself through the system, it may so expend its power upon the alvine canal as to be followed by copious catharsis, (§141, 172;) and many agents which are readily enough diffusible in warm infusion, are likely to confine their principal influence to the stomach and bowels, or other central organs, if given by cold infusion. Even the astringing influence of myrica may be distributed largely among all the tissues of the body, by combining it with suitable relaxants and stimulants, (§206, 248;) the latter agents thus carrying along with them a considerable portion of a medical property that rarely is felt beyond mucous membranes.

264. Instances of the above character are numerous. Many of them are well known to physicians of good experience; but the extent to which they reach, and the true principle to which they naturally point for making combinations, have never yet been discussed. After investigating these subjects for many years, and making numerous careful observations upon them, I offer the profession the following rule by which to guide their combinations: *An agent which influences two or more organs, may be largely diverted to either of them by being combined with an agent of nearly equal acting power which especially influences but one.* To illustrate, apocynum influences gall-ducts, bowels, and kidneys. Taking fifteen grains as an average dose, and combining that quantity with half an ounce of eupatorium purpureum, to be given by cold infusion, and it would be found that the larger quantity of the relaxing eupatorium will proceed to the kidneys, and open the way for the smaller quantity of stimulating apocynum, (§256;) and as a result of this combined influence upon the kidneys, the secretion of urine will be greatly increased, but no hepatic or alvine evacuation will follow. I have at times given as many as forty grains of apocynum in ten hours, thus combined, and obtained from it only the most trifling cathartic action. But now combine fifteen grains of apocynum with ten grains of serpentaria, in powder. Both agents will act upon the kidneys and bowels; but the apocynum here predominating, and the form of administration being most suited for action upon the intestines, the evacuant effect will be unusually sharp and thorough, while no effect whatever will be observed upon the kidneys — or at most no greater effect than will often follow a stimulating evacuant under ordinary circumstances.

265. In like manner, by combining a small quantity of ipecac with asclepias in warm infusion, a greatly increased action upon the skin will be observed; while ipecac with apocynum will materially enlarge the fluid

stools of the evacuant, and with polygala will largely promote expectoration. Trillium and convallaria combined with caulophyllum, will both show a distinct impression upon the uterine organs; but if these two agents are associated with aralia and lobelia, the action of the whole will be determined toward the lungs. In like manner, almost any tonic can be directed to the uterus, by associating it with agents that have an especial reference to this organ; and such general articles as lobelia, capsicum, boneset, and others, can almost at pleasure be determined upon any organ by suitably combining them with other agents. The action of capsicum upon the liver, in company with leptandra, is well known; and it can with equal facility be diverted upon the uterus by associating with it such emmenagogues as senecio or such parturients as caulophyllum; or turned upon the kidneys by combining it with such diuretics as eupatorium purpureum or the leaves of amygdalis persica. It is only requisite, in any such case, that the agent thus diverted shall be subordinate, in the amount of acting quantity used, to the other or controlling article. The articles should also have some resemblance in the time occupied by their action; as an extremely diffusive agent, like gaultheria, might readily expend all its power upon the kidneys before the slow apocynum would begin to act at all, and then the apocynum would not be diverted from its more harmonious channel of the gall-ducts and bowels by such a fleeting companion.

266. At first thought, these propositions might seem so anomalous as to be impossible. But we are perfectly satisfied, by continued observation, that these illustrations, and hundreds of others like them, are correct — the reader being careful to understand that not the *entire*, but only the far greater portion, of the properties of an agent may thus be diverted. And there is nothing anomalous in these facts, nor in the rule which they serve to establish; for a little reflection will show that they accord fully with the experience of the entire profession in combining relaxants and stimulants, as discussed in sections 259, 260; that they harmonize with the well-known doctrine of agents being directed by the vital force to the point where they are most needed, (§138,) at the same time showing how fully the sanative agents harmonize with the life principle, (§53;)

and that they are but another and a wider form of employing influences to expedite or retard the specific impressions of remedies. (§135.) And the clear apprehension of this rule will show to the physician that the admixture of remedies should not be left to crude accident, but should be made a question of close scientific investigation; for the value of numerous articles can be greatly enhanced by giving them in suitable company, while an utter disappointment may be suffered in the use of many agents by unwittingly using them in compounds which determine their action to a point quite remote from the one at which they are desired. I can merely outline this interesting topic in this brief manner; but I commend to the profession its careful consideration as opening a field of great extent and diversity, and one which can not fail to yield rich advantages in daily practice.

TONICS

247. Under the term *Tonic* are included all agents which impart a fuller vigor and a stronger acting power to the system. Cathartics, emetics, baths, and similar depurating measures, secure to the frame a sense of relief and increased strength, merely by ridding it of depressing accumulations. But these are not tonic in the true sense of the term; as under this are brought only such means as give, by their own action, slowly and permanently, greater firmness to the tissues.

248. Derangements of the stomach are the most prominent origins of general weakness; hence it is customary to look upon tonics as agents that improve the condition of the stomach; and as digestion is the one grand function of this organ, a tonic has come to be held as synonymous with a promoter of digestion. While these facts are true in part, they are not universal; for other tissues than the stomach frequently need the true tonic influence, and some of the purest tonics act upon remote structures without promoting digestion at all. Thus, after the acute stage of scarlatina, the system is not unfrequently contaminated with the peculiar virus of that malady; against the depressing influences of which the composition powder is a superior tonic — at once consolidating the tissues, sustaining the blood vessels, and eliminating the virus through the natural channel of the skin. Cinchona and its alkaloid, (quinia,) are peculiarly tonic to the nervous centers, yet have only a limited action on the stomach, and quinia can scarcely be said to promote digestion at all. Juglans, in addition to being hepatic and cholagogue, exerts a very favorable tonic action throughout the bowels; but it has no influence in improving the function of the stomach, except through the relief it secures to the biliary organs.

249. Yet it is nevertheless the fact, that the great mass of tonics do act more or less upon the stomach. As the nourishment of the entire frame is dependent upon this organ, any general feebleness that arises from insufficient digestion is effectually reached by improving the digestion. And organs that are similar in structure, and intimate in sympathy, with the stomach, may be directly improved in strength by agents which otherwise expend their main

influence upon the latter organ. (§129, 138.) Hence the uterus and its appendages are so largely and positively influenced by hydrastis, fraseria, and similar stomachic tonics; though there are also tonics — as viburnum and leonurus — which particularly influence the uterus, and act on the stomach secondarily. Indeed, the propositions enunciated in sections 129, 131, and 138, have peculiar illustrations in the action of this class of agents; and while their use is demanded more repeatedly than almost any other class, the most careful discriminations must be made ere that use can be effectual.

250. *Classification of Tonics.* — Beginning with those which act chiefly upon the stomach, and tonics will be found readily divisible into three general classes, namely: 1st. Those in which stimulating qualities predominate, as hydrastis, gentian, helonias, sabbatia, etc. These possess a medium portion of relaxing influence; but the excess of their stimulation fits them for sluggish cases, in which the impressibility of the stomach is low. 2d. Those in which relaxing properties decidedly predominate, as boneset, verbena, liriodendron, camomile, etc. These have extremely slight stimulating qualities, (the boneset approaches a rather pure relaxant;) and hence are adapted to over-sensitive conditions of the stomach. 3d. Those which possess a large portion of astringing power, as cinchona, cornus, salix, etc. These usually possess some degree of stimulation; but their astringency adapts them to conditions of sluggishness with extreme mucous relaxation. In using any tonic, then, the condition of the stomach and bowels must be understood, and the remedy selected accordingly. Thus the stimulating helonias or sabbatia would be out of place when the stomach was in a state of chronic irritation; and instead of imparting strength, would but increase the excitement and suffering; while camomile or boneset would exactly meet the condition, and impart grateful relief. On the other hand, boneset or verbena would be of no use when the stomach was sour and lined with viscid phlegm, the surface cold, and the bowels inclined to looseness; but such agents would increase the laxity which was already too great, and would thus cause the patient to feel more feeble; while hydrastis or cornus would give the tonic action desired. And again, cornus or salix would be wholly out of place when the bowels were constipated from rigidity of muscular structure and deficiency of mucous secretion, but would render the patient more uncomfortable by; adding to the alvine dryness and rigidity; while such an article as boneset or verbena would give effectual relief.

251. It is probable that every experienced practitioner has made some classification of the above character, at least with some of the leading tonics in prominent cases. But scientific accuracy requires that the classification be made universal, so that each and every tonic may be assigned to its appropriate place. And this classification must extend to those tonics which act so largely upon specific organs; so that time shall not be lost, and disappointment be endured, by attempting to improve digestion with quinia, which acts almost exclusively as a stimulating tonic to the nerves — scarcely advancing the digestive function at all; or by endeavoring to tone the nerves by the relaxing cypripedium, when the more stimulating scutellaria is needed. It is not to be expected that any tonic will confine all its influence to any one tissue, for in the nature of physiology this is impossible. (§130.) But when an article acts upon a particular structure with nearly its entire force, it will be weak practice to employ it for another structure upon which it expends only an insignificant amount of its virtues. And if the agent selected acts with specific qualities upon any particular organ, it must also be considered whether or not it acts as that organ needs at this particular time; that is, whether it relaxes, or stimulates, or astringes the part. By making such a classification, and such discrimination, the practitioner will be enabled to employ his tonics with great accuracy, and with corresponding good effect.

252. *Abuses of Tonics.* — These agents are subject to many quite wrong applications, from a misunderstanding of the true field they are calculated to occupy. So soon as a patient is feeble, or complains of feeling “weak,” it is a too common practice to direct the use of tonics at once, without duly considering the occasion of that weakness. Quite too indiscriminately is the same general prescription made for debility arising from an enfeebled stomach, sluggish liver, occluded gall-ducts, etc. (§165, 166.) A moment’s reflection will show that mere tonics can be useful only in the first of these cases; while in each of the others the retained secretion must be eliminated before any form of tonic can be of use. An instance of this kind is found in the popular management of ague, where the antiperiodics (stimulating tonics to the nervous system) are almost the sole dependence; but where no cure can possibly be

effected till suitable measures have been employed to cleanse the stomach and bowels, reestablish the functions of the liver and skin, and distribute a full circulation. When these things have been done, three-fourths of the disease have been removed; and then appropriate tonics will easily effect the other one-fourth, providing the secretions and circulation are still duly maintained. But in the antiperiodic practice, the nervous centers are pushed inordinately, while the secretions and circulation are not attended to beyond a moiety of their requirements; and as a consequence, while the nerves are for the time so forced as to forestall that nervous agitation which constitutes a “chill,” the actual elements of the disease steadily accumulate and more deeply spread the roots of the difficulty.

253. In a still more marked degree are the tonics misapplied in some forms of fever, under the misnomer of their being “febrifuges.” For example, take the very common employment of quinine in typhoid fever, typhoid pneumonia, and similar conditions of great prostration. However much the nervous system may demand sustaining under such circumstances, it is futile to hope that any strength can be imparted to it while the frame is saturated with the very elements of putrefaction which were the sole cause of that nervous depression. Manifestly, these semi-putrescent materials must be thoroughly ejected from the system, ere the nerves can be maintained effectually; as otherwise, any attempt to use tonics would be like trying to obtain sweet water from a stream whose fountain was tainted. It is true that the system must be sustained to a certain extent, in order to effect the process of elimination; but that support must be of a character to keep all the emunctories thoroughly open, while the circulation is duly maintained by diffusive and general stimulants. (§160, 161.) This kind of action is precisely that which quinine (and also salicine, cornus, etc.) does not secure; for while this article drives the nervous centers more vigorously than they even now require, it notoriously shuts up the whole round of secreting organs, and tightens up every tissue of the frame with unnatural tension. These facts have long been known to all schools of medicine; and hence no well-informed practitioner will attempt to give quinine till some impression has been made upon the emunctories. But even then, the general practice gives this article regularly quite too soon after the secretions have been started, and long before the frame has been relieved from the mass of impurities with which it had been saturated. The consequences of this course are seen in the dry tongue, confined bowels, parched skin, and protracted delirium, which mark typhoid patients

under the quinine treatment for many days longer than is common under other and more suitable management. (§163.) Such a course of tonics, at such a time, can give no strength whatever; but will prove as useless as would strong food when the stomach was too feeble to digest it. It is only after the emunctories have every one been effectually opened, and through them the system purified completely of the morbid accumulations, that such tonics can be used, and then but sparingly. Previous to that moment, it is an abuse of good articles to resort to tonics under the false idea that they can impart strength. And by whatever name a malady may be known, the use of tonics, (especially of an astringent character,) before the secreting organs have been well opened, is a misapplication of these articles — a rule, however, which does not affect the employment of stimulating relaxing tonics with secretants, to promote secretion in chronic cases.

DOSES OF MEDICINES

267. The practitioner naturally desires to know what quantity of an article should be given. This is a question to which no definite answer can be returned; for the temperament of the patient and the conditions of the structures will have much to do in determining the amount to be used. All that can be said of any agent is, that a stated quantity of it is an *average* dose for an adult, when certain effects from it are desired; and then the practitioner should so fully understand the differences between the susceptibilities of temperaments, and the variations made by age, sex, and present state, as to increase or diminish this average according to the case in hand. A few general considerations will indicate the leading facts on these points.

268. First, then, every agent has its own amount of strength, or acting power, in a given bulk. The differences in this respect are very wide. One or two grains of capsicum would represent a full average dose; but twenty grains of asclepias would manifest no greater amount of action than the two grains of the other agent, while fifteen grains of apocynum or eight of podophyllum would equally represent a fair influence of these articles. As capsicum expends its strength rather slowly, doses of it need seldom be repeated oftener than once in four hours for chronic cases, or once an hour for acute cases, and not always so frequently as this, (§134;) asclepias expends itself more quickly, and usually requires repetition every hour or less in acute cases, but is scarcely applicable to chronic cases unless in slowly-acting combinations; while both the nature of apocynum and podophyllum, and the physiology of the organs they act upon, dictate their repetition at long intervals — as twenty-four or even forty-eight hours, yet occasionally oftener. (§176.) These facts are easily recognized when an article is to be used by itself, but it is necessary also to bear them in view when forming compounds, lest an agent be given in too large or quite too small quantities, or a slow agent be used with those which require frequent repetition. (§264.)

269. The conditions of the organism being the same, it will be found that persons of the nervous temperament respond to the action of

remedies more quickly than do others; next in promptness is the sanguine and the sanguine-nervous; the sanguine-bilious comes third in order, and requires pretty liberal quantities; the bilious demands quite large doses; while the lymphatic, and a considerable admixture of the lymphatic with the bilious, will need quantities that to the nervous would seem almost enormous. In the same order will the doses need to be increased in frequency; for the intense activity of the nervous temperament will distribute remedial impressions much more rapidly, and therefore these will lose their effects more early, than in the bilious or lymphatic temperament; and hence the nervous and the nervous-sanguine require their potions at correspondingly shorter intervals than do the more sluggish. On these accounts, it is generally preferable to select remedies mainly of the more prompt kind for the susceptible; and those which are slower, as well as more powerful, for the other temperaments. Thus, among tonics, such articles as camomile, liriiodendron, fraseria. and scutellaria, are more grateful to the nervous than would be gentiana, sabbatia, and jeffersonia; while the latter articles would be more effective and employable in the bilious and lymphatic. Note that the more intense agents are not to be employed in the susceptible constitutions, but that they should not be used alone, and should be compounded with the lighter tonics greatly in excess; and *vice versa* with patients of more sluggish frames.

270. In persons of the same temperament, women are more susceptible than men. In speaking of the doses of an agent, the most customary average is that which has been found suitable for a middle-aged man of the sanguine-bilious temperament. From this it is probably fair practice to deduct one-fourth for a woman; and then hold these relative proportions between the sexes, as the scale of quantities is shifted up or down according to the temperament. Younger persons require much less than an adult; while quite old persons usually require more. The following table will give a fair approximation to the quantities required at different ages:

TABLE OF DOSES ACCORDING TO AGE.

Age	25.	Let the full dose be.....1, or 1 drachm.
“	18	will require ..2/3, or 2 scruples.
“	14	..half, or ½ drachm
“	7	.1/3, or 1 scruple.
“	4	.1/4, or 15 grains.
“	3	.1/6th, or 10 grains.
“	2	1/8th, or 8 grains.
“	1	1/12th, or 5 grains.

The average dose of an article is sometimes divided into two or more portions, and given at short intervals, so that one portion shall be administered by the time the previous one had partially expended its strength. This is called giving an agent in *broken doses*; and is a method especially suitable to acute cases, when diffusive remedies are being used.

271. The habits of individuals often make a material difference in their susceptibility to medicines. Those addicted to alcoholic drinks, fermented liquors, and tobacco, require larger relative doses, according to their temperament, than those who have not pursued such habits. The users of opium are peculiarly blunted to all remedial influences; and it is often impossible to make any definite calculation as to the amount of any agent required to influence them — such persons often requiring twice or thrice an ordinary dose, if they are still using or have recently used the narcotic, though all cathartic agents have to be employed with the greatest caution on those who have recently stopped the habit. (§121.) Any mode of life which induces a full bony and muscular development — such as the stronger mechanical and all outdoor labors — will necessitate some increase of the average doses, while sedentary life and non-muscular pursuits increase the susceptibilities of the system to smaller doses. For the same reason, persons who are habituated to city life, are much more readily influenced than those who live in the country; and a city practice generally calls for the milder agents much more liberally than for the stronger ones. The differences in

this respect are so great, that city residents usually require but about two-thirds as much of any given agent, other things being equal, as would be required by persons of the same constitution who live in the country. It is from this great impressibility of city people, and particularly of those of them with an extreme development of the nervous temperament, that the pellets of Homeopathy effect any palpable results; for upon the more dense and muscular inhabitants of the country, such quantities even of poisons, (§105,) scarcely induce action enough to be noticed.

272. Different forms of disease also exert a most marked influence upon the amounts of remedies that will be required. Even here, however, the facts will be found but a new form of the rules already named as to the influence exercised by the varying temperaments. Where the malady is of a nature chiefly to involve the nervous system and greatly to exalt its sensibility, the doses of an agent will need to be materially reduced. This not unfrequently occurs in cases of irritated stomach and bowels, highly excited uterus, erethism of the brain and spinal cord, and constitutional irritability. In the majority of such cases, and especially such as are of recent origin, quite small portions of any remedy will produce the full effect of larger doses in ordinary cases, and sometimes the system will seem to revolt at the too violent impression made by even a reduced portion, and will require the agents in almost Homeopathic attenuation. In such cases, however, these limited quantities, especially of diffusive remedies, will need to be repeated at quite short intervals, as for nervous temperaments. (§269.) In cases, on the other hand, where the nervous impressibility is much lowered, and the vital action greatly depressed, the quantities will need to be increased much beyond the average. Such is the case in cerebral congestion, pulmonary congestion, and all other congestion — especially as relates to outward appliances (§142;) dropsy and all forms of serous effusion, tardy or suppressed exanthemata, malignant scarlatina and diphtheria, low typhoid, and all forms of putrescent maladies; and in the presence of such uneliminated viri as those of scarlatina and syphilis. In some of these instances, it will not only be necessary to enlarge the common quantities of most of the remedies, but it may seem almost impossible to administer enough of suitable articles — the sensibilities being so deeply blunted, that really enormous masses of even the stronger stimulants must be used.

273. In all cases, again, that particularly involve the fibrous and fibro-serous tissues in a state of high

tension with excitement, large portions must be employed, and the repetition will have usually to be rather frequent. Among instances of this kind may be named true synchona, tetanic convulsions, articular rheumatism, periostitis, and most cases of bilious intermittent fever and acute hepatitis. Such conditions may be considered as the greatest extreme of the same density of fibrous structure that makes bilious temperaments so tardy in yielding to remedial impressions.

274. These suggestions, while correct as therapeutical laws, can be but general; and the specific application of them is to be left to the province of Practical Medicine. But it remains to be noted here, that great perseverance in the use of remedies is sometimes a matter of the first importance. While a moderate quantity may, in a limited time, overcome the diseased condition in a great many cases, other cases will require large quantities and much time. The word *time* is here used relatively; for while six or eight months might be but an ordinary period to occupy in the treatment of some chronic cases, three or four days would be a long time to continue some particular management in some acute maladies. There is a strong disposition among many physicians to change their prescriptions at every visit, without duly considering whether any change in the condition of the patient requires such change in the management. (§166.) This is the more apt to be done if the case is not improving. In some instances, this course is adopted on the mistaken idea that it will give the friends increased confidence in the skill of the practitioner; but probably in most instances grows out of the system of prescribing specifics for disease by name. (155.) The moment the physician allows that idea to have place in his mind, he feels that he has not “hit upon the right remedy” each time that he finds his patient unimproved from his last prescription; his next step must be to “try” something else, in the hope of getting the right thing; and thus he drifts long without any confidence in his own diagnosis or in the correctness of his therapeutical applications, while the poor patient is as a football to the doctor’s daily “tryings.” When poisons are the articles administered, the condition of the invalid is a truly wretched one; and it becomes simply a question which is the stronger, the poisons or

the sufferer’s constitution. The true Physio-Medical practitioner, studying disease only as certain conditions, and dealing in agents that are perfectly harmless, first decides upon what class of agents are required in each case; and then he gives the selected articles till they accomplish their purposes, be the quantity great or little, be the time long or short. If his patient does not improve as was expected from visit to visit, the same treatment is to be pursued all the more vigorously; but no change is to be made till such a change of conditions is diagnosed as shall make other or additional treatment necessary. It is no part of the Physio-Medical philosophy decide that certain remedial impressions are needed in aid of Nature, and then to stop short of making those impressions to the fullest requirements of the case. (§64.)

275. The question is sometimes raised as to whether remedies do not lose their power to affect the frame, by being long continued, so that the dose will have to be increased. Such is the use with all poisons, against which the organism has to establish continual warfare; but I have never found it so with truly sanative agents. An article (as a cathartic) may be given in excessive quantities, and so weary a part by over-stimulation of it (§57;) and while that weariness lasted, the fair effect of the agent could not be procured by the average dose. Even in these cases, however, I have always noticed that, so soon as the weariness of over-exertion had been rallied from, the average dose of the medicine would have the same effect as before. In the continued treatment of chronic cases, it may be advisable to accommodate the stomach by changing from one set of articles to others of the same class; but this is a matter of pure accommodation to the stomach and palate, even as variation in food is desirable, and never, so far as my experience extends, becomes a necessity on account of any truly physiological remedy ceasing to exert its legitimate effect upon the frame.

DEMULCENTS — ESCHAROTICS

276. *Demulcents.* — Articles of this class have a beneficial impression under many circumstances, but their action is more physical than remedial. Applied outwardly, as in poultices, they retain warmth and moisture, and thus prove relaxing; and they also absorb unwholesome discharges, and serve as a vehicle to hold in position pulverized remedies of any class required. Inwardly, they lubricate the mucous surfaces, and prove soothing in inflamed conditions of the stomach and bowels. They similarly affect the lining of the uterus and vagina, whether given as a vaginal injection or used by the stomach; and nearly every remedy of this class seems to pass in part through the kidneys, whence demulcent drinks are always of much service in all forms of acute irritation of the urethra, bladder, prostate gland, or kidneys. They slightly increase the amount of urine; but their chief action is upon the mucous structures. They form valuable soothing injections, by themselves; and are largely employed as a vehicle for conveying powders by injection, so that the remedies may be the more quietly retained by the bowel, and act the more slowly. For similar reasons, they are many times used to convey very bitter or highly stimulating powders to the stomach. In some instances they are used in forming a pill mass, on account of the tenacity with which they bind powders together. Some remedies combine demulcent with their other properties, as symphytum, convallaria, liriodendron, and hollyhock. All agents of such properties are likely to exhibit much of their action upon the lungs.

277. *Escharotics.* — Agents of this class are not remedies. They possess no curative action whatever; but are useful only to break down and destroy small masses that demand some form of violent removal. They are admissible for similar purposes, and only on the same grounds, as the scissors or knife or ligature of the surgeon. Most of them are capable of destroying the healthy as well as the unhealthy structures; hence they should always be limited to the particular surface which they are intended to destroy, and should be so diluted that the really sound structures may be well

able to resist them. (§73.) Such dilution must not be supposed to change the character of their action, but merely to lessen the amount of that action to a point controllable by most healthy tissues. Some escharotics are readily absorbed, especially if applied to any abraded surface, (§125;) and no escharotic thus capable of absorption should be applied, even for caustic purposes. It is a great mistake to suppose that an escharotic can improve the condition of any class of ulcers even of chancres. They will destroy weak granules; but a far better practice will be, to make application of such sanative remedies as will consolidate these incipient growths and stimulate better capillary action. In granular ophthalmia, this is particularly the case; and I am now, even more than formerly, opposed to the employment of any mineral escharotic in these cases, as such articles must be *very* weak in order to escape injuring the sound conjunctiva; and breaking down the very granules needed to heal the original abrasion.

278. *Chemical Reagents.* — In a few instances, chemical substances are employed in and upon the human frame for the distinct purpose of neutralizing other substances. This is done whenever an *alkaline* article — as soda, potassa, magnesia, or lime preparations — is administered to correct acidity of the stomach. That action is a purely chemical one; but it never can *cure* such acidity, because the alkali does not act remedially upon the tissues of the stomach. On the contrary, if the alkali is given in excess of the acid present, the *free* alkali remaining in the stomach may prove injurious to this organ. And if the article is given a short time before a meal, or before the stomach has digested all that it can digest, it will neutralize the true gastric juice and leave the food in a condition to ferment rapidly. (§39.) These facts are sufficient to indicate that the use of alkalies for gastric disturbances, must be practiced with great watchfulness. By relieving persistent acidity of the stomach, articles of this class may partially avert a too great acidness of the urine, which is affected by the state of the stomach; but it is evidently a mistake to suppose that alkalies pass through the kidneys and thus chemically decompose calculi. Should they do so, they would unquestionably disintegrate the kidneys long before they reached the gravel in the bladder. Some sores with an ichorous discharge, are benefitted by an alkaline wash at each dressing. These-called) *mineral acids* are never usable, except as escharotics to remove warts and similar hard excrescences. The mild vegetable acids are frequent necessities to the system, as noted in the benefits often obtained from using acid fruits. This is mostly the case in bilious difficulties, or

during the Summer season when the hepatic organs are easily disturbed. Vinegar is an admissible internal agent; but I can not fairly sanction acids like the citric or tartaric. Patients using acidulated drinks, need to be carefully guarded lest they employ them too freely. Washes of diluted vegetable acids are often good in skin affections, all such acids being somewhat stimulating.

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THE
PHYSIO-MEDICAL DISPENSATORY:

A TREATISE ON
THERAPEUTICS, MATERIA MEDICA, AND PHARMACY,

IN
ACCORDANCE WITH THE PRINCIPLES

OF
PHYSIOLOGICAL MEDICATION.

BY

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ABELMOSCHUS ESCULENTUS

OKRA, BENDEE, GOMBO

Description: Natural Order, Malvaceae. Formerly in the genus *Hibiscus*. Genus *ABELMOSCHUS* : Calyx five-toothed, spathe-like; involucre five to ten leaved. Fruit a five-celled capsule, opening by five valves. *A. ESCULENTUS* : An annual, with erect stems from three to four feet high, branched, woody toward the base, tender parts covered with bristles and often purple-spotted. Leaves alternate, long-petioled, lower ones angled, middle ones palmate, upper ones digitate, all rough and bristly. Flowers axillary, solitary, very large, pale yellow; calyx of a remarkably soft texture, bursting on one side. Capsule four to ten inches long, an inch in diameter, somewhat bristly. Native to the West Indies; now much cultivated throughout the tropical regions and in the more southern portions of the temperate zone for culinary purposes.

Properties and Uses: I. The *capsules* abound in an agreeable mucilage, which is used as an aliment in broths and soups. An infusion is grateful in dysentery and diarrhea; in acute inflammation and irritation of the stomach, bowels, and kidneys; and during the existence of a glassy tongue in typhoid cases. A portion of a single capsule, steeped in a pint of warm water, and moderately sweetened, makes a drink that may be used freely. The mucilage is less viscid and more palatable than many other vegetable demulcents.

II. The *leaves* are also demulcent, though less so than the capsules. When gathered in their green state and pounded, they make a valuable emollient poultice. Miss L. Dille says the plant is prized in Jamaica by the common people.

ABELMOSCHUS MOSCHATUS

GRANI MOSCHI

Description: The natural order and generic characters the same as those in the preceding species. Mr. Lindley says: "Stem herbaceous, hispid with spreading hairs, not prickly. Leaves (and long petioles) hispid with rigid hairs, unequally and coarsely toothed, deeply five to seven-lobed; lobes all spreading, oblong lanceolate, acuminate. Pedicels harshly pubescent, axillary. Involucral leaves six to ten, linear, hairy. Capsules oblong, acuminate, hairy ." A native of Egypt and the East Indies.

Properties and Uses: The *seeds* have a strong aroma of musk, and have been known as *grani moschi*. Relaxing and stimulating powers are attributed to them; and some cases, apparently authentic, have been recorded, in which they seemed to have a decided influence in casting out the poison of snakes. Possibly a further and more careful investigation of their properties, would show them to be an agreeable and useful article in cases where mild nervous prostration required a diffusible stimulant and relaxant. At present, they seem to be used for nothing beyond giving flavor to the coffee of the Arabs.

ABIES BALSAMEA

BALSAM FIR, CANADA BALSAM, BALSAM SPRUCE, BALSAM OF GILEAD, AMERICAN SILVER FIR

Description: Natural Order, Coniferae. *Abies balsamifera* of Micheaux; *Pinus balsamea* of Linnaeus; *Picea* of Loudon. Genus **ABIES**: Staminate catkins more or less clustered toward the ends, of the branches; scales peltate; stamens short, often sessile. Fertile cones erect, growing laterally upon the branches; scales closely imbricated, thin at the edges, (they are thick in *Pinus*,) even, bracteolate, bearing two ovules on their inner side; bracts deciduous; cotyledons three to nine. **A. BALSAMEA**: Cones erect, more or less scattered, two to three inches long, violet when young, brownish when matured; bracts obovate, short, slightly serrulate, mucronate and commonly appressed at the sides. Leaves scarcely an inch long, solitary, linear, grooved and bright-green above, ridged and whitish beneath, mostly growing in two rows on the sides of the nearly horizontal branches. Bark smoothish, dotted with numerous small blisters containing a resinous balsam. This tree is a slender, compact evergreen, growing in moist soils and on cold hill-sides through the Northern States and Canada, seldom attaining a height of more than twenty-five feet, and presenting a pyramidal appearance. It blooms in May, and is often cultivated for its beauty. The balsam contained in the blisters under the bark, is the portion of this tree most commonly employed in medicine. It is known in commerce as *Balsam Fir* or *Canada Balsam*, and is obtained by puncturing the blisters and pressing out their contents into a spoon or other shallow vessel. When first obtained, it is a tenacious fluid, nearly transparent, with a delicate amber tint and agreeable aroma. On long exposure to the atmosphere, it parts with some of its volatile portions and becomes nearly solid and of a deeper tint. By admixture with magnesia, the volatile portions are absorbed and solidification takes place within a few hours. It is a resino-terebinthinate substance, softening under a moderate heat, becoming nearly solid when its turpentine is dissipated under a higher temperature, dissolving readily in turpentine and to a limited extent in cold alcohol, and burning readily with a heavy flame and a dense smoke. *Abies Fraseri* yields a balsam similar to that furnished by the above tree; and the product of the two plants is not discriminated in commerce. This species prefers more genial latitudes than the *balsamea*, reaching from New York to the Carolinas. Its usual height is twenty feet; cones from one to two inches long; bracts wedge-shaped, long-acuminate and strongly reflexed; leaves smooth beneath, and nearly two inches long.

Properties and Uses: I. The *balsam* is stimulating and relaxing, chiefly influencing the kidneys and mucous membranes, acting rather slowly. Its relaxing power is greater in the fresh exudation than in that which has been long standing. It is somewhat nauseating in large doses, and some stomachs do not receive it at all. It is inappropriate to every acute case that is accompanied by irritation, sensitiveness of the mucous membranes, or febrile excitement. To the kidneys it is applicable in chronic cases where the urine is scanty and turbid, the back persistently weak and painful, and the kidneys free from excitement. Good results may be obtained from its use in gonorrhoea, after the acute symptoms have passed away; but it is better to employ it, in conjunction, with other suitable agents, in low gleet, in which difficulty it is a good adjunct to tonics and demulcents. Though seldom used in leucorrhoea, it will be found useful in chronic cases, especially if it can be made acceptable to the stomach. It has been used to advantage in low and chronic pulmonary affections—as in old coughs, chronic bronchitis, and chronic pneumonia following acute inflammation. For internal use, it should always be combined with

some demulcent, as mucilage of gum arabic; and it is more acceptable to the stomach when associated with some such tonic as golden seal or poplar, with an aromatic. The dose may range from two to ten grains, repeated at intervals of three to six hours. Larger doses have been recommended, but very few stomachs will receive them. This balsam is also employed as an ingredient in salves and plasters. In indolent ulcers, and in wounds and bruises that are not disposed to heal, it may be used as a salve in any suitable unguent; but should never be employed upon sensitive, granulating, or inflamed sores. As a plaster, it is generally combined in moderate proportions with some of the gum-resins, and applied over the lumbar region in chronic weakness of the kidneys, and upon the chest in chronic pleurisy.

II. The *bark*, when slit into shreds and simmered in a closely covered vessel, yields a mucilaginous and gently stimulating-relaxing decoction. This is employed by the people in sub-acute dysentery and diarrhea, in settled coughs, and in soreness of the kidneys and urethra. It is less nauseating and exciting than the balsam, yet should be administered with similar cautions as to the conditions of the case. Dose, half a cupful of a pretty strong infusion every second hour, or hour.

Pharmaceutical Preparations: I *Emulsion*. This is the most agreeable form of giving the balsam, whether it is to be used alone, or combined with copaiba, or with a tonic. One drachm of the balsam is sufficient in four ounces of a compound emulsion. (See *Emulsions*.) II. *Pills*. The solidified balsam may be made into a pill-mass by mixing with the powder of elm, or of gum arabic. In very degenerate cases of leucorrhoea, pills may be made of the common balsam and pulverized myrrh, with golden seal in excess. When used in suitable cases, such pills are excellent aids to the other medication. III. *Pectoral Drops*. Balsam Fir, half an ounce; honey, two ounces; diluted alcohol, one pint. Macerate a week, and add vinegar syrup of lobelia, two ounces; essence of anise, six drachms. Used for asthma, and chronic coughs with debility and pain in the chest; contra-indicated in sensitive or inflamed respiratory organs. *Dose*, half to a whole teaspoonful every four hours.

ABIES CANADENSIS

HEMLOCK, HEMLOCK SPRUCE

Description: Natural Order, Coniferae. *Pinus Canadensis* of many authors. Generic characters the same as in the *balsamea*. A. CANADENSIS: Leaves linear, flat, obtuse, about half an inch long, silvery beneath. Cones oval, three-fourths of an inch long, terminal, pendulous, of few scales; bracts evanescent, scales persistent, sterile catkins scattered. This tree is common in the moist lands of the Middle and Eastern States, and Canada. It frequently attains a height of sixty and eighty feet. The coarse-grained timber of hemlock is employed in some of the rougher branches of carpentry. The bark is employed largely in tanning. The bark yields a heavy, nearly black gum-resin, called *Hemlock Gum*, *Hemlock Pitch*, and *Canada Pitch*. Moderate quantities of it exude from the tree spontaneously; but it is usually obtained by gathering the bark of the large trees in the fall or winter, breaking it up, and boiling it in an abundance of water. The gum-resin rises to the surface, and may be taken off when the water cools. By boiling this product in a second water, it is much improved by the complete separation of extraneous matter.

Properties and Uses: I. *The inner bark* is among the most positive of the drying astringents, and is seldom used internally. Dr. S. Thomson, in his earlier practice, employed a considerable portion of it in his Composition Powder; but finally abandoned it, on account of its extremely drying nature. A strong decoction of it may be employed to advantage as a wash in fungous sores, in foul and phagedaenic ulcers, and in the indolent ulcers of an opened bubo. In combination with a moderate portion of the capsicum or xanthoxylum, it may be used as a wash in bad aphthous sores; or the powders may be applied directly to indolent or phagedaenic chancres. It has been used in pile ointments, to arrest hemorrhage; and is good in all hemorrhages, when pure astringents will answer the purpose. Combined with zingiber and capsicum, the infusion acts promptly and powerfully in flooding and in bleeding from the lungs.

II. *The leaves* are relaxing and stimulating, rather prompt in their action, and expend their influence upon the skin, kidneys, and uterus. A free use of the warm decoction induces full perspiration, and may be used in recent colds, suddenly suppressed menstruation, and recent rheumatism. It has been used in family practice in deficient lochia; and would be good when there was no feverishness, but would not answer when there was extreme depression. A strong cold infusion has been commended for pain in the back with turbid urine; in leucorrhoea, and in mild cases of what might be termed sympathetic prolapsus. Some have asserted that these leaves are valuable in gravel, but the idea lacks confirmation. The warm infusion has been found useful in wind colic, and in the vomiting of cholera morbus and pregnancy. Vapor arising from water containing the leaves, is an excellent local application in sprains, stiff joints, and rheumatism; and a general vapor-bath of the same is a powerful relaxing application in recent colds, and in rheumatism. It is a popular practice to have the patient sit over the vapor from these leaves in acute dysentery and suppressed menstruation. A fomentation of the leaves is good in the swelled breasts and testes following translation of the mumps; and will probably be found useful in other indurated swellings, as scrofula. It is not proper to use them internally during active pneumonia, peritonitis, etc.

III. An *oil* is obtained from the leaves by distillation. It is a pungent stimulant and relaxant. Combined with alcohol, it is an excellent rubefacient. Internally, it is warming to the stomach, and too excessively irritating to the uterus. The essence has been employed in wind colic.

IV. The *gum* (more properly the *gum-resin*) is usually softened with sweet oil, combined with resinous substances, and used as a plaster for weakness in the loins. It is slowly stimulating, and is probably among the best of the articles thus employed. Internally, in doses of ten or more grains, three times a day, it is said to be a slow stimulant to the kidneys and uterus.

Pharmaceutical Preparations: The oil enters into the Stimulating Liniment, and into essences; the gum into plasters.

ABIES EXCELSA

NORWAY PINE, NORWAY SPRUCE FIR

Description: The natural order and generic characters are the same as in *abies balsamea*. A. EXCELSA: Leaves copiously scattered around the branches, somewhat imbricated, less than an inch long, slightly four-cornered, smooth, curved, shining on the upper surface. Male catkins ovate, cylindrical, terminal, erect, on short foot-stalks, tawny-red, with numerous spreading bracteas; anthers round, yellow, with a crimson crest. Female catkins sessile, oblong, erect, rich crimson. Strobiles pendulous, solitary, terminal, cylindrical, purple, four to six inches long; scales numerous, rhomboidal, waved at the edges, notched at the point, imbricated. Seeds two, small, oval, with two thin elliptical wings. An inhabitant of Norway and Northern Asia; now under cultivation in this country, where it thrives. A noble tree of one hundred and fifty feet, or more; with long, sweeping branches and a pyramidal appearance.

A series of small concrete tears is found on the bark of this fir, and these constitute the *Frankincense* of commerce. (The ancient frankincense was obtained from the *Juniperus lycia*, and was also called *olibanum*.) These tears are brittle, brownish or amber-yellow, soften at a moderate temperature, and burn with a pleasant and stimulating aroma. By making incisions into the wood, a soft turpentine exudes; and this congeals after a little time, when it is gathered, and purified by being melted in hot water, and strained through an open cloth. This is the *Burgundy Pitch* of commerce, and is manufactured largely in Saxony. It is hard, even to brittleness; yellowish, opaque, sweetish, and with a peculiar balsamic odor; and becomes soft at a moderate heat. The commercial article is commonly adulterated by mixing pitch and turpentine with it, and then throwing the mass into hot water.

Properties and Uses: *Frankincense* and *Burgundy Pitch* are excitants, but are not used internally. Applied to the skin, the pitch softens and becomes adhesive, and will excite redness and tenderness, and lead to blisters and small ulcers. These articles are usually mixed with the gum hemlock, beeswax, sweet oil, and similar substances, and formed into plasters, which are used to provoke counter-irritation over parts where there is deep-seated pain. There can be but little spoken in favor of them, and it is not wise to attempt to cover their character by the virtues of the good company they are generally thrown into. There is no doubt we possess far more efficient and innocent excitants.

Pharmaceutical Preparations: I. *Strengthening Plaster*. Melt together three pounds of resin, and four ounces each of beeswax and Burgundy pitch. When nearly cool, add an ounce of olive oil, oil of sassafras, and oil of hemlock. Spread into plasters while still warm; or work into rolls under cold water, envelop each roll with tin-foil, and spread upon muslin or leather when wanted. This illustrates the formula for most of the common strengthening plasters, except that the oils are seldom used. My own preference would be, to replace the pitch with one-half the quantity of the hemlock resin. A strongly stimulating character can be given to the mass by the addition of two drachms' of capsicum in powder. A. F. Elliott, M. D., of Minneapolis, says that the Burgundy pitch, softened with alcohol and spread upon leather, makes a plaster that gives early and effectual relief in ligamentous forms of rheumatism.

ABRUS PRECATORIUS

JAMAICA LICORICE

Description: Natural Order, Leguminosae. Genus ABRUS: Calyx campanulate, obsolete four-lobed and four-toothed, upper lobe broadest and upper tooth bifid. Corollas with ovate vexilla. Stamens nine, monadelphous. Style short. Legume oblong, compressed, four to six seeded; seeds roundish. Twining shrubs, with abruptly pinnate leaves, racemose inflorescence, pedicels in alternate clusters. A. PRECATORIUS: Bark smooth. Leaves alternate, two to six inches long; leaflets opposite, sub-sessile, linear-oblong, smooth, entire, obtuse, eight to fifteen-paired. Stipules lanceolate. Racemes axillary, solitary, erect, seamed, apex curved. Flowers numerous, short-stalked, large, pale pink; vexillum ascending, as long as the wings; wings falcate, spreading. Ovary minute, hid in the tube of stamens, hairy. Style very short. Legume rhomboidal, protuberant at the seeds, divided into cells by a transverse membrane. A native of the East Indies, but now common in Africa and tropical America.

Properties and Uses: The *root* and *leaves* are quite similar to the glycyrrhiza glabra, and furnish an extract much like our common black licorice. The plant is in popular repute in Jamaica for the treatment of all forms of pulmonary irritation, and the leaves are used in poultices. No doubt the article deserves more attention by the profession. The seeds are a pretty tough article of Egyptian food, though some accuse them of being narcotic.

ABUTILON AVICENNA
INDIAN MALLOWS

Description: Natural Order, Malvaceae. Genus ABUTILON: Calyx five-cleft, without an involucre, often angular. Ovaries five, many-seeded. Styles many cleft. Capsule of five or more carpels, arranged circularly, each one-celled and from one to three-seeded. A. AVICENNA. Leaves four to six inches broad, roundish-cordate, acuminate, dentate, velvety. Peduncles shorter than the leaf-stalks. Carpels about fifteen, inflated, two-beaked, truncated, three-seeded, hairy. Stem branched, three to four feet high. Flowers yellow, nearly an inch broad. Annual, common in waste places, blooming in July .

Properties and Uses: The *leaves* are mucilaginous and slightly astringent, which would fit them for use in dysenteries, and mild leucorrhoea, and as an emollient and cleansing poultice. They are not employed by the profession; but their use among the people in some sections, shows that they should receive attention. The *Abutilon Indicum*, (or *Sida Indica*,) as also the *Sida cordifolia* and *carpinifolia*, are much esteemed as demulcents in the fluxes of Southern Asia and Brazil, to which the plant now so common in our country was probably indigenous. It will undoubtedly repay investigation.

ACACIA CATECHU

CATECHU, CUTCH, TERRA JAPONICA

Description: Natural Order, Leguminosae. Genus ACACIA: Flowers polygamous; calyx four to five-toothed, tubular; petals five, generally distinct. Stamens eight to two hundred, exsert. Legume one-celled, two-valved. Leaves once or twice pinnate. A. CATECHU: A tree fifteen to twenty feet high; branches spreading, armed with strong black spines, downy toward the points. Leaves bipinnate, alternate, of from ten to eighteen pinnae; leaflets of pinnae thirty to fifty pairs, linear, auricled at the base, ciliated; petiole angular, grooved above, downy, with orbicular green glands between the bases of the pinnae. Flowers in cylindrical, axillary spikes, on downy stalks, from four to five inches long, numerous, monopetalous, white or whitish yellow, and about twice as long as the tubular, hairy calyx. Stamens twice the length of the corolla, very numerous, distinct. Ovary glabrous, oval, on a very short stipe, terminating in a single style of the length of the stamens. Legume flat, linear, thin, straight, smooth, brown, pointed, about six inches long by three-fourths of an inch broad. Seeds six or eight, roundish.

This plant is a native of the East Indies, but is now common in some of the West Indies. Its chief value is for the extract which has long been prepared from it in Hindostan, and sold under the names of *terra japonica*, *catechu*, *cashow*, *roath*, *cutch*, etc. It is obtained by separating the redwood from the alburnum, cutting the former into chips, boiling in earthen pots, and evaporating slowly in the sun upon a thick mat smeared with the ashes of cow dung. It appears in market in irregular flat pieces, brownish, brittle, and of a specific gravity about 1.2. The light-brown variety is the best. Soluble in hot water, quickly so in alcohol, sparingly in cold water. It contains much tannin and some mucilage.

Properties and Uses: The *extract* is a powerful astringent without any material stimulation. It is applicable in excessive and passive relaxations of mucous membranes where there is no inflammation, as in some cases of chronic dysentery, leucorrhoea, and gleet. When there is excitement, its use would be a misapplication. It is used as an injection in uterine and hemorrhoidal bleedings; and in epistaxis as a snuff. As a local application it is sometimes employed in thrush, elongated palate, venereal ulcers, and scurvy of the gums. It is an article that will disappoint the practitioner if he attempts to rely upon it alone in any local affection above named; but if seconded by a judicious constitutional regimen, its qualities fit it for usefulness in the conditions of extreme relaxation mentioned. The dose averages twenty grains.

Pharmaceutical Preparations: I. The *powder* is applied to ulcers, though a solution of the extract in hot water is a general mode of exhibition as gargle, drink, and injection. II. *Troches* are sometimes made by mixing it with equal quantities of gum Arabic and sugar, and molding in the usual way. III. A *Tincture* is formed by putting three ounces of the extract to a quart of diluted alcohol, and flavoring with two ounces of cinnamon. The dose is a fluid drachm or more in simple syrup. IV. A *Salve* may be made by incorporating one ounce of catechu with one ounce of white resin, one ounce of beeswax, and ten ounces of sweet oil—powdering the first two articles and adding them to the others at a gentle heat. It is useful in weak, scrofulous, and semi-indolent ulcers; also in all wounds and bruises.

ACACIA VERA

GUM ARABIC, GUM SENEGAL, EGYPTIAN THORN

Description: Order and generic characters the same as in *Acacia catechu*. *Mimosa nilotica* of Linnaeus. A. VERA: A tree eight to twelve feet high, with a crooked gray stem, and purplish-yellow branches. Leaves alternate, bipinnate, smooth; pinnae two to four pairs; leaflets of the pinnae eight to ten pairs, oblong-linear, a gland between the pinnae, and two opposite white spines at the base of each common petiole. Flowers bright yellow, axillary, petioled, globose, from two to four in a cluster. Calyx bell shaped, five-parted. Legume four or five inches long, nearly flat, smooth, pale brown, contracted deeply at each seed. It is a native of Arabia and Northern Africa, and is valued chiefly for its pure white gum. The species *Arabica*, *Seyal*, and *Senegal*, also yield a similar gum, which is rather inferior in quality.

The gum exudes spontaneously upon the trunk and larger branches, is soft and nearly fluid at first, but hardens by exposure. It begins to flow in December, near the flowering time of the tree and soon after the rainy season. Sickly looking trees yield the most; the natives make incisions in the bark to increase the product; and dry, hot weather favors a heavy crop. It is generally in small lumps, irregularly round, varying in color from a nearly pure white to a light brown. It is moderately hard, rather brittle, presents a smooth fracture, is transparent, and without taste or smell. The best qualities have a very delicate orange tinge. Its powder is a pretty white. It forms a thick and adhesive mucilage with cold or hot water; and the water may be entirely evaporated, leaving the gum behind with its properties unaltered. It is soluble, in connection with sugar, by lime water, and in dilute acids; but not in alcohol, ether, or the oils.

Properties and Uses: This *gum* is one of the purest of all mucilages; and is nutritive as well as demulcent. It is used to soothe irritation of mucous membranes in dysentery, gastritis, bronchitis, later stages of typhoid, etc. In acute dysentery it relieves the pain by softening and shielding the passages during the discharge of acrid materials; and lessens the mucous discharges by relieving the excitement. It is best employed by dissolving a drachm or more in eight ounces of cold water, and using freely, as the stomach will bear. A dilute preparation will be received for some days, without clogging the stomach. It is merely an adjunct to the other appropriate treatment.

Pharmaceutical Preparations: I. *Troches* are made by mixing four ounces of gum Arabic, one ounce of starch, and one pound of white sugar, all finely pulverized. Rosewater may then be used to moisten them sufficiently to form into lozenges, and medicines added to suit. II. A demulcent *Mixture* is made by steeping and mashing into pulp an ounce of sweet almonds, and adding an ounce of white sugar. These ingredients are then to be triturated with three ounces of water in which an ounce and a half of gum has been dissolved. Then gradually stir in a quart of water and strain. It is a good vehicle for other medicines in any renal or bronchial affection requiring a demulcent. III. *Emulsions* are formed by employing this gum as a suspensory vehicle, as directed in the part on Pharmacy. The gum is also used in the manufacture of *pills* but it renders the article so very hard, that its employment is not advisable.

ACER STRIATUM

WHISTLE WOOD, STRIPED MAPLE, DOCK-MOCKIE MAPLE, MOOSEWOOD, STRIPED DOGWOOD

Description: Natural Order, Aceraceae. A member of the Maple family. Genus ACER: Flowers polygamous. Calyx five-parted; corolla five-petaled or wanting; stamens eight; samara two, winged, united at base, one-seeded by abortion. Trees with opposite, palmately-lobed leaves, and small flowers; indigenous to America. A. STRIATUM: Leaves with three acuminate lobes, rounded at the base, sharply denticulate, smooth. Racemes simple, drooping, terminal. Flowers yellowish-green, appearing in May, and followed by long clusters of fruit with pale-green wings. A small tree ten or fifteen feet high, growing in clumps in rich woods. Bark beautifully smooth, and striped lengthwise with green and black striae.

Properties and Uses: The *leaves* of this tree are demulcent and relaxant, and were popular among our earlier settlers as a poultice in swelled breasts. They deserve the good opinion once held toward them by the people, and should receive the attention of the physician in mammary, scrofulous, and other swellings requiring a demulcent and mildly relaxing application. The bark is also demulcent, and deserves investigation. From some experience with it, I judge that it is a relaxant and stimulant to the kidneys, skin and mucous structures. I have found it of service in chronic gastritis, irritation of the bladder, and tetter; but can not go further than to give it a recommendation to notice. It is gentle in its effect, and a prompt and powerful influence should not be anticipated from its use. Probably it deserves to be classed among the relaxing alterants.

ACETUM

VINEGAR

Preparation: The juices of all saccharine fruits, as grapes, apples, pears, barley, etc., will readily undergo a process of fermentation in the presence of air, especially if they have been subjected to the action of a ferment-as yeast. If checked at a certain stage in the process, the clear, liquid product of the fermentation is vinegar—which consists of a small portion of acetic acid, and various vegetable matters peculiar to the article acted upon. The best vinegar is made in France, from wine, which is poured upon a little vinegar (called *mother*) and allowed to ferment till suitably sour—the temperature of the room being maintained at about 85°. The clear liquid is then racked off, more wine added to the “mother,” and the process thus repeated indefinitely. In England, barley malt is fermented, and the wort made to fall in a shower upon a bed of birch twigs arranged near the top of a large vat. The liquid is pumped up and made to fall through these twigs several times. By thus spreading out the wort to the air, the alcohol it contains is oxidized rapidly; and the formation of vinegar consists only in this oxidization. In America, most of the vinegar of the people is made by fermenting cider in barrels with open bung-holes. The heat of the summer sun is sufficient to maintain the fermenting process; and the operation must be watched, so that the clear liquid may be racked off before it passes from the acetous into the putrefactive stage. Much of the vinegar at present sold in the shops, is diluted acetic acid. This preparation is by no means a substitute for vinegar, for it contains none of those vegetable substances which give to this article much of its flavor and excellence; and as common acetic acid is frequently contaminated with copper and sulphuric acid, the impropriety of offering such a compound in lieu of well-prepared vinegar, is at once apparent. .

Vinegar has a pleasant acid, and somewhat aromatic smell and taste. Besides some four percent of acetic acid, it contains varying proportions of sugar, starch, gluten, and gum. An article carelessly manufactured may contain free sulphuric acid, which may be detected by boiling it with a solution of chloride of calcium, when a precipitate will be formed. If kept long exposed to the air, it becomes muddy, ropy and putrefactive, and loses its acidity.

Properties and Uses: Vinegar promotes the secretions of the kidneys and respiratory mucous membranes, but diminishes that of the skin. Added to sweetened water, it forms a pleasant drink in febrile and inflammatory cases where the condition of the stomach does not contraindicate a vegetable acid. It quenches thirst, and promotes the flow of saliva. Drank thus in considerable quantities, warm, the patient being well covered in bed, it promotes a favorable perspiration in autumnal intermittents. Its daily use, in moderate quantities, is of sovereign efficacy in scurvy; and in those loosenesses of the bowels and feverishnesses which often arise from scorbutic conditions. Its vapor may be inhaled to advantage in sore-throat; and it may be used as a gargle in putrid cynancheal affections. Externally, it is useful in cutaneous affections accompanied by dryness of the epidermis, as tetter, scald head, etc. From its mild stimulating character, it is often beneficial as a fomentation in sprains, bruises and pains in the bowels. It is an admirable menstruum for many agents—facilitating the action of stimulants that are for external application, and apparently augmenting and hastening the operation of expectorants. From a fluid drachm to half a fluid ounce is usually sufficient for any patient in twenty-four hours.

Pharmaceutical Preparations: I. *Gargle*. Vinegar, two ounces; capsicum, ten grains; common salt, two drachms. This forms a stimulating and antiseptic gargle of rare excellence in putrid sore throat and diphtheria. It may be used every second hour or hour, as needed; and a flannel about the neck may be kept moistened with the same. It is also said to arrest vomiting in cholera, etc., and often to cure this malady. Various stimulants, astringents, and tonics are infused in vinegar for use as gargles, such as myrica, xanthoxylum, cornus, hydrastis, and sanguinaria. II. In the preparation of some *Tinctures*, and *Syrups*, and of the *Oxymels*, vinegar is used in preference to alcohol or water. These will be mentioned in their proper places. All relaxants prepared on vinegar, are mostly restricted in their action to the respiratory passages and stomach. (§227, 263.)

ACHILLAE MILLEFOLIUM

MILFOIL, YARROW

Description: Natural Order, Compositae. Genus ACHILLAE: Involucre ovoid, of unequal, imbricated scales. Rays five to ten, short, pistillate, white. Receptacle flat, chaffy. Achenia oblong, flattened, marginal, without pappus. Perennial herbs common to the pastures of Europe and America, with small corymbose heads that look whitish-gray at a little distance. A. MILLEFOLIUM: Leaves alternate, bipinnate; divisions linear, three to five-cleft, crowded, dentate, mucronate. Stem simple, furrowed, one foot high. Corymb compound, dense, flat. Blooms from July to September.

This plant seems to have been in use from quite ancient times. The whole plant is employed, especially in Europe; but it has received less attention in this country than its positive qualities deserve. It has yielded a so-called active principle named Achilleine; and the flowers furnish an essential oil.

Properties and Uses: It is stimulant and astringent, very positive in quality, moderately slow in action, and yields its virtues to both water and alcohol. The combined qualities are expended on the alvine canal to advantage in chronic dysentery and diarrhea; and also in that feeble condition of the digestive organs known by precarious appetite, passive looseness of the bowels, and consequent nervous prostration. Its influence upon the uterus and renal apparatus is well marked, making it very useful in cases of degenerate leucorrhoea, gleet, and incontinence of urine. For all the above purposes, it is best in cold infusion; but a warm infusion acts positively in profuse menstruation accompanied by relaxation, and may be found serviceable in flooding, as it has indeed proved valuable in both spitting and vomiting of blood. The continued use of a warm infusion arouses capillary action on the skin, securing slow perspiration, and elevating the temperature; and it is no doubt by this diversion of the circulation, quite as much as by its astringent qualities, that it relieves hemorrhages. In intermittent fever, a strong decoction of it is said to be equal to quinine as an antiperiodic; but, while it is no doubt of value when the skin is cold and the inner organism relaxed and sluggish, its virtues in this connection should not be overrated, nor praised without discrimination as to the conditions in which it is proper to use it. It is not admissible in any form of the disease where the pulse is hard and quick, or the skin dry and hot, or the mucous surfaces irritable. Its employment should be limited by the conditions of a depressed but not irritable pulse, cold skin, and relaxation of the mucous membranes. With these distinctions in view, the milfoil will be found one of our best remedies. An ounce to a quart of water makes a good infusion, of which a fluid ounce or more may be taken several times a day. Essence of anise disguises its bitterness well.

Pharmaceutical Preparations: I. A *Tincture* is made by macerating six ounces of the herb in a quart of diluted alcohol, of which the dose is half a fluid ounce. II. *Achilleine*. This may be obtained by boiling any given quantity of the plant in four times its weight of water, straining, clarifying with the white of an egg, evaporating to one-fifth of the original quantity, and allowing the extractive matter to settle twenty-four hours. Filter off the liquid, agitate with a slight excess of hydrated lime, add acetate of lead till a copious precipitate begins to fall, filter, and then saturate the remaining solution with sulphuretted hydrogen, and evaporate to an extract. Mix this

extract with the precipitate caught on the filter, and the product is the yellow *Achilleine*, containing resin and acetate of lead. It is an objectionable preparation, decidedly unfit to use, though doses of five to fifteen grains are praised as antiperiodic.

ACIDUM CITRICUM

CITRIC ACID

Preparation: This acid is obtained freely from lemon juice, cranberries, and currants; also in small quantities from elderberries, red raspberries, and some other fruits. It is mostly manufactured from lemons, the juice of which is put into a vat and allowed to ferment a little. The clear liquid is drawn off, and the precipitate washed, and afterward the lime neutralized by careful additions of diluted sulphuric acid. The sulphate of lime now falls; and the clear liquid holds the citric acid in solution. This being drawn off and slowly evaporated, yields the crystals of citric acid on cooling. These crystals are then dissolved in a very little water, treated with animal charcoal, filtered, and again evaporated.

Crystals of citric acid are large, white, and with a specific gravity of 1.6. They dissolve in water readily. Being obtained from lemons, it is supposed to be the same in properties as the juice of this fruit; but this is quite a mistake, as the citric acid can not be procured till the lemon juice has undergone a fermentation that changes the relations of the organic substances. (§32.) It should not be employed as a substitute for lemon juice, and I think should not be used at all; but it forms with carbonate alkalies a series of neutral salts that are comparatively inert. Twenty grains of citric acid will neutralize twenty-nine grains bicarbonate of potassa; fourteen grains carbonate of magnesia; and twenty-four grains bicarbonate of soda. Its combination with the potassa alkali forms the best effervescing draught; and the citrate of magnesia is just now a popular cathartic, but acting too much like epsom salts to be a very good one.

Properties and Uses: This is a sharp acid in its pure state; and a concentrated solution will provoke inflammation and diarrhea. One ounce diluted with twenty ounces of water, forms a solution of about the common acidity of lemon-juice; and this is sometimes used as a refrigerant drink in fevers. A scruple of the acid to a pint of sweetened water, is strong enough for ordinary purposes; and this should be used only in moderate quantities. It is useful in scurvy, as are all vegetable acids if harmless. It has recently been commended in rheumatism, though apparently without any good cause. Its continued use impoverishes and thins the blood; and those practitioners who are perpetually afraid that the blood will become too rich and nourishing, consider this an argument for its use in inflammation and fever. Let it be borne in mind that, while the system must have vegetable acids, a chemical product of any fruit is a miserable substitute for the original article.

Pharmaceutical Preparations: I. *Sirup*. “Take of citric acid, in powder, two drachms; oil of lemons, four drops; sirup, two pints. Rub the citric acid and oil of lemons with a fluid ounce of the sirup, then add the mixture to the remainder of the sirup, and dissolve with a gentle heat.” (*U. S. P.*) This is added to water and used as a drink. It is a poor substitute for the true lemon sirup. (See *Citrus Limonum*.) II. *Effervescing Draught*. “Take of citric acid, half an ounce; oil of lemons, two minims; water, half a pint; bicarbonate of potassa, a sufficient quantity. Rub the citric acid with the oil of lemons, and afterward with the water till it is dissolved; then add the bicarbonate of potassa gradually till the acid is perfectly saturated.” (*U. S. D.*) This preparation is also called *neutral mixture* and *solution of citrate of potassa*. A tablespoonful is given in sweetened water every third or second hour, and provokes sweating in intermitting and bilious

fevers. It is usually very irritating to the bowels; and the drink of flaxseed and lemon-juice (see *Lemons*) is a far preferable diaphoretic and refrigerant.

ACIDUM GALLICUM

GALLIC ACID

Preparation: This acid may be made from tannic acid, by securing an interchange of one equivalent of oxygen for one equivalent of carbon in the latter. The simplest method of preparing it in quantity, is to mix powdered nut-galls into a thin paste with water, and expose the mixture to the air in a warm situation for two or three months—adding water from time to time to replace that lost by evaporation. The moldy mass is then pressed strongly in a cloth, the solid residue boiled in a considerable quantity of water, and the solution filtered. The tannic acid in galls is oxidized, and thus converted into gallic acid; the boiling water dissolves this; and as cold water will not dissolve it well, the crystals of gallic acid are deposited as the solution cools. These crystals are small, feathery, nearly colorless, and silky. Its purification is effected by filtering its hot solution through a bed of animal charcoal free from all trace of sesquioxide of iron. It is feebly soluble in alcohol; soluble in one hundred parts of cold and three of boiling water; sparingly soluble in ether.

Properties and Uses: This acid is a very pure and efficient astringent; and as it does not precipitate gelatin, it thereby possesses a decided advantage over tannin for internal use, as it may reach remote vessels effectually, and is not liable to cause so much constipation. It is employed locally in all hemorrhages that can be reached by its powder or solution; and internally it is given for hemorrhages of the stomach, lungs, bladder, and kidneys. It enjoys some reputation in menorrhagia, and is undoubtedly good in chronic mucous discharges from the bladder and bowels. It may be made into an ointment for piles. Dose, internally, from five to fifteen grains, three or more times a day. It may be given in pill or powder.

ACIDUM TANNICUM

TANNIC ACID

Preparation: This acid is present in a majority of vegetable substances, and abounds in numerous barks and leaves—to all of which it imparts astringent properties. It is now mostly obtained by percolating ether through coarsely powdered nut-galls. The liquid that passes through separates into two parts, of which the lower stratum contains the tannic acid. The lower liquid is separated from the upper carefully, and evaporated in an air-pump over a surface of oil of vitriol. It forms a light, friable, slightly-yellowish powder; porous, of a pure astringent taste, and scarcely acid. It dissolves readily in water, and sparingly in alcohol.

This acid forms many peculiar compounds with both inorganic and organic substances, and is an article of much interest to the chemist. It rapidly precipitates gluten, albumen, and starch; and with gelatin forms an insoluble compound on which depends the successful manufacture of leather.

Properties and Uses: Tannin is a pure and very efficient astringent; and the rapidity with which it coagulates albumen and gelatin, makes it a valuable application in local hemorrhages. It may be used in powder or strong solution upon a bleeding surface; may be administered as an injection in hemorrhage of the uterus and bowels; and may be formed into an ointment for piles, and suppositories for piles and laxity of the lower bowel. It has, also been used in cases of heavy mucous discharges, as leucorrhœa, gonorrhœa, gleet, and catarrhs; but here it is only of temporary benefit, can not effect a cure, and should not be administered with a hope of securing more than a transient benefit. Like other active astringents, it should not be employed while inflammation or acute irritation is present. It has been well spoken of in sore nipples, as a gargle in sore-throat and salivation, and in colliquative sweats. It is rather agreeable to the stomach; but large doses leave the mucous surfaces harsh and dry, and inclined to persistent constipation. Two to five grains every three to six hours, is a usual dose; but ten and fifteen grains may be given in extreme cases. Prof. R.S. Newton is said to have used large doses successfully to check the profuse discharges in cholera, while bringing other appropriate medicines to bear. Five grains to a fluid ounce of water, form a good strength when used as a wash; but injections may be made weaker. In making an ointment, two scruples may first be rubbed with twenty minims of water, and this then worked up with an ounce of lard. Glycerin dissolves this acid readily; and a solution of it in glycerin will be found a good astringent and styptic application. Softened with glycerin, it is dipped in a mixture of two parts lard and one part white wax, to form suppositories. This article has been commended in the treatment of intermittents; and doses of ten or fifteen grains two hours before the cold stage, are reputed to be unfailing in breaking the chill. Of my own judgment, but not from experience, I should doubt this; nor do I think this a fitting agent for ordinary intermittents, though it may be of some service in those rare cases which are attended with considerable looseness of the bowels. A formula for using it with quinine will be found under Cinchona.

Styptic Colloid: Dr. B. W. Richardson, of England, has introduced to the profession a new preparation of tannin, under the above name. It is prepared as follows: A sufficient quantity of pure tannin is digested for several days in enough absolute alcohol to dissolve it perfectly. Then

slowly add, with stirring, enough absolutely pure sulphuric ether to render the thick alcoholic solution quite fluid. Now add prepared gun cotton till it ceases to dissolve readily; and a little tincture of benzoin to give it an agreeable flavor. When this fluid is spread upon the surface, the alcohol and ether evaporate, and the other substances form a coating that adheres well, and also excludes the air. Few or many layers may be applied by a soft camel's-hair brush. It absorbs and congeals the flowing blood, and so makes an unirritating obstruction to any further escape from the blood vessels. It arrests hemorrhages very rapidly, whether from wounds or incisions, or after small or large surgical operations; from ulcerous surfaces, bleeding after extraction of teeth, etc. Cotton may be saturated with it, and any bleeding cavity plugged with this. By absorbing the blood and excluding the atmosphere, it prevents decomposition and becomes antiseptic—qualities not possessed by any other styptic. It promises to prove a most valuable preparation, if one-fourth of the accounts in its favor are reliable. As a recent preparation, it is liable to exaggerated praise; but is easily made, and deserves a thorough trial.

ACORUS CALAMUS

SWEET FLAG, CALAMUS

Description: Natural Order, Araceae. This plant is common in swamps and marshy creeks, and is well known by its great sword-shaped leaves and tall flower-stem. The root (or subterranean stem) is the part used in medicine; and consists of a flattened, jointed, horizontal, tough rhizoma, often several feet long.

Properties and Uses: The *root* is stimulating and moderately relaxing, and quite pungent. It is called aromatic. It is rather pleasant to the taste; warms the stomach, aids the expulsion of flatus, and relieves cramps and colics. It is used in purely atonic dyspepsia; but its most common employment is as an adjuvant to preparations in which a carminative agent is desirable. It can easily be misused by giving it too freely, or in irritable conditions of the stomach and bowels. It may be eaten, or boiled in milk with pimento or ginger.

ADEPS

LARD

Lard is the fatty substance obtained from the hog, chiefly from the adipose tissue that abounds through the omentum and about the kidneys of that animal. The membranous substances are freed as much as possible from the adipose mass; and the latter is then cut into small pieces, washed to free it of all blood, and then put in an iron or other vessel with a small quantity of water. A gentle heat is then applied, and continued steadily till all the water has been evaporated and the lard has been freed from all the membranous substances. Several hours are required for this purpose, during which time the heat must not be raised too high. The lard in this state is a transparent fluid, with a peculiar unctuous odor. It may be freed from this odor (*Amer. Jour. Pharm.*) by adding to the adipose mass a small quantity of salt, continuing the heat till a scum rises, removing this carefully, and afterward freeing it from the salt. When sufficiently “rendered,” it is to be strained through linen.

Cold lard is white, soft, lighter than water, with little taste or smell, melting at 110° F., and insoluble in water. Alcohol dissolves a very little of it; ether and the volatile oils dissolve more; the stronger acids decompose it; and the alkalies unite with it chemically and form soaps. Melted lard readily unites with melted wax and resins. It contains nearly sixty-three percent of *olein*—the fluid principle of oils; and about eighteen percent each of the more solid principles *stearin* and *margarin*. The application of a high steam pressure in closed iron tanks, is used in Cincinnati to separate the fluid from the solid constituents—the former appearing in commerce as *Lard Oil*, and the latter being used extensively in the manufacture of candles. Nearly all the *Glycerin* of commerce is obtained from the soapmakers’ waste in the use of lard and tallow.

Pharmaceutical Uses: Lard is an emollient, and is sometimes used alone in frictions. Its chief use is as a soft vehicle in the preparation of ointments and cerates. It is occasionally smeared over the surface, previous to the application of a poultice, or added to a poultice to preserve its consistency. Light unction with it, as with other fixed oils, will relieve the too intense smarting of a stimulating application, and also of light burns, etc. It is often added to the resins to give pliancy to plasters; and is sometimes used as an addendum to laxative injections, especially when the lower bowel is irritable. The melting point of lard being above that at which an injection should be given, this fat will make an indifferent mixture for such purposes, and the fluid lard oil will be found more useful.

Lard containing salt or alum is unfit for pharmaceutical purposes. It may be purified from these by melting it with twice its weight of boiling water, and using thorough agitation. When cold: the fat can easily be lifted off from the water.

ADIANTUM PEDATUM

MAIDENHAIR, [MAIDENHEIR FERN]

Description: Natural Order, Filices. Genus ADIANTUM: Sori marginal. Indusia membranaceous, formed from the reflexed margins of the frond. Stipe polished. A.. PEDATUM: Frond pedate; divisions pinnate; segments oblong-rhomboid, incisely lobed on the upper side, obtuse at apex. Stipe eight to fourteen inches high, slender, deep, glossy purple-black, highly polished. This delicate and beautiful fern is common in our damp and rocky woods, and usually attracts attention by the arrangement of its pinnae—the stipe dividing into two branches, which in turn give off from six to eight pinnae on the outer side, so that the whole looks like a crescent of delicate frondlets lying on the top of the polished stipe.

Properties and Uses: This plant is a good demulcent, and a very mild astringent. A strong decoction is soothing in bronchial and pulmonic irritations, and useful in irritable coughs. It exerts a similar influence on the mucous membrane of the bladder and uterus, and is of service in cystic catarrh and scalding urine. It is agreeable to the stomach, and may be used in considerable quantities. Half an ounce to a pint of water forms an infusion of which the whole quantity may be used in twelve hours, or less, according to circumstances. It is generally employed as an adjunct to other medicines.

AESCULUS HIPPOCASTANUM

HORSE CHESTNUT

Description: Natural Order, Sapindaceae. Genus AESCULUS:-Calyx five-toothed. Corolla irregular, four to five-petaled. Stamens seven, (six to eight,) distinct, unequal, hypogynous. Style filiform, with the ovary three-celled, and two seeds in each cell. Fruit coriaceous. Leaves digitate, five to seven-foliolate. Inflorescence paniculate, terminal. A.. HIPPOCASTANUM: This is a large and very beautiful tree, native to Asia, but much cultivated in Europe and America on account of its elegant form and foliage. It grows rapidly, and attains a height of forty or more feet. Leaves of seven obovate leaflets, on long petioles, dark-green; leaflets spatulate, acuminate, serrate, two to five inches long. Petals five, pinkish-white, blooming in June, and appearing in numerous pyramidal racemes. Fruit prickly. Seeds mahogany-colored, shining, roundish, an inch in diameter, with a large pale hilum. The seeds are eaten by deer.

Properties and Uses: The *bark* is a narcotic astringent, and is not a curative agent; yet some have commended it as a tonic in intermittents. The *rind of the nuts* is a stronger narcotic—possessing about one-third the strength of opium. The powdered kernels provoke sneezing.

AESCULUS GLABRA, and AESCULUS FLAVA, which are known as the *Ohio Buckeye*, are said to possess properties similar to the above; though I have conversed with several physicians who assert that their bark is not narcotic, but that it is a tonic and astringent quite equal to the bark of *Cornus Florida*. One physician, whose name I failed to note down, told me that he had used the kernel of the nut many times for wind colic, and found it very valuable. He gave ten or more grains every hour; and never noticed any narcotic effect, but merely a gentle relaxation of the intestinal structures.

AGAVE VIRGINIANA

FALSE ALOE, AMERICAN ALOE, RATTLESNAKE MASTER

Description: Natural Order, Amaryllidaceae. Genus AGAVE: This splendid genus of the amaryllids is native to America, and several species are cultivated for their beauty. Perianth tubular-funnel-form, adherent to the ovary, six-parted. Stamens six, exserted. Capsule butesely triangular, coriaceous, three-celled, many-seeded. Leaves mostly radical, thick, rigid, channeled, often spiny. A. VIRGINIANA: Acaulescent, herbaceous. Leaves linear-lanceolate, fleshy, glabrous, with cartilaginous serratures on the edges, acute. Scape three to six feet high, simple, glabrous, with leaf-like scales. Flowers sessile, one inch long, greenish-yellow, very fragrant, arranged in a loose spike at the end of the slender scape. It blooms in September, and is often cultivated for its fragrance; and is quite common on rocky banks from Pennsylvania southward.

Properties and Uses: The *root* of this plant is fleshy and premorse. It is intensely bitter, and is pronounced laxative and carminative. Probably it is relaxing and stimulating. A tincture is used in flatulent colic; and in some parts of the South it is popularly reputed to be an antidote to the poison of serpents. Probably it may aid the elimination of virus by sustaining the nervous system, and increasing the action of the skin.

Agave Americana, or *century plant*, is an evergreen, the leaves of which abound in a saccharine juice, and which the Mexicans ferment into a kind of spirituous drink called *pulque*.

When evaporated nearly to dryness, this juice is sometimes used as a substitute for soap. The fresh juice is said to be diuretic, laxative and emmenagogue; but it has not been introduced to general practice. It is quite probable that both these plants deserve more attention from the profession.

AGRIMONIA EUPATORIA

AGRIMONY, COCKLEBURR, STICKWORT

Description: Natural Order, Rosaceae. Agrimony is common along the roadsides and field-borders in many parts of America, Asia, and Europe. Stem one to three feet high, branched, hirsute; leaves interruptedly pinnate, with from three to seven lance-ovate leaflets from one and a half to three inches long; flowers yellow, about one-third of an inch in diameter, in dense spicate racemes from six to twelve inches long, blooming in July. It has long been known in medicine, and at one time enjoyed a fabulous reputation. It imparts its properties to water.

Properties and Uses: I. The *roots* are a bitter yet rather aromatic astringent, with some stimulating power. They are seldom used; but J. L. Steinberger, M. D., of Ohio, values them greatly in calculous difficulties. In the *P.-M. Recorder* for March, 1867, he reports some cases in which a free use of the warm decoction secured rare benefit. II. The *herb* (leaves, flowers, and branches) is a mild stimulating astringent; not at all irritating; strengthening to the mucous structures; and acting somewhat on the skin and kidneys. Dr. T. Wells tells us it is a superior tonic for the kidneys. A decoction (made by steeping an ounce of the herb with a pint of hot water for an hour in an earthenware vessel) is used in doses of two fluid ounces every second hour or hour, in passive and bilious diarrhea, bloody flux, and leucorrhea. It is also useful for passive uterine hemorrhage, and spitting of blood. A much stronger preparation may be used cold for all these purposes. It enjoys a popular reputation in chronic coughs with excessive expectoration; is a good gargle in aphthous sores and sore throat; and may be used to some advantage as a wash in purulent, granular, and gonorrhoeal ophthalmia. It has been commended in obstructed menstruation, asthma, scrofula, and jaundice; but of its value in such cases, I know nothing. J. Weeks, M. D., of Indiana, informs us that it is very useful for the enuresis of children. From having once been valued far beyond its deserts, it naturally has fallen to a reputation below its real merits—for it deserves much regard in its proper place, as above indicated.

ALCOHOL

Alcohol is a peculiar fluid, produced only during the chemical changes through which the juices of various organic substances pass in the process of *vinous* fermentation. The product is dependent directly upon a change in the saccharine (sugar) constituents of plants—as starch, gum, and sugar proper. Plants containing no sugar, will not yield any alcohol; and the amount of this product is directly proportionate to the amount of saccharine material contained in the substance acted upon. Sugar alone will not undergo this vinous fermentation; but requires to be in a diluted form, and then to be acted upon by a species of organic ferment. When the vegetable substance does not contain sugar absolute, its starchy elements first undergo a low form of fermentation, by which they are converted into a species of grape sugar. This step is termed the *saccharine* fermentation. This is always the nature of the change when potatoes, rice, corn, and similar grains are used to make alcohol. Grapes contain both the saccharine materials, and the ferment necessary to set up and maintain the fermentation; while in other cases, the ferment is not contained in the plant, but has to be supplied artificially—as when the glucose or diastase of fermenting wheat is mixed with other malts, in the manufacture of whisky from corn, etc. A temperature of between 60° and 90° F., has to be maintained steadily, in order to effect the vinous fermentation; as if it fall below 60°, the entire process will be arrested, and if it rise above 90°, it will pass into the *acetous* fermentation, and result in vinegar. A mean temperature of about 75° F., is usually employed. See *Wine*.

Alcohol is not formed in a free state during this fermentation, but is necessarily combined with water, various coloring matters, the salts of the plants acted upon, and such odorous substances as are peculiar to the article used. From these the alcohol is separated by distillation—its low specific gravity enabling it to pass over into a condensing apparatus, while most of the associated materials remain behind. Simple distillation, however, will not free it entirely from all contamination, and various devices have to be used for this purpose. All the alcohol at present in commerce in this country, is obtained by distillation from the whisky manufactured from corn. This contains a small percentage of an extremely pungent and nauseating oil, known as *fusel oil*, which gives the distinguishing odor to common whisky. This is still present in all alcohol of less than 90 percent. It is now removed by filtering the whisky through a mixture of charcoal, sand, oyster shells, and boiled wheat; then distilling it at a low heat, and then redistilling it from over a moderate portion of manganic acid. The product thus obtained, is known as *deodorized* alcohol, and the process is that invented by Mr. Atwood. The common alcohol of commerce is not thus completely deprived of its fusel oil; but is put upon the market after two distillations, (the last one from over a bed of chloride of calcium, or carbonate of potassa, to remove the water,) and a passage through several tubs packed with the above filter. In this case, an almost undetectable trace of fusel oil still remains in the alcohol.

Alcohol may be obtained from any vinous liquid, as from the purest wines—when it is called *brandy*, and retains its flavoring materials and a considerable portion of its water; from the product of the vinous fermentation of potatoes, in which the quantity of fusel oil is very great. It is in the *arrack* of rice, the *pulque* of agave, and the *whisky* of rye, corn, and barley. The fermentation of molasses yields *rum*; when barley and rye are malted with hops, and rectified from juniper berries, the product is *gin*, etc. Ale, beer, and porter also yield a small percentage of

alcohol. In all these forms of ardent spirit, the exhilarating and intoxicating element is the alcohol.

As alcohol is presented in commerce, and used in the laboratory of the pharmacein, it contains varying proportions of water. Different nations, in their Pharmacopoeias, adopt different grades of strength as their officinal alcohol; but that of the United States accepts that containing 85 percent of alcohol, and 15 of water, by *weight*, with the specific gravity .835. At the present time, it is customary to speak of alcohol as the product most nearly devoid of water, or that which usually passes in commerce as *absolute alcohol*. The following terms in common use, represent the accompanying proportion of alcohol by weight:

Absolute Alcohol, (of commerce,) 98 p. c., Specif. Grav., .798.

Alcohol of Pharmacy, 85 p. c., Specif. Grav., .835.

Proof Spirit, Rectified Spirit, Diluted Alcohol, 49 p. c., Specif. Grav., .920.

In practice, Diluted Alcohol represents equal *measures* of absolute alcohol and distilled water.

The *physical properties* of alcohol are thus concisely summed up by the U. S. Dispensatory: "Alcohol is capable of dissolving a great number of substances, as for example, sulphur and phosphorus in small quantity, iodine and ammonia freely, and potassa, soda, and lithia in the caustic state, but not as carbonates. Among organic substances, it is a solvent of the organic vegetable alkalies, urea, tannic acid, sugar, mannite, camphor, resins, balsams, volatile oils, and soap. It dissolves the fixed oils sparingly, except castor oil, which is abundantly soluble. It acts on most acids, forming ethers with some, and effecting the solution of others. All deliquescent salts are soluble in alcohol, except carbonate of potassa." To this may be added the facts that it will not dissolve starches and gum proper; that all the ethers are preparations from alcohol and various acids, both organic and inorganic in origin; and that it arrests animal and vegetable putrefaction, and preserves organisms indefinitely—at the same time causing shrinkage and consolidation in the fibers. As the percentage of water increases, the solvent and preservative powers diminish; and below 50 percent, this diminution is at a greater ratio than the increase of water.

Pharmaceutical Uses: The effects of alcohol on the human frame, are too well and seriously known to need any **description** here. The article is not remedial, in any sense of the term, (§74;) but is an exciting, irritating fluid, that sometimes provokes what appears to be desirable effects, (§70,) but which leaves behind a nervous prostration that at once classes it as baneful (§92.) While the Allopathic and Eclectic physicians prescribe ardent spirits in some of their many forms, and class them as their most reliable and active stimulants; the Physio-Medical practitioner does not accept them among his stimulants, and does not employ them as in any sense of the word *curative*. The only uses to which alcohol can properly be applied, are as a solvent to that large variety of agents which will not yield a fair portion of their properties to water, and as a preservative addition to numerous pharmaceutical preparations. A very serious question arises, as to whether it is proper to use it at all, even for these purposes, where the preparations containing it are to be administered internally. Without it, many valuable agents

could be made to yield only a moderate portion of their virtues; and some could scarcely be used in any other than a solid form. Much would also be lost in convenience of prescription and elegance of preparation. But such a question should not be decided alone by economy or comfort, but by the principles of Therapeutics. If the pharmaceutical use of alcohol is detrimental in prescriptions, then away with it. For several years, I refused to employ it as an ingredient in any preparation; and adopted such forms of administration as answered a far better purpose than I had expected, and satisfied my patients well. Accidentally, I was made aware of the fact that an ardent spirit, when *completely saturated* with a medicine, exerts no intoxicating power. This I tried upon myself several times, to my full satisfaction; and, though strictly a total abstainer from all such beverages, found that an entire pint of wine saturated with a tonic, exerted no intoxicating impression upon me, whereas two ounces of the same wine would otherwise make me quite dizzy. On these facts, I have since used a moderate portion of alcohol in Pharmacy. But I apprehend that the common customs allow far too much alcohol to the amount of medical agents used, so that the spirituous liquid is by no means completely occupied as a solvent. Should this surmise be found to be correct, physicians should take the proper steps to change these relations in Pharmacy. This can probably be done to the best advantage by using dilute alcohol wherever it is possible; so that water shall be allowed to extract all the virtues it can, and only that which is insoluble in water be left to the alcohol. These remarks apply as well to rectified whisky, brandy, wine, and other alcoholic compounds, as to alcohol alone.

The many cases in which alcohol is employed, will be duly named in the department of Pharmacy. As a solvent menstruum, it is mostly used in treating agents of a strongly resinous character, as podophyllum, jalapa, myrrh, guaiacum, capsicum, etc.; also in solving essential oils and soaps, especially when these are to be used in external applications. It is not probable that any thing is gained beyond flavor, in employing the costly wines and brandies in place of the simpler alcohol; and any diuretic properties that belong to gin distilled from juniper, may be gained to better advantage by the employment of a suitable diuretic. A good flavor of brandy may easily be given to spirits by adding one drachm (or even less) of acetic ether to a gallon of absolute alcohol, and then diluting it with water to any desired standard. I employ this simple method with much satisfaction, and find it answers quite as good a purpose as the high-priced foreign liquor, (brandy,) which contains but from 45 to 50 percent of alcohol.

Alcohol diffuses remedial impressions even more rapidly than is done by warm water. It also seems inclined to direct relaxants strongly toward muscular structures. (§263.) It also makes stronger impressions upon the nervous centers. It is not, therefore, a suitable menstruum when there is gastric, intestinal, or cerebral excitement; nor when a general effect is desired from an agent that may also act upon the brain, as with cimicifuga and serpentaria.

Ale, beer, and other malt liquors, are not solvents, and have no place in Pharmacy. They are often prescribed on the assertion that they are nourishing; but the most thorough investigation shows that a thousand gallons of them do not contain two pounds of nourishment.

ALISMA PLANTAGO

WATER PLANTAIN, MAD-DOG WEED

Description: Natural Order, Alismaceae. Genus ALISMA: Acaulescent marsh-herbs, with expanded leaves and paniced flowers. Flowers perfect, three-petaled and three-sepaled; stamens six; styles and ovaries numerous, and arranged in a circle. A. PLANTAGO: Leaves radical, ovate, sub-cordate, abruptly acuminate, five-veined, four to six inches long, long-petioled. Scape one to two feet high, paniced. Flowers verticillate, numerous, small, rose-white, appearing in July and August. Carpels fifteen to twenty. This smooth little plant is common in our ditches and pools.

Properties and Uses: The *leaves*, when fresh, are highly stimulating, and even vesicant. When dry, a strong infusion of them proves relaxing and stimulating, acting on the skin and kidneys. Used warm, this will secure gentle moisture on the surface, and quiet nervous agitation. Used cold, it procures a free discharge of urine; and has been considered of service in lithic acid gravel, and torpor of the kidneys connected with common colds, dysentery, and typhoid. A fomentation of the dried leaves is good in bruises; and the coetaneous outward and inward use of the plant has a popular reputation for the treatment of hydrophobia. It is not likely that it can be relied upon in such a connection; but no doubt it will prove deserving of confidence as a mild nervine depurator. The insignificant appearance of the plant has led to its being slighted.

ALLIUM SATIVUM

GARLIC

Description: Natural Order, Liliaceae. This article is so common, that its botanical **description** is unnecessary in this place. The bulbous roots are the parts used, and their virtues depend upon a volatile essential oil, which is extremely pungent. This oil may be obtained by distillation in the ordinary manner. Water, vinegar, and alcohol, extract their properties. The common onion (*Allium Cepa*) resembles the garlic, but is not so strong.

Properties and Uses: The *bulbs* have been employed as a condiment and medicine from remote antiquity. They are very stimulating, moderately relaxing, and very diffusible. They excite the mucous secretions, facilitating digestion in sluggish stomachs; improving chronic catarrh, and promoting expectoration. Considerable quantities, or a long-continued application outwardly, will excite the circulation—leading to hot skin, flushed face and headache. By its continued action on the nervous system, it exhilarates it in sudden depressions, and often proves antispasmodic—as in “worm fits” of children, and spasmodic cough. (§245.) It has a popular reputation for worms, suppressed menstruation, atonic dropsies, and hysteria; and its general excitation of the system may enable it to prove of some transient service in such cases. Applied outwardly, it is a strong counter-irritant; and is often used as a fomentation on the feet to relieve the brain in cerebral excitements. A poultice applied over the pubes has been said to relieve paralysis of the bladder; and a drop or two of the juice into the ear three times a day, has been commended in atonic deafness. It is not to be used inwardly during the existence of inflammation or acute irritation; nor outwardly near any organ in the same condition, nor for a long time. Dose, a drachm cut into slices and infused in half a pint of milk; or from half to a whole fluid drachm of the juice mixed with sugar; repeat three or four times a day. Its disagreeable odor is objectionable, and the plant is strongly suspected of being a little narcotic, though not in my opinion.

Pharmaceutical Preparations: I. *Sirup.* Garlic, sliced and bruised, six ounces; vinegar, a pint; sugar, two pounds. Macerate the garlic in the vinegar, in a glass vessel, for four days; strain, and add the sugar. Used in spasmodic coughs and catarrhal affections of children. Dose, for a child of twelve months, a teaspoonful repeated every six hours. II. *Decoction* of the bulbs of common onion, made by simmering them in milk for two or three hours, has received some excellent testimony for its usefulness in dropsies. Several large onions are made to yield a quart of decoction, and this is used in twenty-four hours. Such continued boiling, even in a covered vessel, nearly destroys the acrid properties of the article. I have myself used it as an adjunct to tonic treatment and outward stimulation; and have been much pleased with the manner in which it promoted urinary and perspiratory secretion and facilitated absorption.

ALNUS SERRULATA

TAG ALDER, SWAMP ALDER, SMOOTH ALDER

Description: Natural Order, Betulaceae. The alder shrub grows in thickets in swampy ground, reaching a height of from eight to fifteen feet. Leaves from two to four inches long, one to two and one-half inches wide, obovate, thick; catkins two to three inches long, in terminal clusters, pendulous; flowers reddish-green, appearing in March and April.

Properties and Uses: The *bark* is the medicinal part, and is readily acted on by water. It is mildly astringent, and slowly stimulating to the cutaneous and renal secretions. It is good as an alterant in the treatment of scrofula, scrofulous and cachectic ulcers. The profession have by no means given to the article the attention it deserves; but have sent abroad for sarsaparilla, when the despised alder at their door is probably quite as valuable, especially when combined with suitable stimulants. A strong decoction of the article is a useful wash in scrofulous and venereal ulcers, and in chronic ophthalmia; and the same has been used as a popular drink in sub-acute diarrhea, and will be found a good injection in leucorrhea..

Pharmaceutical Preparations: I. *Decoction*. Simmer an ounce of the bark in a pint of water till half a pint has been evaporated. Dose, a fluid drachm three or four times a day. II. *Sirup*. Macerate three pounds of crushed bark in cold water for six hours; put into a percolator, and add water till five pints have passed over (see Percolation;) put over a slow fire and stir in eight pounds of sugar till dissolved. When cold, add a pint of whisky. Dose, a fluid ounce three or four times a day. Various compound sirups are made, as with dicentra, rumex, etc.

ALOE SPICATA

ALOES

Description: This species of aloe is the one from which the better qualities of the drug aloes are obtained. It is a native of Southern Africa.. Stem round, three or four feet high; leaves about two feet long, wedge-shaped, spreading at the top of the stem; flowers large, white, spiked, bell-shaped.

Aloe Socotrina also yields a good article of the drug; and probably all the species contain it. The portion used in medicine is the inspissated juice of the leaves. It is obtained by either breaking or cutting the leaves, and allowing the juice to fall upon the fleshy side of a sheep-skin spread in a suitable hole in the ground. When a sufficient quantity of juice has thus been gathered, it is put into an iron vessel and condensed at a low heat. The *Cape* aloes comes to us as a dark, blackish-green mass, brittle, of a shining fracture, and almost wholly resinous in character. It yields its properties to water, may be nearly dissolved by boiling water, and is quite soluble in even dilute alcohol. The color of the *Socotrine* aloes varies from a light yellow to a dull reddish-brown, and the fracture is not so glassy as the Cape variety. The *Hepatic* and *Barbadoes* varieties are reddish-brown, and have not a smooth or shining fracture. They are all intensely bitter, though the Socotrine has a little aroma with it.

Properties and Uses: All varieties of aloes are stimulating to the large intestine, acting slowly but very positively, yet not procuring very liquid stools. In semi-paralysis of the lower bowel, and for ascarides, they are generally efficient; but must not be used when there are piles, tenesmus, or the least irritation of the colon. Their continued use is very likely to bring on piles; and a too free resort to pills containing aloes, is probably a source of much mischief of this nature. This drug also stimulates the gall-ducts, and has been given in depressed jaundiced conditions. Its action upon the uterus is associated with that upon the colon; and it has been noticed to promote menstruation powerfully in debilitated states of the uterus, but is not often an advisable article for such purposes, even though very fashionable. If mixed with an alkaline carbonate, as soap, it proves less irritating to the bowel. It has been asserted that its peculiar influence on the bowel and uterus will follow the application of a decoction upon a denuded surface. Dose, as a laxative, two to four grains; as a full cathartic, ten grains. It is generally combined with other and less irritating cathartics; or if its action upon the uterus is desired, it is chiefly combined with the emmenagogue tonics, and given in doses of one to two grains two or three times a day. It is common to use this drug in excess, and thus to weary the bowel; and probably few non-poisonous agents have been so largely misapplied. From an Allopathic practice of combining it with abortives, it has fallen into a disrepute that it does not deserve; for it is an effective article.

Pharmaceutical Preparations: I. *Pills.* Aloes are given in the pillular form oftenest, as this presents the best opportunity for disguising their extreme and lasting bitterness. Nearly all the patent pills, for generations past, have contained some portion of this drug. 1. *Brandreth's* pills contain the following: Aloes, two pounds; gamboge, one pound; bitter cucumber, four ounces; soap, half a pound; peppermint oil, two drachms. 2. Aloes, two ounces; myrrh, two ounces; ginger, half an ounce; sirup, sufficient. This is emmenagogue and cathartic. I prepared it to meet

cases of uterine atony accompanied by flatulence and costiveness, and think well of it. Dose, one to two, morning and evening, for a few days about the menstrual period. 3. Aloes, one ounce; gentian, one ounce; extract boneset, sufficient. I have used this as a laxative tonic profitably. Oil of peppermint may be added to correct flatulence. II. *Tincture*. Two ounces of aloes to a pint and a half of alcohol, is the officinal tincture; of which the dose is a fluid drachm.

ALPINIA CARDAMOMUM
CARDAMON

Description: Natural Order, Zingiberaceae. This plant is a native of Malabar. Root a horizontal rhizoma, (properly a subterranean stem,) bearing a number of leaf-stalks from six to twelve feet high; leaves alternate, sheathing, one to two feet long, elliptical. Flowers greenish- white, labiate-funnel shaped, on procumbent racemes. Fruit a three-sided, three-celled, ovate capsule, yellowish-white, from one-fourth to three-fourths of an inch long. The capsules, with their seeds, are the medicinal part; though the virtue really lies in the seeds. These are fragrant, highly aromatic, and agreeably pungent. They contain much volatile oil, and some fixed oil.

Properties and Uses: The *seeds* are warming, aromatic, and carminative. Their chief employment is as. an adjunct to cordial and purgative medicines, to relieve flatus, and prevent griping. They are the most agreeable and positive of the stimulating aromatics. A dose may range from two to five grains.

ALTHEA OFFICINALIS

MARSH MALLOWS

Description: Natural Order, Malvaceae. Genus ALTHEA: Calyx surrounded at base by a six to nine-cleft involucre; styles numerous, with linear stigmas; carpels numerous, one-seeded, indehiscent; arranged circularly. A. OFFICINALIS : Stem three feet height, erect, covered with thick and stellate wool. Leaves alternate, velvet-like on both sides, cordate-ovate, somewhat three-lobed, dentate. Flowers axillary and terminal, on short peduncles, large, pale-purple, appearing in September.

This plant is native to the salt marshes of Europe, but has been introduced to some of the marshes of America. The root is the officinal part, and our supply is obtained from Europe. It appears in market in pieces varying from three to seven inches long, and as large around as one's finger; white, downy, and tough. The leaves and flowers possess properties similar to those of the root. (See *Hibiscus Moschatus*.)

Properties and Uses: The *root* contains large quantities of pure mucilage, which is agreeable to the taste and soothing to all mucous membranes. A decoction is useful in irritable coughs arising from acute bronchitis, pneumonia, and pleurisy; also in acute dysentery and gonorrhoea, and inflammation or catarrh of the bladder. Probably it is diuretic to a moderate extent, as most mucilages are; at least it exerts all excellent soothing influence in all irritations of the kidneys and water passages, and in scalding urine. It is always given in decoction or infusion; and appropriate medicaments of a more permanent character are generally combined with it. An infusion may be used as an adjunctive wash in acute ophthalmia, and pruritis. Externally, the crushed root, boiled in milk, forms an admirable body for poultices in irritable swellings and sores, and in bruises, scalds, and burns. The dust has been used as an absorbent in making pills.

A *decoction*, made by simmering an ounce of the root in a pint of water, may be given in doses of one or two fluid ounces as; often as desired. A *sirup* may be made by macerating an ounce and a half of the roots in a pint of water for twelve hours, and adding two pounds of sugar to the strained liquor. It soon ferments, and is good only in temporary prescriptions. It is an elegant demulcent for coughs; and if one-half of an ounce of lobelia herb be used in making this sirup, the practitioner will have an excellent preparation for all bronchial irritations. The antispasmodic action would be heightened, and the sirup preserved, by adding to the pint of this two ounces of tincture of *cimicifuga*.

ALTHEA ROSEA

HOLLYHOCK

Description: Natural Order, Malvaceae. This is the common hollyhock, so much cultivated in our gardens for its large and showy flowers. The generic characters are the same as the marsh mallows.

Properties and Uses: The *flowers* are demulcent; and also yield a slightly tonic property of a somewhat nauseating taste, that acts mostly upon the renal organs. The mucilaginous qualities are best extracted by tepid water; and make a good drink for irritable coughs, and irritated stomach, bowels, bladder, and urethra. The tonic and diuretic properties are best extracted by water at nearly a boiling temperature. I have found them of considerable service in the treatment of irritable forms of spermatorrhea, and chronic sensitiveness of the prostate, neck of the bladder, and urethra. The roots are said to be similar to the flowers.

Pharmaceutical Preparations: I. *Mucilage*. Hollyhock blossoms, dried, two ounces; water, a sufficient quantity. Macerate for four hours at a low heat, and strain. Dr. S. Thomson used a thick mucilage of this kind in his preparation called “Bread of Life.” II. *Compound Sirup*. Hollyhock blossoms, *celastrus scandens*, each half a pound; *hydrastis* and *caulophyllum*, each two ounces. Digest the hollyhock in one quart of hot water for three hours. Crush the other articles, and treat them with diluted alcohol in a percolator till a quart has passed. Set this aside, and add the hollyhock and its decoction to the ingredients in the percolator, and then add water till two quarts have passed. To this add two pounds of sugar, and evaporate on the water bath to one quart. Mix the two products. I have used this preparation to great advantage in spermatorrhea. Dose, a tablespoonful four times a day.

ALUMEN

ALUM, SULPHATE OF ALUMINA AND POTASSA

Alum is a chemical compound of two distinct salts, namely: Sulphate of alumina and sulphate of potassa, or sulphate of alumina and sulphate of ammonia. The last salt is present only in a few varieties, and other specimens contain a soda salt with the salt of alumina, and still others substitute an iron salt for alumina. The following symbols represent the more familiar specimens: *Roman* or *Rock Alum*. $\text{KO.SO}_3+\text{Al}_2\text{O}_3+24\text{HO}$. *Ammonia Alum*. $\text{NH}\cdot\text{O.SO}_3+\text{Al}_2\text{O}_3+24\text{HO}$. *Iron Alum*. $\text{KO.SO}_3+\text{Fe}_2\text{O}_3+24\text{HO}$. The proportion of water is thus seen to remain uniform through them all, while the characterizing salt is a tersulphate of a sesquioxide.

Rock Alum is the one used in medicine. It is found in a nearly pure state in the volcanic region of Italy, and is purified by solution and subsequent crystallization. The *alun ores* are certain slaty earths, from which the alum is manufactured by calcination, exposure to the air for three months, and subsequent lixiviation and crystallization.

Properties and Uses: This is a pure, and among the least, irritating of the metallic astringents. Given in doses of five to fifteen grains every three or four hours, it has been used to check passive hemorrhages, and chronic dysentery and diarrhea. In solution of half a drachm to an ounce of water, it has been extolled as a gargle in scarlatina and other anginose affections, for ptyalism, and elongated uvula, and as an injection for uterine hemorrhages; while five to nine grains to the ounce form a wash in purulent ophthalmia, and (in some demulcent infusion) an injection in leucorrhœa, gleet, and even gonorrhœa. It will check mucous discharges in all these cases; but such a mere suppression is by no means a *cure*, and therefore the alum practice is a very poor one.

In doses of from forty to sixty grains every fifteen minutes, it is an emetic, and has been highly valued for this purpose in croup. In the same large dose, repeated every three hours, it proves purgative; and is said to allay the nausea and open the bowels more efficiently, in lead colic, than any other agent. It is reputed antispasmodic, and has been given in small doses, three times a day, in hooping-cough.

The article is chemically incompatible with the alkalies and their carbonates, as lime and lime water, magnesia and its carbonate, potassa and its carbonate, soda, tartrate of potassa, and acetate of lead—which it will neutralize and render nearly inert.

Pharmaceutical Preparations: When given internally, it is better to mix the fine powder with the sirup, or honey, than to give it in solution. *Alum Whey* is prepared by boiling two drachms of alum with a pint of milk, and straining to separate the curd. *Burnt Alum* is merely alum deprived of its water by heat. It is powdered and sprinkled upon fungous flesh, acting as a very mild escharotic.

AMARANTHUS HYPOCHONDRIACUS

PRINCE'S FEATHER, AMARANTH

Description: Natural Order, Amarantaceae. Weedlike herbs, with alternate leaves four to eight inches long. Stem four to six feet high, furrowed, smooth; leaves on long petioles, oblong-lanceolate, light-green with a purple spot; flowers three-bracted, three to five-sepaled, in long, erect, crowded spikes; calyx and bracts a brilliant purplish-red. This plant is often cultivated for its flower-spikes.

Properties and Uses: The *leaves* are mildly astringent, with a little diffusively stimulating power. They have been used in dysentery, diarrhea, menorrhagia, leucorrhoea, sore mouth, and other conditions to which the leaves of hamamelis are applicable.

The *A. melancholicus*, called *Cock's Comb* and *Love-lies-bleeding*, probably possesses the same properties. It is reputed to be of much value in menorrhagia and all uterine floodings ; and R. H. Homer, M. D., of Greensboro, Ind., assures me it is reliable in such cases. Rafinesque speaks of it very favorably in his Medical Flora.

AMBROSIA ARTEMISIAEFOLIA

RAG WEED, ROMAN WORMWOOD, BITTER WEED, HOG WEED

Description: Natural Order, Compositae. Stem one to three feet high, slender, pale- green, pubescent when young, branched; leaves twice pinnatifid, nearly smooth, light-green; flowers small, green, sterile ones in terminal racemes, fertile in the axils of upper leaves. A somewhat common nuisance along roads, in meadows, and through fields everywhere.

Properties and Uses: The *leaves* are stimulating and astringing, bitter, and permanent in action. An infusion is useful in diarrhea and dysentery of a passive character; in uterine, gastric, and pulmonic hemorrhages; and in degenerate leucorrhoea as an injection and drink. It is also a valuable local styptic; and may be applied to bleeding surfaces, as in piles, epistaxis, wounds, etc., either in powder or infusion. A use of a strong decoction influences the kidneys considerably, sustains the tone of the stomach, and slowly elevates the circulation; and these actions render it useful in the treatment of chronic dropsies, especially when combined with hepatics and stimulating diaphoretics. A very strong decoction, used freely, is reputed among the people in some sections to be a reliable antiperiodic; and many of the actions of the agent certainly suggest properties analogous to cinchona. It is said to be useful in poultices to phagedaenic ulcers— checking putrescence; and I do not doubt but such is the case. The article is too much overlooked by the profession.

Ambrosia Trifida is probably similar in properties to the above species.

Pharmaceutical Preparations: I. *Infusion.* Macerate an ounce of ambrosia and one drachm of zingiber in a quart of hot water. Dose, one to two fluid ounces every two, three, or four hours, *pro re nata*. II. *Compound decoction.* Ambrosia, four ounces; *fraxinus acuminata*, two ounces; *liatris spicata*, two ounces. Macerate in four pints of water, strain and reduce to two pints. Dose, a fluid ounce four or five times a day. Useful in dropsies, in conjunction with baths, and with physic if the case should need it. The same article may be formed into a sirup in the usual manner.

AMPELOSIS QUINQUEFOLIA

AMERICAN IVY, WOODBINE, VIRGINIA CREEPER, FALSE GRAPE

Description: Natural Order, Vitaceae. This shrubby vine is common throughout the United States in woody thickets, mounting the highest trees with its root-like tendrils. It is cultivated for the beautiful covering it makes when it climbs the sides of the houses. Leaves quinate, each leaflet being oblong, two to four inches in length, and dark green; flowers small, greenish ; berries small, dark blue, sour, ripe in October.

Properties and Uses: The bark and twigs are used. They are mildly stimulating to the mucous membranes and secreting organs, and slightly astringent—a combination of qualities which has led the plant to be classed as alterant and tonic. It improves the vigor of the lungs, promotes expectoration moderately, and slowly increases the action of the skin. By these influences, it becomes of service in chronic coughs and bronchitis, in the early stages of scrofulous phthisis, and in mild cutaneous affections. Combined with more vigorous alterants, it gives a tone to the system which is often valuable. The article probably deserves more notice than it has yet received.

Pharmaceutical Preparations: I. *Decoction*. Digest two ounces of the bark in a quart of water, and reduce it to a pint. Dose, a fluid ounce four or six times a day. It may be combined with ordinary alterants at pleasure in the form of sirup.

AMYGDALUS COMMUNIS DULCIS SWEET ALMOND

Description: Natural Order, Rosaceae. A tree of fifteen to twenty feet high; native of Persia, Syria, and Northern Africa; much cultivated in Spain and Southern France; capable of cultivation in the Gulf States and Mexico. Flowers large, pale red varying to white, in pairs, nearly sessile upon the branches, appearing before the leaves; calyx five-parted, reddish; petals five; stamens twenty or more, spreading. Leaves elliptical, pointed, three inches long, alternate, short-petioled, minutely serrate, bright green. Fruit a drupe, as in the peach, but the sarcocarp (fleshy portion) becoming thin, tough, and dry; the ripe pit constituting the well-known almond nuts of commerce.

Properties and Uses: The cotyledons of the almond drupe are edible, and a fine table luxury. When deprived of their reddish-brown envelope, they are said to be *blanched*; and when beaten up in a mortar with a moderate quantity of water, they form an emulsion of elegant flavor and superior demulcent properties. Half an ounce, thus made into emulsion with two drachms of sugar, half a drachm of gum arabic, and eight fluid ounces of water, make the officinal Almond Mixture; of which from two to four fluid ounces may be taken every four hours, as a nutrient demulcent in dysentery and irritation of the water passages. It is also used as a vehicle for stronger remedies, especially in the exhibition of camphor mixture. The blanched almonds, when crushed in a mill or mortar, put into canvas sacks, and strongly pressed between moderately-heated iron plates, yield more than fifty percent of oil. This oil is clear and colorless, or but very slightly tinged greenish-yellow, almost without smell, and of a sweetish-bland taste. It is used for the same purposes as olive oil, but is pleasanter and more nutrient. Made into an emulsion with the yolk of an egg, sugar, and water, it is sometimes used as a pectoral and dietetic in pulmonary affections and old coughs, where there is much feebleness and irritability. From a teaspoonful to a tablespoonful may thus be given two or three times a day.

The *amygdalis amara* is a variety of the common almond, the cotyledons of which have a rather bitter taste, much like that of peach kernels. They are liable to undergo chemical change very speedily, and through this change to furnish a small quantity of hydrocyanic acid, (§32 ;) hence their emulsion is not a safe preparation. Their fixed oil is as bland as that of the sweet almonds. The cake left after the fixed oil is expressed, is mixed with water and submitted to distillation. During this process, chemical changes take place; and there is obtained an acrid and bitter oil which, says the U. S. Dispensatory, “*does not preexist in the almond*, but is produced by the reaction of water upon the amygdalin contained in it, through the intervention of another constituent denominated emulsin. It is obtained also by the distillation of the leaves of the cherry laurel, and various products of the genera *Amygdalus*, *Cerasus*, *Prunus*, and others.” The active constituent of this oil, is the poisonous hydrocyanic or prussic acid; and thus does the highest Allopathic authority recognize the fact that this poison does not originally exist in the peach, cherry, almond, etc.; but is a product of chemical fermentation and reaction among the organic constituents of the plant, as alcohol is a product of chemical fermentation among the elements of corn, rye, wheat, potatoes, etc. It is peculiar of all the plants of these genera that, while they will yield no prussic acid when dry, the presence of water determines these changes speedily; and a

tepid infusion or emulsion of any of them, (except the blanched sweet almonds,) may thus be altered in from six to twelve hours.

AMYGDALUS PERSICA

PEACH

Description: Natural Order, Rosaceae. This is the peach-tree of our orchards, belonging to the same genus as the almond, but valued for the large and luscious development of a fleshy sarcocarp around the drupe. It is too well known to need **description**.

Properties and Uses: The *kernels* of the peach are among the pleasantest of all stomachic tonics—promoting appetite at the same time that they soothe irritation. In female difficulties, as leucorrhœa, they are especially serviceable, as well for toning the uterine organs and allaying nervousness, as for improving the tone of the stomach. Their power is quite concentrated; and, unless combined with such diffusive tonics as camomile, aralia, liriodendron, etc., they act quite locally. Hence they are best used in small quantities with such articles, both for their agreeable flavor, and to give intensity to the action of the other remedies. Ten to twelve grains of these kernels are a sufficient quantity to use three times a day; or two ounces may be employed in a gallon of any compound preparation. Heat quickly impairs their virtues; hence they should always be made upon some liquor.

The *leaves* are largely relaxant and somewhat demulcent. They exert a decided and most valuable influence upon the kidneys, bladder, and urethra—promoting the urinary discharge, and soothing all inflammation, tenderness, scalding, and aching of these parts. They are one of the most reliable agents in the *Materia Medica* for all such purposes, and deserve great attention in acute cases. They may also be used in the urethral and cystic irritation of gonorrhœa. In large quantities, they act mildly upon the bowels, securing mucous discharges without pain; and in this act many times leading to the expulsion of worms in their nests. They are best given in infusion—a drachm of the leaves to four ounces of tepid water; dose two fluid ounces every three hours to increase the water of the urine and relieve scalding. At least twice this quantity would be required to affect the bowels. This infusion should be made fresh at least every twelve hours, and used cold. The addition of a moderate quantity of ginger is often an advantage; and when the kidneys are congested, a grain or two of capsicum may be added to four ounces of the infusion, and a fluid ounce given once an hour.

The objection is usually raised to these kernels and leaves, that they are dangerous because of the prussic acid they contain. In the department of Therapeutics, (§32,) as well as under the article on almonds, it is shown that they contain no prussic acid whatever; but this is a product only of chemical changes which take place in the presence of warmth and moisture. This point is clearly proven by all chemical science; and it is admitted by the U. S. Dispensatory, Stille, Pereira, Christison, and all other writers of eminence, that no such product was ever obtained from any of these substances till after their chemical decomposition. But it is gravely asserted that such plants, especially the flowers and kernels of the peach, show by their odor that they *do* contain prussic acid. This assertion shows great ignorance of this acid, and also of current literature on this subject. Neither peaches, bitter almonds, cherry-laurel, or other plants of like odor, have any of the odor of prussic acid; for the two smells are entirely different. One need go no further than the U. S. Dispensatory to learn this fact; any reliable work on chemistry will tell him the same fact; and Christison says the odors bear no resemblance to each other, but that the distilled waters

from the fermented plants retain their peculiar odor “after the acid is thrown down ” and totally removed. But it is said to be harmful to eat large quantities of peach kernels, which is quite probable; for they are of difficult digestion, will undergo chemical changes in the presence of the heat and moisture of the stomach, (§39,) and that change will produce prussic acid freely. Before fermentation, they are absolutely safe; after fermentation, they are extremely dangerous.

AMYLUM STARCH

Starch is a constituent in the saccharine group of organic substances. In this country, it is now mostly obtained from corn, and a smaller quantity from wheat; and it also abounds in potatoes, rice, and most of the cereals. Tapioca, sago, and arrow-root, are peculiar forms of starch, obtained from the roots of certain woody plants. It is obtained by soaking the grain and then grinding it; passing it through sieves, in company with a large quantity of water, to separate the bran; and then allowing the starch to settle in large vats filled with water. Afterward it is cut into large cubical masses, and kiln-dried at a temperature of about 125° Fahrenheit.

The appearance of starch is well known. It consists of a mass of small granules, each with a membranous covering. It is not soluble in cold water, alcohol, ether, or the oils. Boiling water breaks down the membranous envelope, and then it is so effectually suspended in water as to appear as if it were dissolved. Trituration and heat will also break down these membranes, so that their contents can be suspended in cold water. By roasting for three hours at a temperature of 300° F., it is converted into a brittle, yellowish-brown mass, readily soluble in cold water, and used as a paste under the name of *British Gum*. By boiling in very dilute sulphuric acid, all starches are slowly converted into a species of grape-sugar, (see *Alcohol*;) and fermentation with the dextrine of wheat malt will effect the same change, more rapidly. When thus converted into sugar, boiling with strong nitric acid will form it into the oxalic acid of commerce.

Properties and Uses: Boiled starch is mostly used for laundry purposes, to give stiffness to cotton fabrics; and as a paste in the laboratory. It is an excellent article of nutrition, with almost pure demulcent properties; and physicians would find much advantage in turning the attention of patients to it as one of the lightest articles of diet, suitable for children and adults in bowel complaints, in convalescence from parturition, typhoid, and a great many other cases. One of the most elegant dishes made from it is by mixing three tablespoonfuls of the pulverized starch, (prepared by Mr. George Fox, 87 Columbia Street, Cincinnati,) into a quart of milk, and boiling for three minutes with a tablespoonful of sugar. It may be flavored with lemon or vanilla; and when cold, forms a nice jelly. Eggs may be added to it for a heartier dish. It is preferable to arrow-root and sago.

Medically, boiled starch is soothing and very slightly astringent to mucous surfaces. A trifle is a desirable addition to the milk of children who nurse from the bottle. It is used mostly as a mucilaginous vehicle for suspending powders, and as a demulcent ingredient for injections. Combined with glycerin, it makes an excellent soothing appliance, as well as a good vehicle for conveying powdered drugs. The dry powder may be dusted upon chafed surfaces, and upon parts troubled with erysipelas; and is a fair absorbent of irritating secretions.

ANETHUM GRAVEOLENS

DILL SEED

Description: Natural Order, Umbelliferae. Dill is a native of Spain, Portugal, and Southern France; but is much cultivated in all the European countries, and somewhat in America. The plant grows erect, three to four feet high, branched, and with a pointed stem. Leaves on sheathing petioles, bi or tri-pinnate. Flowers yellow, without any involucre, and in large, flat umbels. The fruit is a flat, brownish seed, oval, and somewhat more than a line in length. These so-called seeds are of a peculiar and pungent aromatic odor, allied to the smell of fennel, though not so pleasant. They yield a small quantity of volatile oil; and are acted on readily by diluted alcohol, and partially by boiling water.

Properties and Uses: These *seeds* are an excellent aromatic stimulant, diffusive, and quite warming. They are among the most valuable carminatives; and make an excellent adjunct to strong tonic and cathartic medicines. They are seldom used in this country, the fennel seeds taking their place. They may be compounded with angelica and dioscorea in colic preparations. Dose of the powder, fifteen to twenty grains; but they are usually employed as a diluted tincture, or by infusion.

ANGELICA ARCHANGELICA

ANGELICA, GARDEN ANGELICA

Syn: Archangelica Officinalis.

Description: Natural Order, Umbelliferae. This plant is many times cultivated in the garden, and reaches the height of from three to five feet. It has a smooth and slightly polished green stem; and large branched roots. Leaves bi-pinnatisect, on large petioles with loose sheaths; segments sub-cordate, lobed, serrate; smooth and bright green. Involucels many-leaved. Calyx five-toothed, short; petals entire, elliptical-lanceolate, acuminate, point reflexed ; fruit compressed dorsally, with three thick carinate ribs on each carpel; seed loose in the ripe carpel. Flowers green, from June to September.

The *Angelica Atropurpurea*, commonly called *Masterwort*, grows wild in wet fields and by the side of ditches throughout the United States. It is larger than the former species, with a dark purple stem, and three-parted leaves. It is a more rank plant, though its properties are similar to the other—except that the juice of the green roots is said to be injurious.

Properties and Uses: The *roots* are grayish-brown outwardly, and nearly white within. They have a peculiar aromatic and pungent odor, and a pungent taste. Their properties seem to depend in part upon an oleo-resinous material. They may be chewed, or used in warm infusion; and prove diffusively stimulating and relaxing to the stomach and skin, with a slight influence upon the kidneys. They promptly relieve flatulence and wind colic. Are not proper in inflamed conditions. The *seeds* possess the same properties, but are rather more diaphoretic. A warm decoction of them, used freely during an evening, is a popular family remedy for retained placenta, and suppression of the menses suddenly following cold; and is deserving of use, if employed early. A strong decoction has been asserted to cure chills, if suitable cathartics have first been used ; and the tincture for spasmodic coughs. They can be used profitably as an adjunct to antispasmodic nervines.

Pharmaceutical Preparations: I. *Infusion.* Angelica roots, one ounce; hot water, one pint. Infuse in a covered vessel. Dose, one to two fluid ounces as needed. II. *Compound Tincture of Angelica, Carminative Drops.* Angelica root, four ounces; dioscorea root, two ounces; leonurus, coriander seeds, anise seeds, and dill seeds, each one ounce. Crush the whole, and macerate in forty ounces of thirty percent alcohol for ten days. Apply strong pressure, and add half a pound of white sugar to the clear liquid. This is an agreeable and a most reliable carminative preparation for all forms of flatulence, colic, and abdominal pains not connected with inflammation. Dose for an adult, half to a whole teaspoonful, in water, every hour or oftener. Equal parts of these drops and the Neutralizing Cordial, make an admirable mixture in tormina with sour stomach and a tendency to diarrhea, but not in dysentery.

AUTHEMIS COTULA

MAY WEED, DOG FENNEL, WILD CAMOMILE

Syn: MARUTA COTULA.

Description: This is a too common annual weed, throughout the United States and Canada, along the roadsides and elsewhere, growing thickly to the height of about ten to fifteen inches. In general habit and appearance, it resembles the garden camomile ; but it is more dense, branched, and leafy. Flowers solitary, terminating the branches, disk yellow, ray white; rays standing horizontal during the day, reflexed at night. Involucre hemispherical, imbricated, hairy, July to October. The whole plant has a strong, unpleasant smell; which is very persistent if bruised in the fingers. It imparts its properties to water and alcohol. When green, it is extremely bitter and acrid to the taste; and is rather pungent, even when dried. It has been used in some places for tanning some of the softer leathers.

Properties and Uses: A number of practitioners have assured me that the *flowers* of the may weed resemble those of the garden camomile; but are stronger, more stimulating, more diaphoretic, and better fitted for sluggish conditions of the stomach and the circulation. Personally, I can not speak of their value; but the practitioners above-named are careful men, and have spoken from their own experience. The *herb* as a whole, is extremely acrid when green, and almost excoriating; when dry, it is a rather sharp stimulant. The only uses to which I have known this put, were externally. The green herb, pounded and put in small bags may be boiled in a little water; and the bags then applied as a fomentation in congestions of the abdominal or pelvic viscera, and in rheumatism; or several of them may be placed along the sides of the patient, to secure perspiration. They yield a little volatile and very stimulating oil; and this in connection with the vapor, makes this appliance quite a powerful one, when a strong determination to the surface is needed. The dried herb, similarly managed, I have known to be applied to old and very indolent ulcers; where it aroused strong local action, secured the sloughing of degenerate parts, and put the surface in a condition favorable to healing. Probably the agent deserves more attention than it has yet received; but the stimulating qualities of even the flowers should be borne in mind, when using it. Dr. Horton Howard speaks of the article in very warm terms; especially of the flowers in colds and rheumatism. They are used in warm infusion, much as the garden camomile.

ANTHEMIS NOBILIS

CAMOMILE, GARDEN CAMOMILE, [ROMAN CHAMOMILE]

Description: Natural Order, Compositae. This plant is indigenous to Europe; but is much cultivated in American gardens, on account of its medical virtues. Stem herbaceous, erect, eight to fourteen inches high, round, hollow, a little downy, much branched. Leaves bipinnate, sessile, pale-green, somewhat downy; with narrow, flat, and slightly channeled leaflets. Flower-heads terminal on the branches, three-fourths of an inch across, solitary, yellowish disk, white rays. Involucre hemispherical; scales imbricated and nearly equal, with membranous margins. Receptacle conical, with chaffy scales. Disk florets numerous, tubular, yellow, perfect, becoming ligulate by cultivation; ray florets ligulate, spreading, three-toothed, fertile; usually eighteen in a single row. The flower-heads are more or less double, according to the extent to which cultivation enlarges the corolla of the disk florets.

The flowers are the medicinal portion; and the small disk-flowers are said to contain most of the strength; on which account the single flower-heads may be better than the double. Most of that found in the shops, is imported from England and Germany; but it may be profitably cultivated by dividing the roots into thirty or forty plants, setting out (in March) in a deep loam, eighteen inches apart in rows three feet asunder, and not manuring too much. The perfected flowers are nearly an inch in diameter, and of a dull-white color; they have a rather fragrant smell, which is strongest in the undried flowers. A small quantity of a volatile oil may be obtained from them by distillation; and they also contain a little resinous material. Water and alcohol extract their virtues readily; and hot water very readily. A somewhat similar but smaller flower, is found in the shops under the name of German camomile, which is the *Matricaria Camomilla*.

Properties and Uses: Camomile *flowers* have been used for centuries, and are highly esteemed for their agreeable tonic properties. They are mainly relaxant, and only moderately stimulant; expend their influence somewhat promptly; manifest a decided action upon the circulation, nerves, and uterus, as well as upon the stomach. This action is expedited and distributed, when they are given as a warm infusion. They then secure slow and gentle moistening of the surface, with relief to internal pressure; and may be thus used in remitting, bilious, and puerperal fevers, and in colds. In painful menstruation, where the flow needs to be hastened and increased, they are of peculiar efficacy; and especially if there are any nervous or hysterical symptoms. They so deserve attention in all forms of nervous agitation, and colic, and cramps in the stomach. Large and frequent doses of the warm infusion, prove nauseating; and may even induce vomiting; and sometimes these flowers are used as an adjunct in securing emesis, especially in bilious and remittent febrile cases.

In cold infusion or decoction, their action is confined more to the stomach and uterus. As a tonic, they are mild but reliable; promoting appetite and digestion; and are suitable where there is sensitiveness of the stomach, but not appropriate to cold and sluggish conditions. They are more grateful than most of the tonics; and may be selected in cases of convalescence, and especially in nervousness and hysteria. Their action upon the uterus is one to which I would call particular attention; for I have found them a most valuable soothing antispasmodic to this organ, and decidedly capable of promoting the menstrual flow. This makes them of peculiar value in all

uterine pains and feebleness, when the catamenia are scanty; but they should not be employed when this discharge is already too free or frequent, nor when the lochia are too free. The warm infusion has an unusual power in reestablishing suppressed lochia; at the same time opening the capillary circulation, and relieving uterine pain. They act slowly but persistently. Externally, fomentations of the flowers are useful in congestion and moderate irritation of the abdominal viscera; and also in painful ulcers.

Pharmaceutical Preparations: I. Infusion. Half an ounce of the flowers to a pint of boiling water, macerated ten minutes, make the ordinary infusion. Dose, cold, for tonic purposes, from half to a whole fluid ounce, three or four times a day; warm, two to four fluid ounces, repeated at pleasure, say once an hour. Combining ginger, polemonium, or asclepias with the warm infusion, is often serviceable. II. *Wine Tincture*. In various tonic preparations upon wine, this makes an elegant addition. It is usually combined with liriiodendron, convallaria, trillium, aralia racemosa, and similar mild nervine tonics. Orange peel is a grateful and appropriate corroborant. Sometimes it is used with small portions of hydrastis, or gentian. III. *Extract*. Heat impairs these flowers so much, that no really good extract can be prepared, except *in vacuo*. This is sometimes used as a basis for pills; and the dose is from one to three grains, at intervals of six or more hours. Some persons chew the flowers, and swallow the saliva thus slowly medicated. Those wishing to cease the use of tobacco, sometimes use camomile as a substitute. An admirable *Fluid Extract* is prepared, after the method for eupatorium perfoliatum. Dose, one-fourth to half of a fluid drachm.

ANTHEMIS PYRETHRUM

PELLITORY OF SPAIN, SPANISH CAMOMILE

Description: Natural Order, Compositae. This is scarcely a camomile, though so closely allied as to be thrown into the same genus by most Botanists. It is a native of Spain and all Southern Europe, as well as of Syria and Arabia. It has numerous procumbent and slightly pubescent stems; spreading leaves cut into linear and pinnatifid segments, of which the cauline are sessile and the radical are petioled; a single flower terminal to each branch, the ray florets being a bluish-white and the disk-florets yellow; and a light-brown, wrinkled root, as large as a pull.

Properties and Uses: The root of pellitory possesses very pungent stimulating properties, which, when chewed, give a sharp and tingling sense of heat in the mouth, and excite a copious flow of saliva. Alcohol and ether extract its properties, but water acts on it only moderately. It has long been used as an application for toothache; and may be found useful in extreme dryness of the mouth, and paralysis of the tongue and vocal organs. It is prepared in tincture—an ounce of the root to eight ounces of alcohol.

APIUM PETROSELINUM

PARSLEY, GARDEN PARSLEY

Syn: *Petroselinum Sativum*.

Description: Natural Order, Umbelliferae. A biennial plant, native of Sardinia and France, but now much cultivated as a pleasant pot herb for soups. Stem two to four feet, round, furrowed, striated green and yellow, branched. Leaves decompose, with numerous narrow segments; lower cuneate-ovate, terminal ones trifid, cauline segments lance-linear; smooth and shining; on long, furrowed petioles. Umbels regularly compound, not sessile, in heads; involuclers of three to five subulate bracts. Flowers greenish-white, calyx margin obsolete; petals roundish, with a small inflexed point. Fruit one line long, compressed laterally, five ribbed; vittae five to eight.

This plant possesses a small quantity of a pleasant volatile oil, upon which depend the culinary merits of the leaves. The root is the chief medicinal part. It is fleshy, fusiform, several inches in length, sweetish and aromatic to the taste, and of a pleasant odor. It yields its properties to water and alcohol. Its power is impaired by drying and by age.

Properties and Uses: The *root* is an agreeable, aromatic, relaxant, and mild stimulant. Its chief power is expended upon the kidneys; and a little of its action may be felt upon the skin.

It greatly increases the flow of urine; and may easily be made to exhaust the kidneys, which is too often done by such persistent diuretics as this. In ordinary suppressions of the urine, it is a reliable article; and gives relief in strangury, aching in the back, hysteria, and similar cases, where deficient excretion of urine is much concerned. It is better adapted to recent than chronic cases; and may be given even when sub-acute inflammation of the kidneys is present. It has been highly praised in dropsy, and will no doubt give temporary relief to the effusion; but as this malady depends so much less upon the kidneys than is generally supposed, any treatment that relies too largely upon forcing diuretics, is quite sure to fail. (See *Diuretics*.) In these cases, parsley root may be used in moderation with other suitable agents. The *leaves* are reputed good, as a fomentation, in bruises, swelled breasts, and enlarged glands. The *oil* has been obtained, and is used in lieu of the root—two drops, three times day. The *infusion*, made by adding a pint of hot water to an ounce of the fresh root, is the usual mode of employing the article; and one ounce of this may be given at intervals of from two to four hours. The green root may also be eaten.

APOCYNUM ANDROSAEMIFOLIUM

BITTER ROOT, DOGSBANE, WANDERING MILKWEED, BLACK INDIAN HEMP

Description: Natural Order, Apocynaceae. Herbaceous, perennial, indigenous to America, growing along fences and upon hill-sides. Stem erect, three to five feet high, branched above, reddened on the south surface. Leaves opposite, entire, mucronate, two to three inches long, one to one-and-a-half wide, on petioles one-fourth of an inch long, dark-green above, paler beneath. Flowers in loose, nodding cymes, terminal and axillary, on the upper parts of the plant; pale-white, slightly blushed or striped by the sun. Calyx very small. Corolla monopetalous, one-third of an inch long, with five short and spreading lobes. Stamens five, on short filaments, arising from the base of the corolla, alternate with five glandular teeth or nectaries; anthers cohering to the stigma by the middle. Ovaries two. Fruit a pair of slender follicles, three to four inches long, distinct, drooping; containing many small, oblong seeds, with a crown of downy pappus on each. The whole plant yields a glutinous, milky juice, when wounded. June and July.

The root of this plant is many feet in length, creeping horizontally, and tapering from the size of a man's finger; blackish-brown without, grayish-white within, with a very thick corticle; milky. The root, or more properly the corticle, is the medicinal part. It is permanently bitter; yields much of its properties to water and all of them to alcohol; and contains an active resinoid, also a less active extractive matter. Age impairs its powers.

Properties and Uses: The root of this article has by some been called poisonous, but we are abundantly able to certify to the contrary. It is one of the powerful and reliable articles of a harmless materia medica; and the virulent qualities which attach to some plants of the same botanical order—such as the nux vomica and the upas—in no degree belong to this agent. (§30.) It is a stimulant and relaxant about equally; manifesting its powers slowly, and quite persistently. Most of its action is expended upon the gall-ducts, gall-cyst, and tubuli of the liver—in distinction to leptandra and all other agents which promote the secretory function of the liver itself. This article also extends its influence to the muscular and mucous coats of the bowels, and to the kidneys; while its action directly upon the stomach is sufficiently marked to have led to its classification among the tonics. In excessive doses—as of forty to sixty grains—it will induce very persistent retching, with the ejection of great quantities of mucus; and the absence of any fluids in the stomach, makes this vomiting quite unpleasant, and often followed by persistent languor. It should never be used for purposes of emesis; though its action in this respect is wholly unlike that of veratrum, to which some have compared it. It is reputed diaphoretic, but is of no practical value in this connection.

By its action on the biliary passages, it secures a free discharge of bile, thus unloading the gall-cyst and relieving turgescence of the liver. It is peculiarly indicated in jaundice; and in all cases where a sallow skin, clammy and yellow tongue, and clay-colored or dark faeces, indicate deficient excretory action of these ducts. Most of these cases, with their long train of gastric and nervous symptoms, usually pass under the general term of “biliousness,” and are treated by hepatics; but an excernant like the apocynum, should find the first place in them. It is best fitted for sluggish cases, where the pulse and the sensibilities are below normal; and this class of

jaundiced patients sometimes need no other article. When feverishness, a hard pulse, and pain, are present, it is not an appropriate agent. It serves a good purpose in some cases of gall stones.

In securing a discharge of bile, and in further acting on the bowels, it becomes an efficient cathartic. Stools following its use are a trifle soft, and may even be made thin by large doses; and its action on the muscular rings is shown by its occasionally griping. A fair dose usually acts in about six hours. It is best given in dry faeces and muscular torpor, (especially of the lower bowel,) with bilious symptoms, when the system is sluggish; but is not suitable for sensitive and irritable conditions, nor is it best when piles are present. Its gripings are best obviated by combining it with soda or other alkali, and with zingiber and anise, or other stimulant. By its action on the rectum, it usually stimulates the uterus somewhat.

It is seldom valued for its action on the stomach, though expended upon the gall-ducts, gall-cyst, and tubuli of the liver—in distinction to leptandra and all other agents which promote the secretory function of the liver itself. This article also extends its influence to the muscular and mucous coats of the bowels, and to the kidneys; while its action directly upon the stomach is sufficiently marked to have led to its classification among the tonics. In excessive doses—as of forty to sixty grains—it will induce very persistent retching, with the ejection of great quantities of mucus; and the absence of any fluids in the stomach, makes this vomiting quite unpleasant, and often followed by persistent languor. It should never be used for purposes of emesis; though its action in this respect is wholly unlike that of veratrum, to which some have compared it. It is reputed diaphoretic, but is of no practical value in this connection.

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It is seldom valued for its action on the stomach, though by macerating four ounces of the crushed roots for a week in a quart of 76 percent alcohol. But this preparation is seldom used, as it is generally preferable to add a portion of the apocynum to tonics and alteratives, and make a compound whisky or wine tincture in the usual mode.

APOCYNUM CANNABINUM

INDIAN HEMP, WHITE INDIAN HEMP

Description: This plant very closely resembles the foregoing, growing in the same places, and nearly to the same height. The principal differences are, that in this species the leaves are a little downy on the under side; the flowers are yellowish-white, pinkish within, and the corolla but little longer than the calyx; the young roots are yellowish-brown, and the older ones dark chestnut. The roots are five or six feet long, horizontal, yellowish-white within, become brittle when dried, and form a yellowish-white powder. They are the medicinal part, have a strong odor, and a permanent sickish-bitter taste.

Properties and Uses: This article secures large and liquid stools, accompanied by but little griping; acts with more or less freedom upon the kidneys; and in large doses produces much nausea, and rather copious vomiting. Emesis from its use is followed by rather free perspiration, as is to be expected from any emetic; though this agent also acts considerably upon the surface. The pulse becomes softer and fuller under its use; and it is accused of producing drowsiness and a semi-narcotism. Formerly I used somewhat liberally of this article, and never saw any narcotic effect whatever; yet have laid it by in the latter years of my practice, lest mischief might be found resulting from it. Information about the agent will be thankfully received. It has been most used for its effects as a hydrogogue cathartic and diuretic in dropsies; but should be employed only in moderation, and in connection with tonics and diffusive stimulants. It usually increases the menstrual flow, and some have lately attributed decided antiperiodic properties to it, but this is not yet satisfactorily confirmed. An ounce of the root boiled a few minutes in a pint of water, is the better mode of preparing it; and from one to two fluid ounces of this are a laxative dose. An extract is made, of which the dose is from three to six grains.

ARALIA HISPIDA

DWARF ELDER, WILD ELDER, PRICKLY ELDER, BRISTLESTEM SARSAPARILLA

Description: Natural Order, Araliaceae. This plant belongs to the same family as the spikenard, and not to that of the common elder. It grows from New England to Virginia, and westward, seeking gravelly and rocky places. An under shrub, perennial, one to two feet high. Stem woody, and thickly covered with stiff bristles below; branching and herbaceous above. Leaves bipinnate; leaflets numerous, ovate, cut-serrate, long-cuminate, smooth. Umbels numerous, in terminal corymbs, on long pedicels, globose. Fruit a dark-colored, three-celled, three-seeded, nauseous berry. July and August. Whole plant ill-scented.

Properties and Uses: The *bark* of the root is the strongest, but that of the stem is also used. It is a relaxant and mild stimulant, acting with but moderate promptness, leaving behind gentle tonic effect, and influencing the kidneys chiefly. A portion of its power is unquestionably expended upon the uterus, and slightly upon the circulation toward the surface; both of which effects have usually been overlooked. It has a slightly warming, bitter taste, and is rather pleasant to the stomach.

Scarcely any remedy possesses such a desirable and reliable influence upon the kidneys—securing their full and steady action, without forcing them to an exhaustive effort. It is mostly used in compounds for dropsy, and is one of the best of its class; but for any sub-acute or chronic torpor of the renal organs, with aching back and scanty urine, it is an agent of peculiar value. In high-colored urine, and in chronic aching and weakness of the bladder, it is equally beneficial. It promotes menstruation a little; and is a good adjunct to other remedies in the treatment of mild leucorrhœa, amenorrhœa, and other female weaknesses. I have also used it to good purpose in the treatment of gleet. It is generally prepared in decoction, two ounces to the quart; of which two or three fluid ounces may be given three times a day. Used warm, it will promote gentle diaphoresis. It yields its properties readily to any alcoholic liquor; and may be employed in wine or other bitters, as with convallaria, liriiodendron, euonymus, etc. A warm infusion of the *leaves* is reputed sudorific; but they are not always agreeable to the stomach.

Pharmaceutical Preparation: *Compound Sirup.* Crushed aralia hispida, eight ounces; liatris spicata and fraxinus, each four ounces; cimicifuga, two ounces. Treat with diluted alcohol after the general manner of preparing Compound Sirup of Mitchella making these quantities into two quarts of sirup. I have found it of much service in the treatment of ascites and other forms of dropsy; using half a fluid ounce or more three times a day. It is generally advisable to add a small quantity of the tincture of capsicum after the sirup is made; and the use of eight ounces of chimaphila with the above ingredients, may be an advantage.

ARALIA NUDICAULIS

SMALL SPIKENARD, FALSE SARSAPARILLA AMERICAN SARSAPARILLA

Description: This plant is an indigenous perennial, from Canada to the Carolinas and westward. It has no proper stem, or at best but a very short one; a single leaf-stalk and flower- stalk arise separately from a large and somewhat fleshy root. Leaf-stalk seldom two feet high; leaf large, solitary, decompose, either tri-ternate or tri-quinate; the leaflets smooth, oval and obovate, acuminate, finely serrate. Flower-stalk about a foot high, naked, terminating in three rather compact umbels of from twelve to twenty flowers each. The flowers are small, greenish- yellow; in other respects similar to *A. hispida*. June and July.

Properties and Uses: The *root* is the medicinal part; has a pleasant balsamic odor; and yields its strength to both water and alcohol. It is relaxant and gently stimulant; mild and moderately slow in action; and expending its properties chiefly upon the skin and kidneys, and moderately upon the mucous structures of the lungs and uterus. It is mainly valued for its influence upon the first-named secretions, for which it enjoys a just repute as an alterant. It is principally used in mild secondary syphilis, and in cutaneous affections connected with irritability. It is seldom employed in pulmonary difficulties; yet is good whenever the lungs need a mild expectorant with stimulation. In the same way, it may be used in simple cases of leucorrhoea and weakness of the back. Boiling impairs its properties. A decoction may be made by steeping an ounce of the root in a pint of boiling water; one half of which may be used in twenty-four hours. In preparing it for syrups, it is oftenest combined with such articles as arctium, celastus, and menispermum; and treated by percolation.

ARALIA RACEMOSA

SPIKENARD, SPIGNET, PETTYMORREL

Description: This species of *Aralia* has a smooth, herbaceous stem, three to four feet high, dark-green or reddish, and widely branched. Leaf-stalk three-parted, with traces of dilated stipules; each part bearing large heart-ovate, pointed, double-serrate leaflets, three to five in number, slightly downy. Umbels numerous, small, arising from the axils of the leaf-branches, decomposed as paniced racemes. Rich and moist woodlands. July. The root of this plant is large, grayish without, whitish-gray within, and possessed of a pleasant balsamic odor. It yields its properties to water and alcohol; and is impaired by heat and age.

Properties and Uses: The *root* is a mild relaxant, with stimulating and probably demulcent properties; somewhat prompt in its action; and expending its influence chiefly upon the mucous membranes, and somewhat upon the skin. It is particularly valued for its action upon the respiratory organs; to which it is a gentle expectorant, at the same time soothing irritation, allaying spasmodic cough, and imparting a feeling of tone. These effects give it a place of much value in recent and irritable cough, as in that following bronchial and pulmonary congestions, pleurisy, measles, etc. It is not suited to cases of depressed sensibilities and great feebleness, unless combined with more strengthening and stimulating agents. When placed in water in an open vessel upon a warm stove, it fills the room with a mild aroma which is exceedingly grateful to irritable lungs. I often use it thus in phthisis, at intervals of three or four hours; or it may be used in an inhaling apparatus. Its action upon the mucous membranes of the uterus fits it for cases of irritable leucorrhoea; and it is many times combined with convallaria, symphytum, liriiodendron, and similar agents, for this purpose. Its influence upon the skin is felt merely enough to render the surface pliant, and to give relief to internal irritation. It is spoken of as an alterative, but is scarcely to be used as such.

Pharmaceutical Preparations: It is best treated by percolation, and prepared in sirups, with the use of very little heat. Two compounds containing it may be especially mentioned: I. *Compound Sirup of Spikenard, Pulmonary Balsam.* Spikenard, elecampane, comfrey, bloodroot, hoarhound, bark of wild cherry, each, one pound. Saturate the crushed articles with seventy-five percent alcohol, for three days; then put in a percolator, and add warm water till four pints have passed. Set this aside; and add water till two gallons have passed over. To this add twenty pounds of refined sugar, and dissolve with a gentle heat. When cold, add the first or alcoholic product of displacement. This is an old formula, usually made too sweet by a larger addition of sugar. It is a good tonic expectorant for rather obstinate coughs. Sometimes it may be an advantage to increase its relaxant influence by adding half an ounce of lobelia tincture to a pint of the sirup. Dose, for an adult, a large teaspoonful four or five times a day. II. *Cough Sirup.* Crushed spikenard, one pound; lobelia herb, three ounces; wild cherry bark, four ounces. Macerate in thirty per cent. alcohol for twenty-four hours; put in a percolator, and add water till two quarts have passed. To this add five pounds of sugar, and dissolve at a low heat in a covered vessel. When cold, add eight ounces of tincture of macrotys. This is an elegant preparation for all forms of dry and irritable coughs, and mild hooping-cough. It is my principal article in such cases; and the favor it has received from many physicians, induces me to commend it to general notice. It will not meet old and sluggish cases. Dose, a teaspoonful every two hours, or oftener.

ARALIA SPINOSA

SOUTHERN PRICKLY ASH, PRICKLY ALDER, ANGELICA TREE, TOOTHACHE TREE, HERCULES' CLUB

Description: This species of *Aralia* is met along the rivers of the Middle and Western States, where it is usually from eight to fifteen feet high; but in the South it is quite common, is frequently cultivated, and attains the height of twenty-five and thirty feet. Its woody stem is crooked and branchless below, and crowded with prickles—the layers of the bark also standing out in knobs like blunt spines. It is divided into several leaf-branches at the summit, thus wearing the appearance of a palm-tree. Leaf-stalks very long, strong, and prickly. Leaves four to six feet long, bi- and tri-pinnate; leaflets sessile, ovate-acuminate, glaucous beneath. Umbels numerous, forming a very large panicle. Flowers small, white. August and September. Damp localities, yet often thriving on high, loamy ground.

Properties and Uses: The *bark* of this shrub is a strong and rather bitter stimulant, very pungent to the taste, and acrid when fresh. It yields its properties to alcohol and water. It is usually sold in the markets under the common name of Southern Prickly Ash, and is considered to possess the same therapeutic properties as the *xanthoxylum* of the North. But it is a stronger and more irritating article than the latter; and is inclined to excite emesis, if given in strong warm infusion. This latter fact is an objection to its use in some cases where it would otherwise be more valuable, as in cholera. It is employed in the same forms of disease for which *xanthoxylum* is used. The berries resemble the *xanthoxylum* berries.

ARCTIUM LAPPA

BURDOCK

Description: Natural Order, Compositae. This is the burdock plant so annoying to the farmer; with its great coarse leaves, purplish flowers in numerous thistle-like heads, and long, tapering roots. The roots are succulent, difficult to dry, and of an unpleasant sweetish taste. It is best when gathered in early spring, and sliced into thin pieces. Unless very quickly and thoroughly dried, it will mildew. It yields its property readily to water and diluted alcohol. The chocolate-colored seeds have a slightly bitter taste.

Properties and Uses: The *root* is mainly relaxant and demulcent, with a limited amount of tonic property. It acts slowly and mildly upon several of the secreting organs, as the kidneys, skin, and bowels. This secures from it a gentle alterant action, of use in cutaneous, scrofulous, and scorbutic affections, particularly where there is an irritable condition of the system. It enters into a sort of family beer along with such agents as yellow dock, spikenard, elder flowers, and ginger; which may be used with benefit in the spring. In syphilis, and the degenerate class of skin affections, it is of little account, unless combined with the more positive stimulating alteratives. Its action on the kidneys and bladder is available in irritable conditions of these organs; and it may be employed there oftener than is usually done. To the bowels, it merely favors a soft and natural openness. Preparations of it require to be pretty strong, and given freely; though half a pint of a decoction three times a day, as some writers advise, would be ridiculous. The agent requires to be used several weeks, to secure its full benefits.

The *seeds* possess somewhat the same properties as the root; but are more prompt and temporary in their impressions. They increase the flow of urine; and are very serviceable in irritation and aching of the bladder, scalding urine, and urine charged with mucous and grayish sediments. Their action on the skin is very good, and affects the sebaceous as well as sudoriferous glands; and thus they restore the natural oiliness of the surface in scarlet fever, tetter, etc. I frequently use them in typhoid cases, in any diaphoretic infusion, as often preferable to the queen-of-meadow. They seem also to abate the nausea of lobelia. The form of warm infusion is best, in the same manner as asclepias, though they may be substituted for the roots in alterative sirups. They need crushing before they will yield their strength.

The *leaves*, or their inspissated juice, is said to make a good ointment in scrofulous ulcers. I have been told that a tablespoonful of this juice, three times a day, will act on the liver and bowels gently, and purify the blood speedily in boils. It is in some places a popular practice to apply the bruised leaves directly to boils, as a “drawing” and cleansing fomentation.

Preparations: I. *Decoction.* Two ounces of the roots boiled in a quart of water till a pint remains. Strain, and give from two to four fluid ounces three times a day. II. In *Sirup*, it is an ingredient of compounds with sarsaparilla, celastrus, and rumex. A *Compound Sirup of Burdock* may be prepared as follows: Arctium, one pound; menispermum and celastrus, each, half a pound; euonymous and xanthoxylum, each, four ounces. Crush the articles; macerate in diluted alcohol twenty-four hours; transfer to a percolator, and treat with diluted alcohol till two quarts pass. Set this aside; continue the percolation with water till four quarts pass; add five pounds of

sugar, and evaporate on a water bath till four quarts remain; when cold, add the first product. This is an excellent alterative and tonic preparation for most scrofulous and hepatic affections. If additional tonic action is required, four ounces of gentiana ochroleuca may be incorporated. III. *Extract.* The solid extract is furnished in considerable quantities, but has no practical advantages.

ARCTOSTAPHALOS UVA URSI

UVA URSI, BEARBERRY, UPLAND CRANBERRY

Syn: Arbutus uva-ursi.

Description: Natural Order, Ericaceae. An evergreen shrub, of the heath family; common to the Northern parts of America, Europe, and Asia; preferring sandy and elevated positions. Stem prostrate, trailing, round, woody, several feet in length, covered with a deciduous bark; young branches erect, three to eight inches. Leaves, alternate, on short petioles, thick and leathery, entire, dark-green and smooth above, paler and veined beneath, obovate, half inch to an inch long. Flowers nearly white, tinted rose-pink; in short, terminal, drooping clusters. Calyx small, red, persistent; five-parted. Corolla ovoid, swollen at the base; with five small, reduced segments on the limb. Stamens ten, on the base of the corolla, with downy filament and red anthers. Fruit deep red, resembling a cranberry, nearly as large as a currant, tasteless, with five long and closely united seeds in the nucleus. Flowers June to September. Berries ripen during the winter.

The *leaves* of this plant are used in medicine. They have a bitter-astringent taste, and a faint but pleasant smell; yield their properties to water and alcohol; and will yield tannic and gallic acids; and resinous material. They are often adulterated with other leaves; but may be distinguished by their obovate or spatulate shape, leathery feeling, *entire* edges, and reticulated under-surface.

Properties and Uses: These *leaves* are principally astringent, with which they combine mild tonic and soothing properties. They increase the flow of urine; and while their powers are more or less expended upon all mucous membranes, they particularly show their influence upon the urino-genital structures. In chronic and sub-acute mucous discharges—such as catarrh of the bladder, leucorrhœa, gonorrhœa, and gleet—they serve an admirable purpose in lessening the discharge gradually, and giving tone to the parts. We have cured several cases of lingering gonorrhœa, in females, with them alone; and have found them a valuable addition to the usual tonics, in leucorrhœa. So, in aching of the kidneys and bladder, congestion and ulceration of the bladder and prostate gland, involuntary seminal emissions, and incontinence of urine, they serve a good purpose. They may be used in chronic diarrhea and dysentery; and are especially suited to an ulcerated condition of the bowels in such cases—when they may advantageously be combined with hydrastis. They are more grateful to the stomach than nearly any other astringent and give relief to the achings that usually accompany the above maladies. I have used them as a tonic and astringent in a bleeding stomach, bowels and kidneys, to very good advantage—being careful at the same time to distribute the blood to the surface. They are reputed good in diabetes, gravel and strangury, but of these connections I know nothing.

They unquestionably influence the uterus, and give tone to it. This action is of service in the treatment of leucorrhœa, especially when connected with a flaccid condition of the womb and vagina, and with prolapsus. Also in parturition, when the parts are very moist and flaccid and the pains trifling, an infusion of the leaves will secure very positive uterine contractions. They also prepare the parts against flooding, under such conditions; and will be found of use in passive menorrhagia. As a parturient, they may be combined with some diffusible stimulant, as ginger or xanthoxylum. Dose, in powder, one to three scruples three times a day. They are seldom

administered in this form, the decoction being preferable. Dr. M. S. Davenport, of Illinois, tells me he has used it as a local application to the bites of poisonous reptiles; and says it abstracts the poison, relieves the pain, and quiets nervous agitation.

Pharmaceutical Preparations: I. *Decoction*. One ounce of the leaves to a pint and a gill of water; simmer till a pint remains, or about fifteen minutes. Dose, two to three tablespoonfuls four times a day. In parturition, one tablespoonful, warm, every half hour. II. *Extract*. An alcoholic extract is a very good article, but that made on water is not so good. It may be given in pill, from three to six grains three times a day. III. *Third Extract*. This is a concentrated article, made as are the other preparations of this class. It may be given in doses of half to a whole teaspoonful, as desired; or may be added in suitable quantities to sirups. I employ this as a very valuable addition to the emulsion of copaiba, in the treatment of sub-acute gonorrhœa—half an ounce of the extract in four ounces of emulsion; and to the compound sirup of mitchella in all gonorrhœas. Like other astringents, the preparations of this article must not be made in vessels lined with iron.

ARISTOLOCHIA SERPENTARIA

SERPENTARIA, VIRGINIA SNAKEROOT, BIRTHWORT

Description: Natural Order, Aristolochiaceae. This peculiar little plant is common in thickets and rich, shady woods, through the Middle, Southern, and Western States. Stem eight inches to a foot high, round, slender, without branches, jointed, and forming slight angles at each joint. Leaves oblong, or ovate-cordate, acuminate, thin, entire, pale yellowish-green, on short petioles arising alternately from the joints of the stem, two to four inches long, of variable width. Perianth springing from the joints near the root; on a long and bending peduncle, which curves till the flower is often hidden in the decaying leaves around; consisting of a dull-purple, leathery, tabular calyx, the corolla being wanting; this calyx-tube being from seven to nine lines long, curiously bent upon itself near the middle and enlarged at each end, and the limb of three short obtuse lobes. Stamens six, with their anthers sessile and adnate to the back of the short stigma. July. The plant is minutely pubescent; from one to several stems from the same root-stalk; flowers one to four. Root perennial, with a short, light-brown, horizontal, knotty rhizoma, which gives off a thick cluster of yellowish-brown, long, and slender fibers.

This root has long had a reputation in medicine. It has an aromatic odor and taste, bitter and heating, something between turpentine, quassia, and camphor. It contains a volatile oil; and a very bitter, yellowish, extractive material. Water, and alcohol in any degree of dilution, extract its properties. Heat impairs it by driving off its oil; though this oil is not sufficient in quantity to have led to its appearance in commerce. The fibers turn brown by age; and lose much of their virtue, unless carefully kept. It has been asserted that a cold decoction slowly deposits crystals of camphor, but I feel satisfied this is a mistake. It often appears in market adulterated with pink-root and senega; but these may both be distinguished from the serpentaria by their taste, and by not occurring in entangled masses upon a knotty rhizoma.

Other species of *Aristolochia* are equally valuable with this one, as the *reticulata*, *hirsuta*, and *tomentosa*.

Properties and Uses: The *root* is very strong; actively and diffusively stimulating, and considerably relaxing. It is very warming and persistent to the taste, leaving bitterness behind, and stimulating the flow of saliva. It influences the capillary and arterial circulation, and by them the secretions of the skin and kidneys; also elevating nervous activity, and increasing the gastric and mucous secretions. Its excitation of the stomach is very prompt; it seems to pervade the whole system almost instantly, by means of the solar plexus of the sympathetic nerve; and though its impressions are not very permanent, they are very decided.

In small doses it arouses the stomach, and may thus increase appetite and digestion. A warm sensation follows its use; and large doses create nausea, and even prompt vomiting. This vomiting, connected with the sudden stimulation of the nerves, I have thought might render this a good agent when an emetic was needed to eject a narcotic poison from the stomach. A continued use of considerable doses induces flatulent and uneasy feelings in the stomach; and there may also follow gripings, tenesmus, and dysenteric stools. These facts usually prevent the use of the article for any considerable length of time; and in cases where there is a tendency to irritation,

inflammation, ulceration, or looseness of the bowels—also in many typhoid conditions. They render it most appropriate in cases where a prompt and temporary impression is demanded; also in typhoid states when the above-named conditions are not present. Among the difficulties for which it is peculiarly valuable, may be named the following: Fainting, depression from any form of nervous or surgical shock, sudden nervous languor, sudden recession of blood from the surface, and insufficient development of small-pox. or scarlatina, (but not usually fit for measles.) The warm infusion, given in small doses while the patient is well covered, will soon secure a warm perspiration in languid conditions; I have repeatedly noticed this moisture appear first on the hands and feet, thus evincing the extreme diffusiveness of the agent; the perspiration is usually accompanied by a slight itching sensation; and after a time the pulse gets fuller and stronger, till the heart and brain finally feel the stimulation. The cold infusion, or even the warm infusion to a patient in a cool atmosphere, will usually act with vigor upon the kidneys.

By its influence upon the entire circulatory and nervous systems, it may arouse different functional actions; but it very especially influences the uterus. In sudden suppressions of the catamenia, especially those from cold, and while the system is languid, it will exert a decided effect in restoring the menstrual flow. During parturition, it will arouse flagging pains with great power, if the patient become weary and chilly, with cold extremities. Combined in small quantities with cypripedium and caulophyllum, it is a most valuable parturient under such circumstances, but not under others. It promotes saliva and expectoration, and has been used as a gargle in malignant conditions. Though some speak of it very highly in low fevers, it needs, as above shown, much discrimination in its use. Its reputed value in agues is not deserving of confidence. It was once considered sovereign in snake-bites and other poisoned wounds; and is of much service in arousing the system to cast out virus. In threatening pyaemia and mortification, where the system lacks power to resist the encroachments of the poison, it will rapidly establish the line of demarkation and eject the putrid fluids—provided the stomach is not too irritable to use it.

Dose, of the powder, from two to five grains every six or four hours. It is rarely given in this way, the infusion being usually preferred when the article is used alone.

Pharmaceutical Preparations: I. *Infusion*. Roots of serpentaria, crushed, three drachms; macerate for an hour in a pint of water, in a covered vessel, at a heat considerably below the boiling point. In emergencies and for sudden impressions, two or three tablespoonfuls of this may be given every twenty or thirty minutes; but one tablespoonful every hour will serve most acute cases, and every four hours when it is desired to continue the agent for a day or more. II. *Tincture*. Four ounces of the crushed root may be macerated for ten days (or less) in a sufficient quantity of diluted alcohol; then put into a percolator, and treated with diluted alcohol till one quart passes over. If used alone, this is given in doses of from half to a whole teaspoonful, or even four times that quantity. Its chief employment is as an addition to tonic preparations. The *wine tincture*, three ounces of roots to a quart, is a more pleasant article. It is an ingredient in the Compound Tincture of Cinchona. The Eclectics combine it with ipecac, saffron, camphor, and opium, in their Sudorific Tincture—a compound rendered deceitful and pernicious by the last ingredient. As a diaphoretic, I combine it usually with asclepias tuberosa, which see.

**ARTANTHE ELONGATA
MATICO**

Synonyms: Piper angustifolium of Pavon; Piper elongatum of Vahl.

Description: “A shrub with a jointed stem, about twelve feet in height. The leaves are sessile or very short-petiolate, oval-lanceolate, acuminate, two or three inches long, by an inch in breadth, of an agreeable aromatic odor, and a strong spicy taste. The plant is a native of Peru. The leaves, spikes, and stalks are mixed together, more or less compressed, in the packages of the imported drug; and all are possessed of activity. A volatile oil, and a resin termed maticin, are probably the active ingredients.” (*U. S. Dispensatory.*) Its virtues are readily imparted to diluted alcohol and warm water; and are much dissipated by boiling water.

Properties and Uses: The *leaves* are diffusibly stimulating, distributing the blood promptly to the superficial capillaries, inducing gentle warmth and moistness of the skin, and leaving behind a mild tonic impression of a slightly astringent character. It is particularly useful in uterine flooding, excessive menstruation, spitting of blood, and other hemorrhages from internal organs. The promptness of its action renders it a very desirable article in such cases; and it may be combined with more permanent agents to great advantage. The powder is sometimes employed as a local styptic, partly as an absorbent, but chiefly because its stimulating property arouses contraction in the small vessels. Its diffusive action often relieves that form of nervousness which accompanies fatigue and a deficient outward circulation, It exerts a decided influence on the mucous membranes; and may be employed in chronic and excessive discharges from these surfaces when in an atonic condition. The kidneys are somewhat affected by it, and so is the uterus in parturition. The promptness and great pleasantness of the article, commend it highly, and its value in the above connections is very reliable; but its action is somewhat transient, and therefore it is usually best to combine it with agents that exert a more permanent influence.

Half an ounce of the crushed leaves macerated for an hour in a covered vessel, with a pint of hot water, forms the usual *infusion*; of which the dose is from one to two fluid ounces, repeated every hour or half hour, according to circumstances. A *tincture* is prepared by macerating eight ounces of the leaves, for ten days, in a quart of diluted alcohol, and straining with strong pressure; of which the dose is from one to three fluid drachms.

ARTEMISIA ABSINTHIUM WORMWOOD

Description: Natural Order, Compositae. This is a familiar garden herb, perennial, growing from two to three feet high, and presenting a hoary, pubescent appearance. Stems numerous, furrowed, angular, in paniced branches at the summit, with a compact, bushy appearance. Leaves parted pinnately two or three times, with lanceolate-dentate lobes. Flowers small, yellow, with a brownish-green involucre; in terminal panicle racemes, slightly nodding; florets all fertile, ray florets few and pistillate. Involucre ovoid, imbricated, compact; receptacle hairy. The plant was introduced from Europe, but is now found wild in some parts of New England. July and August. The whole bush has a strong, aromatic smell; and a taste slightly nauseous, and most intensely bitter. It yields its properties to water and alcohol, the leaves and flower-heads being the medicinal parts. A moderate portion of volatile oil is obtained from it.

Other species of artemisia have been used in medicine. The *vulgaris* (mugwort) has been reputed tonic, nervine, and emmenagogue; and the *Pontica* (Roman wormwood) is about the same as the absinthium, but weaker.

Properties and Uses: The *leaves* and *flowers* were used by the ancients. They are stimulating and relaxing tonics, bitter and strong to the highest degree, and acting upon the stomach and gall-ducts. It improves appetite and digestion, and slightly influences the bowels; for which effects it has been a favorite addition to tonic preparations for low and bilious conditions, intermittents, jaundice, hypochondria, and similar maladies. A small portion of it serves a good purpose, in such cases, when there is decided languor and sluggishness of action; though its intense bitterness has pretty much driven it from use. Considerable doses, or its long-continued use, leads to excitement of the stomach, pulse, and brain; which results have been attributed to a narcotic property in it. I wholly doubt its narcotism; but trace these effects to its very slow and persistent stimulating and tonic action upon both the heart and the nervous centers. It is quite popular in the treatment of worms; and is good for the stomach worm, when the stomach is languid, and the abdomen tumefied and flaccid. It makes a good fomentation in sprains, rheumatism, and other sub-acute difficulties about the joints; and in bruises and local congestions. As a result of its influence on digestion, it sometimes proves useful in atonic leucorrhoea and diarrhoea; and exerts a little stimulating influence upon the uterus, which may be taken advantage of in atonic amenorrhoea.

The *oil* is not used internally; but makes a good ingredient in liniments designed for sprains, bruises, congestion of the kidneys and uterus, and other places, where an outward application needs to be strengthening as well as stimulating.

Dose of the powder, five to fifteen grains, three times a day. Usually it is given as infusion—half an ounce macerated in a pint of boiling water, is strong enough; and two to four drachms or this is a dose. A habit in families is, to make a tincture with an ounce of the herb to a quart of whisky, sweetened, and used for jaundice and biliousness in the spring. In combining it

with other tonics, I seldom use more than half an ounce of this in each gallon of the preparation; for it is too concentrated an article to employ in such large doses as are generally used. It is most appropriately combined with slow relaxants, such as boneset, wahoo, etc.

ARTEMISIA SANTONICA

WORMSEED, SANTONICA, SEMEN SANTONICA, SEMEN SANCTUM

Description: Under this specific title and these common names, commerce has for many years kept upon the market the unexpanded flower-buds of some undetermined varieties of wormwood. They are principally imported from Russia; but are also obtained from Palestine, Arabia, Asia Minor, and Persia. For a long time they were supposed to be the *Artemisia santonica* only, (tartarian southernwood ;) but it seems more probable that most of them are the product of *Artemisia contra*. Our American southernwood (*Artemisia abrotanum*) is, no doubt, very closely allied to the foreign article.

Though called *wormseed*, (as are also the seeds of *Chenopodium anthelminticum*,) they are not seeds at all; but, as already stated, are the small, round, unexpanded flower-buds, mixed with pieces of peduncles, and some minute leaves. They are greenish, sometimes covered with a minute white down, have a strong and not very pleasant smell, and a pungent, very bitter taste.

Properties and Uses: From the old Arabic school of medicine, down to the present time, this article has been prominent as a remedy for worms. The round, tape, and seat (pin) worms, are all said to yield before it, with much certainty. Its physiological action seems to be much like that of the common wormwood, but more stimulating and diffusive, and less locally tonic. Dose, from ten to thirty grains of the powder, night and morning. It may also be given by infusion.

Pharmaceutical Preparations: I. *Santonine*. This is a neutral principle, obtained in the form of large and heavy white crystals. I abridge the following mode of preparation from Pereira: "Take of santonica, bruised, one pound; slacked lime, seven ounces; boil the santonica for an hour with a gallon of distilled water, and five ounces of the lime, in a copper or tinned vessel; strain, and express strongly. Boil the residue with another half gallon of water and the rest of the lime; then treat as before. Mix the liquids; let them settle well; decant the clear fluid, and evaporate to two pints and a half. While the liquor is hot, add slowly, with brisk stirring, enough hydrochloric acid to render it slightly but permanently acid; then set it aside five days. Now remove an oily scum carefully; and decant the fluid from the precipitate which has formed. Collect the precipitate on a paper filter; wash with pure water till nearly free from acidity; dilute half a fluid ounce of ammonia solution, and wash with that, and again wash with water. Dry the precipitate between folds of filter paper, at a gentle heat; mix with sixty grains of animal charcoal; digest with nine ounces of hot rectified spirits; filter while hot, and set in a dark place for two days. The precipitate that forms may be again washed with hot alcohol, and left to re-precipitate; and finally dried, and preserved in a dark-blue glass bottle, away from the light!" The crystals thus obtained are flat, colorless, almost devoid of taste, (leaving behind a very feeble bitterness,) nearly insoluble in water, and sparingly in cold alcohol. They will turn orange-yellow in a strong light, and lose a portion of their properties; and finally be decomposed. Castor oil and sweet oil dissolve them; and they are also soluble in solutions of the alkalies—toward which they behave as an acid. These facts have led to exhibition of santonine either in one of the above oils, or in a solution of soda. Dose, for a child six years old, a grain to a grain and a half, twice a day. It is the common practice to use it three days consecutively, and to use purgatives in conjunction with it; for it is reported that large doses, or its continued use, will cause purging, vomiting, abdominal

pains, and cold sweats. I have frequently used it in large doses for a week or more, and seen no such effects; Prof. G. Hasty tells me he has administered it very freely without ever observing such symptoms; and some practitioners give from three to five grains at night, with a gentle cathartic the following morning. It often colors the urine a canary yellow; and the more so if the liver have been inactive. II. *Suppositories*. Twelve grains of santonine may be made into four suppositories, with a sufficient quantity of cocoa butter, or of bayberry tallow and beeswax, softened with a little olive oil. One of these introduced to the rectum on going to bed, and carried all night, is said to be almost infallible in removing the "pin" or seat worm.

It may be added of santonine, that some practitioners find a cathartic seldom needed after it; and when any physic is given, leptandrin is considered the best. Some physicians value it much in obstructions of the kidneys. Though pronounced dangerous by some, no death from its use has been reported. See *Indiana Transactions* for 1867

ARUM TRIPHYLLUM

INDIAN TURNIP, WAKE ROBIN, JACK-IN-THE-PULPIT, DRAGON'S ROOT

Description: Natural Order, Araceae. This plant grows in moist, rich woods, throughout America. Root a turnip-shaped corm, half an inch to an inch and a half in diameter, covered with a light-brown and wrinkled epidermis. Early in the spring it sends up a very large spathe, or cowl, tubular below, ovate- acuminate above, bent over forward near the top; dark-green, with purple and black stripes and spots. Leaves one or two, on long sheathing petioles, divided into three elliptical-ovate leaflets; smooth, entire, dark green. Flowers sessile upon a fleshy and club-shaped spadix, which rises into the throat of the spathe; dioecious or monoecious, no floral envelopes; sterile flowers above the fertile, consisting of whorls of four or more stamens with very short filaments; fertile flowers of a one-celled ovary with a depressed stigma. May. Fruit a compact bunch of shining scarlet berries.

The tuberos-looking corm is intensely acrid when fresh; and produces a severe burning sensation in the mouth, which is followed by persistent soreness. This property depends upon a volatile oil, which seems to be insoluble in water, alcohol, acids, or oils, but is wholly driven off by heat. When dried in a kiln, it will furnish a starchy powder as fine as arrow-root.

Properties and Uses: The *root*, when green, is too utterly acrid to use. When dried, it is a rather mild and diffusive stimulating relaxant. It influences the respiratory organs chiefly— promoting expectoration; and employed in dry asthma, hooping-cough, and dull pains in the chest. Not proper in any inflamed or irritable case; and not a very reliable agent at any time. Usually given in powder; five to ten grains three times a day.

ASARUM CANADENSE

COLTSFOOT, CANADA SNAKEROOT, BLACK SNAKEROOT, WILD GINGER, INDIAN GINGER

Description: Natural Order, Aristolochiaceae. Stem subterranean, as a dark-brown, creeping rhizoma, several inches long, an eighth of an inch in diameter, with numerous fibers, brittle. Leaves two, on long petioles, kidney-shaped, three to six inches wide, soft-pubescent, thin, growing very closely together from the rhizoma. Flower solitary, rising between the two leaf-stalks; peduncle hairy, short, pendulous, often concealed under the decaying leaves about; no corolla; calyx regular, bell-shaped, limb three-parted, lobes long-acute and widely spreading, very woolly, brown-purple inside. Stamens on unequal filaments, tips extended as awns beyond the anthers, slender, united with the base of the style. Stigmas six, radiating, thick, uniting into a single style. Ovary with the calyx wholly adherent. April to May.

Indigenous to America, growing in moist woods and shady places. The root is strongly aromatic, with a warming and slightly bitter taste; pleasant to most persons, but disagreeable and nauseating to some. It yields a small quantity of a fragrant essential oil; and a resinous material that is slightly terebinthinate in smell. Alcohol eliminates all its active powers, and water nearly all of them. Boiling injures it.

Properties and Uses: This *root* is one of the positive aromatics, stimulating and relaxing, rather prompt in diffusiveness, and somewhat tonic. Its influence is expended largely through the circulation and nerves, both of which it arouses and sustains. Through these channels it warms and invigorates the surface, and secures a favorable perspiration. in languid conditions; but this soon subsides, and is followed by an increased warmth of the skin and a little dryness. These facts make it objectionable in all cases where the skin is already dry and hot; and it should not be used indiscriminately as a diaphoretic. It is best for recent colds, and such functional suppressions as follow colds; for scarlet fever, small-pox, typhoid fever and pneumonia, when the languor is considerable; and for suppressed menstruation. It exerts a direct influence upon the uterus, which is of value in suppressions of an atonic and congested character; and as a promptly stimulating parturient, when the pains become feeble from nervous fatigue, it probably has few superiors. For such purposes, I frequently combine it with the more permanent caulophyllum. S. B. Dodd, M.D. of Ohio, informs me that he uses an infusion of it, in small and frequent doses, for all uterine hemorrhages of a passive character, (including menorrhagia,) with the happiest results—securing very prompt uterine contraction and a warm surface. It stimulates the pulmonary vessels, and increases expectoration; for which purposes it may be used in old or languid coughs. Also good in colic and painful menstruation. Large draughts of it will soon nauseate; and their close repetition will usually incite vomiting of the stimulating character—emptying the stomach, and leaving the skin warm and dry. It may be combined with tonics, or used alone in cold infusion, for excessive and cold perspiration. It is not suitable in cases of acute sensitiveness of the stomach, bowels, or uterus, nor in any active inflammation. The powder is a good stimulating snuff in catarrh; and it stimulates the contraction of small blood vessels in a favorable manner, when applied locally in hemorrhages. Dose, five to fifteen grains of the powder.

Pharmaceutical Preparations: I. *Infusion*. Although water does not obtain all its virtues, the warm infusion is the favorite mode of employing it. Two drachms of the powder to a pint of

boiling water; macerated in a close vessel for half an hour; given in doses of from one to four tablespoonfuls every thirty minutes or oftener. II. *Tincture*. An ounce of the root to a pint of 50 percent alcohol; used in doses of half a drachm to a drachm, every hour or two. It is an ingredient in the Compound Tincture of Lobelia.. It is many times added in small portions to tonic-expectorant and tonic-emmenagogue preparations.

The *Asarum Europaeum*, or *asarabacca*, is similar to the above; but is much more prompt as an emetic, and not unfrequently induces catharsis. A warm infusion has been used in neuralgia and rheumatism. A drachm will usually induce vomiting.

ASCLEPIAS CURRASAVICA
GARDEN SILKWEED

Description: Natural Order, Asclepiadaceae. This is a half-shrubby species of the silkweed, branching at the base, pubescent, three to five feet high. Leaves lance-linear, acuminate, long. Umbels solitary, lateral, shorter than the leaves, few-flowered. Flowers usually a brilliant scarlet, varying to almost white. It is a native of the West Indies; but is now cultivated in gardens for its stately and brilliant appearance.

Properties and Uses: Miss L. Dille, M. D., during a residence in Jamaica, became professionally acquainted with this plant. She tells me the *roots* are in all respects similar to those of the *asclepias tuberosa*, though she considers the *currasavica* preferable to the *tuberosa*. She used it quite extensively in practice there; and found it reliable in all cases for which the pleurisy root is given, though more inclined to act upon the bowels unless combined with some diffusive stimulant to secure for it an outward determination. The fresh root is quite a relaxing emetic. The article has been spoken of by Lindley, Rafinesque, and others, as an emeto-cathartic.

ASCLEPIAS INCARNATA

SWAMP MILKWEED, SWAMP SILKWEED, WHITE INDIAN HEMP

Description: Natural Order, Asclepiadaceae. Stem erect, nearly smooth, two or three feet high, paniculately branching, two downy lines above, very leafy. Leaves opposite, four to seven inches long by six to fourteen lines wide, tapering very acutely at apex, on petioles half an inch long, slightly tomentose. Flowers in compact, erect, terminal umbels; umbels two to six together, an inch or more in diameter; ten to twenty reddish-purple, sweet-scented flowers in each umbel; peduncles two to three inches long. Pods not warty nor prickly. Common in wet places every-where. June to August. Root from two to six lines in diameter, lightish-yellow, imparting its properties to water. Usually confounded in commerce and by physicians with apocynum cannabillum. This species has several varieties.

Properties and Uses: The *root* is a relaxant and mild stimulant; affecting the mucous membranes and fibrous structure of the bowels, and apparently acting on most of the secreting organs. It will secure soft and relaxed stools; and in considerable quantities is said to provoke emesis. Its principal use is as a mild cathartic in worm preparations, for which purpose it is often combined with santonine, chenopodium, and other anthelmintics. It is also reputed excellent in dropsies and visceral obstructions. Prof. Tully speaks favorably of it in dry asthma and syphilis; while others ascribe to it narcotic properties. I have used it little, but think it free from narcotism. Usually given in powder, ten to twenty grains three times a day. Information on this plant will be thankfully received.

Asclepias fibrosa, called *cotton-weed*, has narrow and pointed leaves, and dusky-yellow flowers, in terminal umbels. An infusion is said to be an excellent diureto-cathartic.

ASCLEPIAS SYRIACA
MILKWEED, COMMON SILKWEED

Synonym: *Asclepias cornuti*.

Description: Natural Order, Asclepiadaceae. This is the milkweed so common in roads and fields and barren places, throughout America. Stem two to four feet high, erect, stout, rarely branched. Leaves opposite, five to eight inches long, two to three inches broad, oblong-ovate, short-acuminate, downy beneath, pale, spreading, on short petioles. Flowers on stout peduncles, axillary, in globose and dense umbels, nodding, from fifty to one hundred greenish-purple flowers in each umbel, most of the flowers ultimately abortive. Fruit one or two follicles on each peduncle, oval, pointed, drooping, three inches long by an inch or more in diameter, covered with soft and warty spines, filled with flat, umber-colored seeds with an abundant crown of long, white silk on each. July and August.

Properties and Uses: The *root* of this plant, with many practitioners, bears a good name for a relaxing, stimulating and lightly tonic action upon the kidneys; and also upon the uterus. It is thus reputed of value in dropsy, achings of the back, and general feebleness of renal action; in passive amenorrhea; and as a diuretic addition to preparations for scrofula and syphilis. I have found its action on the kidneys slow, but well marked; but suspected it of causing a sort of languid condition resembling a form of narcotism, and so discontinued its use. Possibly I was mistaken in this; yet many class the root among the anodynes ; and Prof. S. E. Carey tells me he has found the half-dried root quite nauseating, and inclined to induce persistent and protracted vomiting. I am of the opinion that it is a suspicious article.

ASCLEPIAS TUBEROSA

WHITE ROOT, PLEURISY ROOT, BUTTERFLY WEED, SWALLOW-WORT, WIND ROOT, ETC.

Description: Natural Order, Asclepiadaceae. Genus ASCLEPIAS: Herbaceous perennials. Calyx deeply five-parted; corolla deeply five-parted, valvate in aestivation, finally reflexed; staminal corona five-leaved, leaflets rolled into a hoodshape, a hornlike process standing out from the base of each; anthers in a five-angled, truncate mass; pollen in masses of five distinct pairs, pendulous; fruit in two ventriocous follicles; seeds numerous, flat, umber-colored, with an abundant white, long, silky coma. A.. TUBEROSA: Stem ascending, sometimes almost decumbent, with spreading branches at top, hairy. Leaves alternate, scattered, upper ones sessile, acute, obtuse at base, oblong, two to four inches by six to ten lines. Flowers in numerous, large, corymbed umbels, terminal; with hoods bright orange, oblong, narrow; appearing in July and August. Follicles erect, lanceolate-pointed.

This species of asclepias is more abundant in the Southern than the Northern States. It selects moist and loamy ground, and is usually from two to three feet high, the stem not emitting much milky juice. The root is long, fleshy, nearly white within, and pale brown on the surface. This root is the medicinal part; is easily pulverized, yields its properties readily to water or diluted alcohol, and has a somewhat insipid, bitter taste.

Properties and Uses: The *root* of this plant is probably one of the most reliable and serviceable relaxing diaphoretics in the whole *Materia Medica*. It diffuses itself with only moderate rapidity, but maintains its influence with considerable pertinacity. Its principal action is upon the sweat glands, at the same time that it relaxes the capillaries and thereby relieves the heart and arteries. It also exerts a decided impression upon the serous tissues, especially the pleurae and peritoneum; the mucous membranes of the lungs and bowels are also influenced by it; and its general action gives a peculiar and valuable relief to acute arterial and nervous excitements.

The chief employment of this agent is in febrile and inflammatory affections, where the perspiration needs to be decidedly promoted, and excitement of the heart relieved by a full outward determination of blood. It secures a slow, steady, and free perspiration, at the same time suitably diminishing excessive heat of the surface; which action renders it highly serviceable in typhus, scarlet, bilious, puerperal, lung, rheumatic, and other forms of fever, with a hot skin and rigid pulse. Measles and catarrhal fever may be added especially to this list; and so great is its service in pleurisy, that "pleurisy root" is one of the most popular of its names among the people. In acute dysentery, with fever and tormina, it secures that free circulation to the surface which affords great relief to the bowels; and in the acute stages of inflammation of the womb, bladder, and kidneys, it is of equal advantage. In all these cases its use is followed by not only an increased perspiration and softening of the pulse; but the action of the kidneys becomes better, the mucous surfaces act more firmly and naturally, and the nervous system obtains a soothing impression that is very desirable.

General as the action of this agent thus is, it is yet rather slow; and its influence is so void of stimulation, that the physician will be disappointed if he look for sudden and powerful effects from it. Its persistency and mildness, together with its certainty, are what make it so useful. Most

commonly it is combined with some diffusive and more prompt stimulant, especially with about one-fourth its own weight of ginger or polemonium. There is a peculiar insipidness about the taste of this asclepias, which is well covered by the ginger. The fresh root has a rather mawkish, nauseating taste.

This agent is not one that is to be chosen in the treatment of chronic cases; though its action on the sweat glands leads many to combine it with stimulants and tonics in leucorrhœa, recent dropsies, and other cases where the skin is harsh and dry. It is not an article suitable for depressed conditions; and should not be used where there is already a tendency to too much perspiration, or where the pulse is small and feeble. In distinct typhoid cases, it should always be combined with a full portion of stimulants; and the same rule should be observed in using it during the latter stages of pneumonia, pleurisy, peritonitis, etc. If, in any of these cases, the surface becomes cold, the pulse weak, and signs of approaching effusion supervene, this asclepias should not be used at all. In like manner, it would be out of place in any malady presenting a similar condition of skin and pulse, with a tendency to suppuration or putrescence.

The most common, and altogether the most appropriate mode of using the white root, is by warm infusion. One ounce to a quart of boiling water is the best proportion; and the dose of this may be varied from four to six tablespoonfuls every hour or half hour; or half a teacupful every hour or hour and a half.

Pharmaceutical Preparations: I. *Infusions.* The simple infusion has been mentioned. It enters into a very large number of compound infusions, among which may be named the following: Ist. Asclepias, one ounce; ginger, two drachms; lobelia herb, half a drachm. Used in small doses every half hour where a moderate nauseating impression is needed with a relaxing diaphoretic. 2d. Asclepias and dioscorea, each, half an ounce; ginger and anise seed, each, one drachm. Used in colic, flatus, etc. This article also enters into a new Composition Powder, that will be found among the preparations of Myrica. II. *Compound Diaphoretic Drops.* Digest one pound of crushed asclepias in a quart of water and four ounces of alcohol; at the end of twelve hours transfer to a percolator, and add water till three pints have passed; to this add half a pound of sugar, and evaporate rather briskly, yet below the boiling point, to one pint. Have prepared one ounce of caulophyllum and one drachm of aristolochia, tinctured in eight ounces of diluted alcohol, by percolation. Add this to the concentrated decoction of asclepias. Dose, one to four teaspoonfuls in a warm tea of spearmint, catnip or ginger, every hour. It is a very potent diaphoretic, moderately stimulating and nervine, and quite useful in recent colds, small-pox, and other exanthems, etc. III. *Asclepidin.* This is prepared by percolation in a very close apparatus, passing to it the vapor of 98 percent alcohol. The tincture thus obtained is evaporated three-fourths; and when the residue is allowed to stand for several days, the asclepin rises slowly to the surface, from which it may be gathered and dried in the usual way. It forms a grayish-white, faintly odorous powder, which represents the root but moderately well. For diaphoretic purposes it is an indifferent agent; and though some speak of it in glowing terms for purposes of sudoresis, it will be of little service unless given in very large doses, and associated with such warm infusions as would probably secure a perspiration without any aid from asclepin. (136, 186.) For a nervine action, and influence on the serous tissues in sub-acute cases, it answers a better purpose. Dose, two to five grams every two or four hours.

ASPIDIUM FILIX MAS

MALE FERN, SHIELD FERN

Synonyms: NEPHRODIUM FELIX MAS, POLYPODIUM

Description: Natural Order, Filices. Genus ASPIDIUM: Fruit dots round., situated on the pinnate veins, not marginal, scattered; indusium reniform-orbicular, flat, attached to the receptacle at the center or at the sinus, opening around the whole margin. Fronds erect, usually disposed in a circle, numerous, three to four feet high, arising annually from a prostrate and perennial rhizoma. A. FELIX MAS: Frond oval-lanceolate in outline, pinnate, bright-green, with the footstalk and midrib covered with brown, membranous scales. Pinnae remote below, running together as they ascend, oblong, crenate, deeply divided into lobes which become less distinct toward the apex. Sori in small (usually scattered) dots on the back of each lobe, in two rows distinct from the edges. Rhizoma long, cylindrical; flexible, an inch or more in diameter; brown without, and light yellowish-green within; covered with the overlapping remains of previous stipes, each an inch or two in length, brown and shining. Numerous small root-fibers arise between these scales.

This plant is a native of Europe, and is not found in America. The *A. novaboracense*, however, is found in New York, and seems closely allied to the European species; and is nearly always the article that passes in commerce as the European male fern, though experience does not warrant the belief that it possesses the full properties of the foreign article. The American species is common in eastern swamps and thickets; frond a foot high, pale-green, very delicate and membranous, tapering evenly from the middle both ways, with the lower pinnae reflexed; pinnae about twenty pairs, with about twenty-five pairs of segments; rhizoma very dark brown, muddy-white within, remains of leaf-stalks very short, hard when dry.

The *root* (or rhizoma) of the European species is the part used in medicine. It is generally gathered between May and September, and dried as quickly as possible in the shade—the outer scales and brown parts being carefully cut away. It should be pulverized as soon as possible, and the powder kept in the dark in closely-stopped bottles. It contains a volatile oil, and a fixed oil obtained by treating the freshly-dried root with ether; also a moderate portion of resinous and other materials. It yields its properties to ether and alcohol; water extracts but little of its strength; and heat or age dissipates its properties.

It is unfortunately the case that the various species of polypodium are gathered and brought into market as the American aspidium; and the practitioner is often disappointed in using this article under the impression that it is the true male fern. The botanical characters distinguish the two genera with sufficient clearness. The frond of the polypodium is simply divided into narrow segments, but is not at all pinnate or bi-parted. It also has a multitude of small, creeping root-stalks, instead of the one large rhizoma that marks the aspidium. Polypodium is an extremely common fern in all sections of our country; whereas aspidium is much more rare.

Properties and Uses: The *root* of this plant has had some repute in the treatment of worms, for several centuries—almost from the time of Christ. About the year 1775, Madame Nouffer, the

widow of a Swiss surgeon, acquired such celebrity in the treatment of the tape-worm, that the King of France, on the commendation of a commission from the French Academy, purchased from her the secret of her treatment. This consisted in using a free dose of powdered aspidium, to be followed in two hours by an active cathartic—this course to be repeated at intervals of two or three days till the worm should be evacuated. The European physicians, especially those of France and Germany, have since been very successful in thus using the article; and there can be no rational doubt as to its efficacy, though its use in America has not been satisfactory—probably from the true article being seldom found in our shops, as above explained. It seems to poison the worm, killing it outright.

When given in the powdered form, it is most common to administer one hundred or one hundred and twenty-five grains, in the form of an emulsion, on an empty stomach in the morning. In from two to three hours after, a brisk cathartic, as the anti-bilious powder, should be given. Others prepare from two to four drachms in boluses, giving the whole before breakfast; and then using the cathartic. The taste is slightly bitter and astringent. The best **description** of its action is recorded in connection with the use of its oil, in which the properties of the article reside.

Pharmaceutical Preparations: I. *Oil, or Ethereal Fluid Extract.* Mix two pounds of freshly-dried fern roots, in coarse powder, with two pints of ether pack closely in a tight percolator, and add ether till it comes away nearly colorless. Evaporate or distill off the ether, on a water-bath, when a blackish-brown, oily-looking extract will remain. A pound of the roots yields nearly one and a half ounces of this oil. The dose is from half to a whole drachm, made into an emulsion with an ounce of thick mucilage of gum arabic, and given in half a cupful or more of fresh milk. It is generally given before breakfast, and followed in two hours by a large dose of castor oil ; but some give the fern at bed-time, and the castor oil the following morning. Dr. J. Constable, London, reports a case in which he gave a lady one and a half drachms at bed-time. A few minutes after taking the medicine, she felt very sick and inclined to vomit; “a peculiar benumbed sensation crept over her body; in twenty minutes after, she felt sudden and darting sensations in the stomach for a few seconds; the sickness wore off after midnight, without any vomiting or retching.” The following morning, before taking any physic, she passed a *whole* tape-worm, measuring over twenty-two feet. She then recovered good health. (*Braithwaite’s Retrospect*, Part 66.)

ASTER CORDIFOLIUS

STARWORT

Description: Natural Order, Compositae. The Genus ASTER is a large and very common one throughout our country, flowering late in the autumn; with the ray florets always well marked, varying from whitish-purple to bluish purple, but never yellow, always in a single row, and pistillate. The disk flowers, on the other hand, are very small, tubular, yellow changing to purple, and perfect. Receptacle flat, alveolate; pappus simple, capillary, scabrous; achenium usually compressed. Leaves alternate. A. CORDIFOLIUS: Stem smooth, occasionally roughish, two feet high, divided above into a number of paniculate and spreading branches. Lower leaves cordate, large, strongly serrate, on slender and hairy-winged petioles, sometimes hairy beneath; upper leaves gradually reduced to minute bracts. Flowers in small heads, quite numerous upon the paniced branches; involucre scales closely appressed, obtuse, short, tipped with green points; rays ten to fifteen, pale blue or nearly white. This is a very common plant on the hillsides and through the rocky woods of the entire North and West, blooming from September to October.

Properties and Uses: This plant was introduced to the profession by Prof. Rafinesque; and experience has confirmed the brief account he gave of it. The *root* is relaxant and aromatically stimulant, acting slowly and rather permanently. Its principal power is expended upon the nervous system; and it is used in hysteria, nervous irritability, painful menstruation, rheumatism, and similar difficulties to which caulophyllum is suited, but is more slowly relaxing than the latter article, and more properly in the class of the nervine tonics. It deserves more attention than it has received from the profession, and its abundance should secure for it a trial. It has been compared to valerian; but is less relaxing, and more aromatic than the latter plant.

The *Aster puniceus* is said to resemble the above. It grows in moist places; reaches a height of from four to seven feet, is usually purple-red on the south side of its stem, with its stalk furrowed, rough-hairy, and not so much branched as the cordifolius. Leaves oblong, clasping, slightly eared at the base. Flowers large and showy, with fifty to eighty rays in two rows—rays, lilac-blue, and long. I have not found it so agreeable a medicine; but more relaxing and permanent than the above species. It is sometimes called *cocash* and meadow *scabish*, though these names are given to other plants.

ASTRAGALUS VERUS

TRAGACANTH, GUM DRAGON

Description: Natural Order, Leguminosae. A small shrub, native to Asia Minor, Armenia, and Northern Persia. Branches covered with imbricate scales and spines; leaves of eight to ten pairs of linear pinnae; flowers in axillary clusters of two to five, yellow, sessile, small; legume two-celled, dorsal suture turning inward. Two to three feet high. Several species and varieties are found.

The medicinal portion of this plant is a gummy exudation, generally obtained by making longitudinal incisions through the bark, at the lower part of the stem, during July and August. The gum dries in white, semi-circular flakes, and is gathered after three or four days. Changes in the weather give it a yellowish or reddish tinge, but without materially altering its qualities. It is insoluble in alcohol; cold water causes it to swell up in a large and dense gelatinous mass, but does not dissolve it; boiling water dissolves only a very small portion. It is without taste or smell.

Properties and Uses: The *strained mucilage* is occasionally used as a vehicle for exhibiting very active and dense powders. Its most common employment is as a basis for medicated troches and lozenges, for which its density well adapts it. Druggists generally use it as their label paste; for which purpose four drachms may be macerated in a pint of cold water, and more water added as required.

Pharmaceutical Preparations: I. *Mucilage*. Macerate five scruples of selected gum in ten ounces of boiling distilled water, for twenty-four hours; triturate, and strain by pressure through open muslin. In this form it is used in the preparation of troches and pills, and the exhibition of powders. A little rectified spirit may be added without causing any deposit. II. *Compound Powder*. Select one ounce of the best flakes, dry them for several hours at a heat of 120°, and pulverize them in a warm mortar. Triturate with this one ounce each of powdered starch and gum arabic, and three ounces of sugar. It makes a pleasant mucilage, when saturated with water, during the treatment of gastric and intestinal irritation, or for the exhibition of such powders as capsicum, myrrh, etc.

BALSAMODENDRON MYRRHA

COMMIPHORA MYRRHA, MYRRH, GUM MYRRH

Description: Natural Order, Amyridaceae. Stem shrubby, with rough branches terminating in spines, covered with alight ash-gray bark. Leaves ternate, short petiolate, smooth; leaflets obovate, obtuse. Flowers unknown. Fruit a little larger than a pea, short-stalked, ovate, brown, and smooth. This small tree is a native of Arabia Felix, where it grows abundantly in acacia and euphorbia forests. It is also found in Abyssinia.

The medicinal portion of this plant is a gummy resin, which exudes spontaneously from the bark; at first pale-yellow, soft, clear, and oily; but afterward turning dull reddish-yellow, and becoming more opaque and hard. It was an object of trade nearly four thousand years ago, and was employed in medicine by Hippocrates. As it appears in commerce, it is in irregular tears or masses; varying in size from a small pea to a large walnut; of color ranging from a reddish-yellow to a reddish-brown; having an irregular and somewhat oily fracture, and with a pleasant aromatic and balsamic smell. The taste is warming and somewhat bitter, but not unpleasant. Heat slowly softens it; and it will burn at a high temperature. The best qualities are imported from Turkey; are generally in large masses, covered with more or less fine yellow powder, soft and fatty within, and mostly pale in color. A second quality is darker in color, harder, and always in quite small tears. A quality shipped from the East Indies is nearly brown-red, in pieces about the average size of a walnut, and frequently intermixed with foreign substances.

Though classed as a gum, this substance contains about 40 percent of resin, and 2.5 percent of a volatile oil. Only a portion of its gum is soluble in water; alcohol does not dissolve any but its resinous qualities, and takes up less of its virtues than water will; but dilute alcohol will solve most of its strength. An alcoholic solution added to water becomes milky, but does not deposit its resin. Alkaline solutions, as carbonate of potassa, increase its solubility in water. By being broken into fragments, it will slowly dry, and then may be pulverized.

Properties and Uses: An excellent antiseptic, a slow and mild stimulant, possessed of moderate astringency, and acting as a stimulating tonic. Its use occasions an agreeable sense of warmth in the stomach, large quantities causing decided gastric excitement. It slowly increases the fullness and force of the pulse, and exerts a well-marked influence on the capillary circulation. It diminishes mucous discharges, leaves a sense of warmth in the respiratory passages, arrests decomposition, and removes foul odors from sores. It is also a very good styptic in passive hemorrhages. Emmenagogue properties have been attributed to it; but it merely arouses the uterine blood vessels in common with the rest of the circulation, and has no specific influence on this organ, except as it lends its influence there in concert with distinct emmenagogues. (§265.)

It is an article seldom used alone: and it should never be used at all during febrile excitement; in inflammatory affections, where there is sensitiveness of the mucous membranes either of the stomach, bowels, lungs, uterus, or renal organs; nor where the mucous discharges are deficient. It is indicated where there is feebleness of the vascular apparatus, and a tendency to congestion with nervous prostration; and phlegmatic temperaments admit it more readily than the nervous or

sanguine. In atonic conditions of the stomach and bowels, giving rise to particular forms of indigestion, flatulence, colic pains, and coldness, it is of use combined with tonics. In excessive mucous discharges, with debility of the membranes and the general system, it exhibits its virtues to great advantage; as in chronic leucorrhœa and catarrh, when the secretions have become offensive; likewise in low ulcerations of the bowels and the bladder, providing no inflammatory excitement be present. It may be used directly to the vagina, in bad leucorrhœa; and when combined with bayberry or a little capsicum, forms a potent injection to the bowels in passive hemorrhages following typhus. As a local application in degenerate ulcers, it is of great value—especially in phagedaena, malignant and foetid sores, carbuncles, malignant scarlatina, putrid sore throat and diphtheria, and after an indolent bubo has been opened. In these cases it is best to combine it with capsicum or other stimulant, but seldom with astringents. I have found it of good service in phagedaenic chancres, along with lobelia seeds and a little capsicum. In all such local cases it may be used in powder, tincture, or watery solution. It is a favorite appliance in aphthous sores, and bleeding or spongy gums. Many make use of its tincture in liniments; but being so largely resinous, it soon forms a layer of varnish upon the surface—thereby shutting in the perspiration that should escape at the part, and preventing the subsequent applications from reaching the structures.

The dose of this article usually directed, is from ten to twenty grains. I consider this by far too large. The powder is not a very heavy substance; and from two to five grains, repeated three or four times a day, are usually enough. Ten or twelve grains may be given in extreme cases. It is best given in powder; but may be made into a bolus with gum tragacanth solution.

Pharmaceutical Preparations: I. *Tincture*. Bruised myrrh, four ounces; alcohol of 85 percent, three pints. Macerate for fourteen days, and filter. This preparation is used only as a wash to ulcers; or internally as an adjuvant to emmenagogues and tonics for atonic conditions. II. *Compound Tincture of Myrrh, Hot Drops*, No. 6. Myrrh, one pound; capsicum, one ounce; alcohol of 85 percent, one gallon. Digest at a very moderate warmth, with occasional agitation, for ten days. This is one of the most famous preparations of Dr. Samuel Thomson; and though over-fastidious practitioners may seek to ignore it, it is one of the most powerful antiseptic and stimulating- tonic compounds ever offered to the profession. It is not surpassed by any preparation for atonic, sinking, and putrid tendencies; malignant diseases of the throat, receding variola, gangrenous conditions about sores and wounds, absorption of pus, etc. The addition of the capsicum to the myrrh greatly intensifies its action. Dose, half to a whole fluid drachm in water, every two hours, hour, or half hour, as needed. The dregs of this preparation are the most powerful of all local antiseptics. III. *Compound Tincture of Myrrh and Cypripedium*. Bruised myrrh and cypripedium, each one pound; ginger and xanthoxylum, each four, ounces; capsicum, one ounce; oil of sassafras, two drachms. Macerate the drugs for twenty-four hours in a sufficient quantity of 85 percent alcohol; transfer to a percolator, and treat with alcohol till two gallons have passed over. Dissolve the oil in four ounces of 98 percent alcohol, and add to the tincture. This makes a less pungent preparation than the No.6 but one that is much more diffusive, pleasant, and nervine. It may be used in the same general way as the other; though larger doses may be given if required. IV. *Solution*. Myrrh, twenty grains; sugar, half an ounce. Triturate thoroughly, and add boiling water, four fluid ounces. Trituration with a sharp-grained brown sugar increases the solubility of myrrh in water. This preparation is one of the pleasantest forms in which the article can be given. It may be used in doses of half a fluid ounce, or more, every

six, four, or two hours. The stomach will often receive it kindly when in a condition of sluggish turgescence, bordering on a state that precedes gangrene; and also in that form of gastric irritation which ushers in peritoneal effusion and typhoid ulceration. An equal quantity of cypripedium may be used in the preparation.

BAPTISIA TINCTORIA

WILD INDIGO, INDIGOFERA, INDIGO BROOM, RATTLE BUSH, HORSEFLY WEED

Description: Natural Order, Leguminosae. Genus BAPTISIA: Calyx four to five-toothed, persistent; corolla banner short, keel-petals nearly separate; stamens ten, distinct; pod stalked, inflated, many-seeded. Perennial herbs, with three-foliolate, palmate leaves, and racemed flowers. Leaves and stem blacken in drying. B. TINCTORIA: A smooth, slender, shrubby-looking plant, two to three feet high, with loose and bushy branches. Stem round, yellowish-green, dotted; leaves small, alternate, sessile; stipules and bracts minute, deciduous; racemes terminal to the branches, six to twelve-flowered; flowers yellow, one-half an inch long; pod one-seeded, about as large as a pea, oval-globose, on a long stipe. July to September; common to poor soils; the entire plant has a bluish-green look, and turns nearly black in the fall, or when dried.

The leaves and root of this plant are medicinal, and yield their properties readily to both water and alcohol. The fresh root has an acrid and nauseous taste; but the sharpness is mostly lost in drying. The plant yields an inferior blue dye; but it seems to me altogether probable that, were it treated with the same skill and care as are necessary to obtain the imported indigo, it would yield a product equal to the foreign article. The white-flowered species (*B. alba*) may be found to possess the same medicinal properties.

Properties and Uses: This plant has been pronounced poisonous, though there seems to be no proof whatever that such is the case. I have used the *leaves* with much freedom outwardly, and at times inwardly. The *bark of the root* is said to act the same as the leaves. These are peculiarly antiseptic, with decided stimulating and moderate relaxing qualities. They make an excellent application to ulcers, erysipelatous sores, buboes, carbuncles, etc., when there is a degenerate condition and a tendency to gangrene. They relieve the peculiar suffering attendant on such conditions, (§238,) remove the foul odor, and favor the reparative process. A demulcent poultice may be covered with the powder. Powdered prunus or nymphaea makes a good accompaniment; or small quantities of myrrh or capsicum may be added, in very degenerate cases. It makes a good vaginal injection for foetid leucorrhoea; and a wash for mercurial sore mouth. The dry powder is an excellent local application to hunterian and phagedrenic chancres.

Internally this article makes a decided impression on the glandular system, stimulating the secreting organs—especially the liver and bowels. Large quantities act freely as a cathartic. It also elevates the circulation and nervous action, yet without undue excitement. It has been spoken of in scarlatina and typhus; but its better internal use would be in small portions added to sirups for degenerate syphilitic and scrofulous cases, and in atonic rheumatism. Fomentations of the leaves will promote the absorption of scrofulous swellings and chronic abscesses; and have even been reputed useful in cancerous tumors. It should always be dried before using; and should never be given when there is inward irritation or inflammation.

Pharmaceutical Preparations: I. *Decoction*. Half an ounce of the root boiled for a few minutes in a pint of water, is the best form for using it alone. Dose, a large tablespoonful every

three or four hours. II. An *ointment* may be prepared in the usual way. III. Treated with alcohol, and evaporated, it furnishes a semi-resinous *extract*, often called *Baptisin*; but the addition of a little acetic acid to a concentrated tincture, throws down the baptisin as a yellowish-brown powder. Dose, one-fourth to half a grain, twice a day.

BAROSMA CRENATA

BUCHU, BUCCO

Description: Natural Order, Rutaceae. Also called *Diosma crenata*. A native of the Cape of Good Hope, where it grows abundantly as a shrub two to three feet high. Leaves opposite, ovate-oblong, minutely crenulate, obtuse, one inch or less long, three to five lines broad, three-nerved, stiff, dark-green above, pale or yellowish-green beneath, smooth, glandular-dotted on the lower side, of a rue-like odor, and a taste like pennyroyal. The leaves of two or three other species are gathered and presented in market indiscriminately. They all possess a peculiar and volatile oil, on which much of their virtues depend. Water and diluted alcohol extract their properties. Boiling injures them.

Properties and Uses: A knowledge of the medicinal qualities of these leaves was obtained from the Hottentots. They are a mild and rather diffusive stimulant, exerting also a relaxing nervine action, and leaving behind a gently toned condition. Their power is expended chiefly upon the bladder and its appendages; but it influences the mucous membrane of the stomach and of the uterine organs. A cold strong preparation increases the flow of urine; a weaker and warm preparation promotes gentle diaphoresis.

Its action on the urinary organs is most favorable in chronic catarrh of the bladder; in sub-congested conditions of the prostate, with gummy discharges and aching through the penis; and in recent gleet or old gonorrhoea. It is also of service in those forms of spermatorrhea where the seminal discharges are thin, and a feeling of impotence is invading the parts. It relieves the aching and uneasiness attendant upon all these cases; and diminishes the mucous secretion. It should never be used in any case of acute or sub-acute irritation, as it is too stimulating for such conditions. Among difficulties where it will occasionally give relief, may be named inability to retain urine in consequence of a congested prostate; in which malady it is an excellent addition to the peach leaves. Some have commended it highly in lithic acid gravel, but probably it is of small use there.

This article may be used to advantage in lingering leucorrhoea, with a tenacious discharge and aching in the back. It is usually combined, for this purpose, with such agents as aralia or liriodendron. It rather improves the tone of the stomach, and relieves sympathetic irritability of that organ. It makes a serviceable adjunct to emulsion of copaiba, in chronic gonorrhoea. Probably several of our native articles of the same class are at least equal to it. Dose, ten to twenty grains of the powder, three times a day.

Pharmaceutical Preparations: I. *Infusion*. Bruised buchu, half an ounce; distilled water, ten fluid ounces. Pour on the water very hot, and infuse in a covered vessel for an hour. Dose, one to two fluid ounces, every six or four hours. II. *Tincture*. Bruised buchu, two and a half ounces; proof spirit, one pint. Macerate the buchu in a covered vessel, with three-fourths of the spirit, for two days; transfer to a percolator, and slowly add the remainder of the spirit; when the dripping has ceased, press the dregs strongly, filter the product, and add enough spirit to make the whole a pint. Dose, one to two fluid drachms, three times a day. III. *Fluid Extract*. Buchu, in coarse powder, sixteen troy ounces; alcohol, 85 percent, sufficient. Moisten the buchu with some of the

alcohol; pack very firmly in a percolator, and treat it with alcohol till twelve ounces have passed. Set this aside, and continue the percolation till two pints more of tincture have been obtained. Evaporate this last on a water bath, at a temperature not exceeding 150°F. and mix it with the reserved tincture. After it has stood twenty-four hours, filter through paper. This is the fluid extract of the U. S. Pharmacopoeia, and is altogether the most elegant preparation of this agent. (Some direct its preparation by the employment of ether with alcohol and gin; but ether has no solvent power on the oil of buchu, and gin is a very uncertain and inefficient article.) Dose, twenty drops to half a fluid drachm, in water and sugar. It is much used in spermatorrhea.

BENZOIN ODORIFERUM

SPICEWOOD, SPICEBUSH, FEVERBUSH, WILD ALLSPICE, BENJAMIN BUSH

Synonyms: Laurus Benzoin of Linnaeus.

Description: Natural Order, Lauraceae. Genus BENZOIN: Shrubs five to twelve feet high. Flowers dioecious; calyx six-cleft, open, yellow; corolla wanting; sterile flowers with nine stamens in three bands; fertile flowers fifteen to sixteen rudiments of stamens; deciduous scale-like bracts, four. Inflorescence in clusters, made up of umbels of four to six honey-scented flowers. Leaves appearing after the flowers, deciduous, entire. B. ODORIFERUM: Leaves two to four inches long, half as wide, obovate-lanceolate, veinless, entire, pale beneath. Flowers in small, sessile umbels. Drupes red. Common to moist woods in America. Whole plant spicy, aromatic, resembling benzoin. May.

Properties and Uses: The *bark* of this shrub is a diffusive relaxant, with mild stimulating properties. A warm infusion, of an ounce to a pint of water, may be used freely; and is a mild diaphoretic in recent colds, tardy appearance of the eruption of measles and small-pox, and in the early stages of typhus. Also used in chicken-pox, colic, and similar affections. The *berries* possess the same general properties in a large degree. They have been used in recent rheumatic fever; and applied as a poultice in chronic rheumatism. The article is among the mild ones of the *Materia Medica*, but is a peculiarly agreeable one; and may be used to advantage in all cases of moderate circulatory and nervous depression. It can be combined with asclepias, effectively; and makes a grateful and useful adjunct to tonic and alterative preparation. The berries, boiled in milk, are said by Dr. H. Howard to be of value in the second stages of dysentery; and Rafinesque says the oil of the berries is an excellent agent for colic, rheumatism, bruises, etc.

BETULA LENTA

SWEET BIRCH, BLACK BIRCH, MAHOGANY BIRCH

Description: This is a noble tree, common to the uplands of the Eastern and Middle States, and often attaining a height of fifty or sixty feet, and a diameter of two to three feet. It has a strong, compact, and red wood, which has given it the name of *mountain mahogany* in some localities. It takes a good polish, and is much used by cabinet makers. The bark is dark- brown or reddish; and the leaves are three to four inches long, cordate at base, and ovate in outline. Both the bark and leaves have an agreeable, spicy flavor, not unlike that of wintergreen. They yield their properties to water.

Properties and Uses: The *bark* is a mild nervine relaxant and stimulant; promoting gentle action on the skin, if given in warm infusion; leaving behind a slightly tonic and astringent impression on the stomach and bowels. It is most serviceable in diarrhea, cholera infantum, and similar complaints of the bowels—in which it promotes perspiration, quiets the stomach, and relieves nausea, and promotes just that mild tonicity which is allowable in such cases. It may be used as a grateful adjunct to other articles, in chronic diarrhea and dysentery; and may also be given by warm infusion in convalescence from measles and typhus, when the bowels are inclined to be too loose. It has an extremely mild astringent influence, which follows the expenditure of its other powers, and is more toning than drying.

The *leaves* are less astringent and tonic than the bark, but promote the flow of urine, and are excellent to relieve irritability of the kidneys and bladder. Their action on the skin is at the same time favorable both in these cases and in the same cases where the bark is used. These leaves deserve far more attention than they have yet received, for their power to assuage renal and cystic irritation; and especially when such irritation is connected with too much mucous discharge, as in oxalic acid gravel, sub-acute catarrh of the bladder, etc.

Two ounces of the bark to a pint of warm (not boiling) water, make an infusion that may be used in doses of two fluid ounces every two hours, or hour. Half an ounce of the leaves may be prepared on a pint of water, and used in the same way. Heat dissipates their properties.

BERBERIS VULGARIS

BARBERRY, BERBERRY

Description: Natural Order, Berberidaceae. Genus BERBERIS: Hardy shrub, five to seven feet; branches covered with a smooth gray bark, inner bark very yellow; fruit an oblong, red, sour, few-seeded berry. B. VULGARIS: Leaves small, obovate, tapering at the base, in clusters of three to ten, simple, armed with bristly serratures, reduced to triple spines on young branches. Racemes pendulous, many-flowered. Flowers small, yellow, six-petaled and six-stamened. Berries oblong, in clusters, remaining the entire winter.

This shrub is a native from Canada to Virginia, preferring rocky situations. Cultivated through New England and the Middle States as a hardy ornamental shrub. The inner bark and root are sometimes used to impart a chrome-yellow dye—which they do very effectually. They are used in medical practice, and impart their qualities to water and to diluted alcohol.

Properties and Uses: The *bark* is intensely bitter, rather stimulating and slightly relaxing. Its action is principally that of a tonic, improving the appetite and strength in debilitated conditions, and especially in bilious affections, and during the languor incident to spring. It exerts a distinct impression on the gall-ducts, favoring the escape of bile, always proving gently laxative, and even acting as a mild and slow cathartic in large doses. This action renders it of much value in jaundice; and in all cases where absorbed bile has depressed the strength, lowered the digestion, tinged the skin, and weakened the lumbar region. Its action on the hepatic organs makes it a good addition to alterative sirups for various affections of the skin. Some speak of it in intermittents and chronic diarrhea, but it probably deserves little attention in such connections, except for its truly beneficial effect upon the hepatic apparatus. This influence is one of the first importance in such cases; whence berberis may be employed, but not in the character of an antiperiodic or astringent. The *berries* form an agreeable conserve, which gives a pleasant acidity to drinks in febrile cases.

It may be given by infusion, the strength of from five to ten grains of the bark being used three times a day. The quantities usually directed are entirely too large. It is often given tinctured on hard cider, which is a popular family remedy for spring “biliousness,” through New England. Dr. S. Thomson was in the habit of prescribing it in the following form: Four ounces each of berberis, populus, and prunus ; crush and macerate for a few days in a gallon of cider. Dose, a large tablespoonful or more, three times a day. The article is one of the powerful agents of the *Materia Medica*; but its intense bitterness is an objection to it. Its bark yields the alkaloid principle, *berberina*.

Berberina is most readily prepared by first making an alcoholic tincture, evaporating it one-half, and adding twice its bulk of water. A soft, brown, resinous substance subsides; pour off the liquid from this, dry it at a low heat, treat with alcohol, pour off the solution from the portion that remains undissolved, and evaporate. It yields a brownish-yellow extract, soft, and soluble in alcohol. It is a valuable addition, in small quantities, to cathartic pills, imparting tone to the digestive apparatus, which is too often overlooked in such preparations. It may be used in lieu of the bark. Dose, two to five grains, three times a day.

BERCHEMIA VOLUBILIS

SUPPLE JACK

Description: Natural Order, Rhamnaceae. Genus BERCHEMIA: Calyx five-parted, petals five, inclosing the five stamens; fruit an oblong drupe, sitting deeply into the disk, with a bony, two-celled nut. B. VOLUBILIS: Climbing and woody shrubs, growing in the damp, alluvial soils through the Southern States; stem an inch or more in diameter, twining about trees to the height of ten or twenty feet, with a smooth, reddish bark, and very tough wood; leaves two inches long, ovate, with straight veins; flowers small, greenish-white, in panicles; nut small and very hard.

Properties and Uses: I have repeatedly been told by responsible men, that the root of this plant has a peculiar and powerful action on the urinary organs; and that it has rare efficacy in curing lingering gonorrhoea and gleet. Several highly respectable gentlemen, long resident in Arkansas and Louisiana, have separately spoken to me about it, as having seen the negro physicians use it with unvarying success in cases that seemed nearly hopeless. One gentleman says he obtained the following recipe, at considerable cost, from a negro who used it to cure secondary syphilis, and whose success attracted whites as well as blacks from many counties: Roots of berchemia, one pound; menispermum, half a pound; roots of the palmetto tree, two ounces. Prepared in a sirup, with enough whisky to preserve it; and given in suitable doses three times a day. It is probable that this plant deserves investigation.

BIDENS BIPINNATA

SPANISH NEEDLES, BEGGAR TICK

Description: Natural Order, Compositae. Genus BIDENS: Annual or perennial herbs, with opposite and various leaves; deriving their generic name from the fact that their flat fruit is crowned with two teeth or awns, which are barbed downwardly, and thereby made very troublesome when they get a hold upon one's clothing. Heads many flowered; flowers small, yellow; achenia flattened, crowned with the persistent awns, shining brown. B. BIPINNATA: Stem smooth, brown, two to four feet, branched; leaves bipinnately dissected, nearly smooth, petioled; heads small, with inconspicuous rays. Very common in dry waste places. The swamp beggar tick and the burr marigold are species of the same genus. They are employed indiscriminately in medicine.

Properties and Uses: The *seeds* are a diffusive stimulant and relaxant, promoting expectoration, and securing a good outward flood of blood. They soothe and sustain the nervous system, and seem also to be of benefit in light cases of painful and deficient menstruation. Some physicians consider them of great efficacy in painful menstruation) especially as accompanied by palpitation, general nervousness, or other light hysterical symptoms. They are generally given in warm infusion. The root is said to be a good tonic expectorant in chronic cough; and the leaves are reputed diaphoretic and emetic, capable of relieving membranous croup. This latter idea seems to require some modification; especially as the late Dr. W. T. Craig, of Illinois, told me he made much use of the leaves as a local application to arrest the flow of blood, and with great success. He used a wash in piles, nose bleed, bleeding gums, etc.

BOTRYCHIUM VIRGINICUM

MOONWORT, RATTLESNAKE FERN

Description; Natural Order, Filices. Genus BOTRYCHIUM: II. " Thecae sub-globous, one-celled, two-valved, distinct, coriaceous, smooth, adnate to the compound rachis of a racemose panicle; B. VIRGINICUM: Stipe with a single frond in the middle; frond twice or thrice pinnate, the lowest pair of pinnae springing from the base; ultimate segments obtuse, somewhat three-toothed; spikes decomposed; plants subpilous. Stipe one to two feet high, bearing the frond about half way up. This is apparently ternate, the lower pair of divisions arising from the base. It is almost tripinnate, the ultimate segments being decurrent and more or less confluent at base. Panicle terminal, three to six inches long, reddish-tawny." (*Wood.*)

This is a delicate and very pretty fern, found in the edges of open woods. Its three fronds, springing out abruptly from the stem about six inches from the ground, with their pale yellow-green color, and numerous graceful divisions, at once attract attention. The erect panicle, densely crowded toward the top with tawny globular seed cases, and springing directly from the middle of the three-parted frond, makes this botrychium peculiar among ferns.

Properties and Uses: My attention was called to this plant by a farmer in central New York, who said its decoction would prove reliable as an antiperiodic. Preparing an ounce of the fresh plant in a pint of hot water, and giving two fluid ounces of warm infusion once an hour, it induced a gentle and warm perspiration, and soothed the nervous system. The urinary secretion was also fairly promoted. In several cases of gastric intermittent, it had a happy nervine and antiperiodic effect. The farmer also told me that an application of the bruised leaves, and the free internal use of their warm decoction, would also cure the bites of any poisonous snake or other animal. The reliable character of the man, and the good effects of my own limited experience with the article, induce me thus to lay its claims before the profession, in the hope that it may be investigated.

BRAYERA ANTHELMINTICA

KOUSSO, COSSO

Description: Natural Order, Rosaceae. A tree native to the table-lands of Abyssinia, twenty or more feet in height. Leaves alternate, interruptedly pinnate; flowers dioecious, small, greenish, turning purple, on hairy peduncles.

Uses: The flowers of this tree are the medicinal portion; and appear in commerce in compressed and broken bunches, a foot or more long. They contain a peculiar volatile oil, some bitter resin, and some tannin. It is held in marvelous estimation in Abyssinia, as a remedy for the tapeworm and as a drastic purge; but European and American experience scarcely bears out its reputation. The following is condensed from Pereira:

The physiological effects are not in general very great. The flavor, though not strong, is not agreeable, and may create disgust. It sometimes excites heat, nausea, even vomiting, and thirst; and acts on the bowels only occasionally. Its anthelmintic properties depend entirely on its poisoning the worm; and it often has to be followed by a cathartic. In the case of a French woman, it brought away the worms, only one of which retained any life. The conflicting results following its use are doubtless due to the fact that it sensibly loses its properties by age. It seems most effective against the *Tenia solium*; but has been known to expel the tapeworm of Switzerland—*Bothriocephalus latus*. No ill effects have resulted from its use in this country. It is administered by infusion, which may be prepared as follows: Koussou, in fine powder, one ounce; boiling water, four ounces. Infuse in a covered vessel for fifteen minutes. Take it in the morning, fasting, by stirring up this infusion and drinking powder and all, at three or four doses ten minutes apart. If the bowels do not move in four hours, take a prompt purge.

BROMUS CILIATUS

BROME GRASS

Description: Natural Order, Gramineae. Genus BROMUS: I. “ Spikelets many-flowered; glumes unequal; lower paleae round from below its two-cleft lip; upper paleae adhering to the groove of the linear grain; stamens three. Coarse grasses with large and drooping spikelets. B.CILIATUS: Culm three to four feet high, with large leaves, somewhat hairy. Panicle compound, very loose, long branches at length divergent and drooping; awn half to three-fourths the length of the flowers; lower paleae silky. Common along river banks and moist woodlands.” (Gray.) The *cheat* or *chess* so troublesome to farmers, is in this genus.

Properties and Uses: The leaves are an efficient relaxant purgative, acting mildly, yet rather promptly, and securing the evacuation of the gall-ducts and mucous lubrication of the bowels. They are slightly stimulant, but not griping. They also influence the uterus and promote expectoration. The taste is that of a faint and rather pleasant bitter. Used by infusing an ounce in a pint of hot water, of which two fluid ounces may be given every two hours till they act, for cathartic purposes; or one fluid ounce every four hours for tardy menstruation.

CALENDULA OFFICINALIS
GARDEN MARIGOLD

Description: Natural Order, Compositae. This is a well-known garden plant, of which several varieties are in cultivation. The variety here alluded to is about one foot high, with a striated and dichotomous stem; leaves alternate, oblong, slightly cordate at base, with sub-dentate margins; flower-heads terminal, solitary, large, with brilliant orange-colored radiant corollas. The whole plant has a peculiar, strong smell, not particularly disagreeable, and which is lost in drying. It yields its properties to water and diluted alcohol.

Properties and Uses: The *flowers* and also the *leaves*, have been used medicinally from very remote times, especially as a family remedy. They are a mild and diffusive stimulant, with some relaxing properties, expending their power chiefly upon the nerves, and moderately upon the capillary circulation. Like all other articles of such qualities, they are nervine and antispasmodic; and have been used in hysteria and general nervousness, and to promote moisture at the surface. They are reputed to act upon the uterus beneficially in painful menstruation, slightly promoting the catamenia; and also upon the gall-ducts. Their action is mild, and they are best fitted to light cases. As a local application, they are said to promote granulation, to advance the healing of contused wounds, and to prevent mortification. The last repute would not do to depend on. An ounce of the flowers to a quart of water, is the ordinary infusion.

CALLICARPA AMERICANA

SOURBUSH, FRENCH MULBERRY

Description: Natural Order, Verbenaceae. Genus CALLICARPA : Shrubs with opposite leaves, scurfy pubescence, and small flowers in axillary cymes. Calyx four-toothed, bell-shaped; corolla short bell-shaped, four-lobed; stamens four, exerted; style slender thickened upward; fruit a juicy drupe inclosing four nutlets. *C. AMERICANA* : Branches and leaves whitish-downy beneath. Leaves ovate-oblong, wavy-toothed, tapering, three to five inches long, two to three inches broad. Flowers small, violet-purple, compound in short cymous clusters; berries abundant, in dense verticils at the axils of the leaves, the size of elderberries, sweetish. Shrub three to five feet high. June and July. Common in the Southern States.

Properties and Uses: The *bark* is an aromatic bitter, with mild tonic properties. It is rather grateful to the stomach, and promises to be a useful remedy. The *leaves* act upon the kidneys rather freely.

CALX

LIME, OXIDE OF CALCIUM

Lime exists abundantly in mineralogy, but is never found in an uncombined state. It is an oxide of the metal calcium; and being strongly 'basic, and having, in the cold, an intense affinity for carbonic acid, it is found as carbonate of lime in all species of marble, and in the blue and gray limestones; chalk, oyster shells, etc. White marble and oyster shells contain the purest forms of the carbonate; while all limestones are more or less contaminated by mineral and earthy compounds. The carbonic acid may be driven off at a full red heat-in which respect the lime carbonate is directly the opposite of the soda and potassa carbonates. Marble or shells should always be used in preparing lime for pharmaceutical purposes; and these may be heated in a lightly covered crucible for three hours.

Lime is a grayish-white, strongly alkaline, and caustic earth. It absorbs carbonic acid when cold; whence exposure to the air will slowly return it to a carbonate. It also absorbs moisture, and crumbles down as "slaked" (hydrated) lime. An excess of water added quickly, is absorbed with the development of considerable heat. Hydrated lime is much less caustic than the dry or anhydrous. *Milk of lime* is a hydrate stirred into a thick liquid with an excess of water. Lime dissolves in water to a limited extent—less than four ounces of unslaked lime being sufficient to saturate a gallon of distilled water. Like the other alkalies, it forms soapy compounds with the oils; but its soaps are insoluble.

Properties and Uses: Lime is used to neutralize acids in various pharmaceutical operations; also in the manufacture of the disinfectant, chloride of lime. Lime water is a weak antacid, and sometimes is used in doses of half to a whole fluid ounce, in milk, three times a day, for sourness of the stomach and the acid forms of dyspepsia; but, like all other alkalies, can not do more than give transient relief by neutralizing the acid present, and absorbing the carbonic acid gas which arises from fermenting food. It is not, therefore, a remedy, but a palliative; and though not so strong an alkali as some others, (the water never taking up more than a fixed quantity of lime,) its continued repetition will do harm. A lump of several ounces, wrapped in a piece of damp flannel and placed under the bed-clothing, will evolve so much heat in slacking as to procure a fair sweat. It is a popular remedy in some sections for recent colds.

CANELLA ALBA

CANELLA

Description: Natural Order, Meliaceae. Genus CANELLA: Calyx three-lobed; petals five, longer than the calyx; ovary superior, three-celled; fruit one-celled by abortion, two to four-seeded. C. ALBA: A native of Jamaica and other West India islands, where it grows as an erect and slender tree thirty to fifty feet high; branching near the top only; covered with a whitish bark. “Leaves alternate, oblong, entire, dark-green, thick, shining, with a laurel odor; flowers small, violet, in clusters at the ends of the branches; fruit an oblong, dark berry, with black and shining seeds.” (*Willd.*) The inner bark is medicinal, and comes to market in thin rolls (quills) from a few inches to two feet in length, of a yellowish-white color. It contains a fragrant, spicy, yet bitter oil; and also resin and bitter extractive. Alcohol takes up all its active qualities, but water acts on it only moderately. It is usually presented in drug stores as a light-yellowish, aromatic powder, of a spicy but pungently-bitter taste.

Properties and Uses: The bark is an aromatic stimulant, leaving a resinous impression in the mouth. It warms the stomach and arouses local circulation; on which account, together with its flavor, it has been used as an adjuvant to tonic and cathartic preparations for atonic conditions, and to cover the taste and obviate the griping of purges. Its taste is unpleasant to most people of a nervous temperament, and the article deserves less consideration than has usually been given to it.

CAPSICUM ANNUUM

CAPSICUM, CAYENNE PEPPER, RED PEPPER

Description: Natural Order, Solanaceae. Genus CAPSICUM: Herbaceous annuals, one to three feet high. Stem crooked, smooth, branched above. Calyx five-cleft, erect, persistent; corolla white, tube very short, limb plaited, on axillary and long peduncles. Leaves long-stalked, ovate or oblong, nearly entire, sometimes in pairs. Fruit capsular, inflated, scarlet or yellow, variegated with orange or green, variable in size and shape—oblong, round, cordate; seeds numerous, whitish yellow, flat. C. ANNUUM: Stem angular; leaves ovate-acuminate, entire, smooth; calyx angular, with short acute lobes; fruit (berry, incorrectly called pod) tapering- oblong, very smooth, bright red. There are several garden varieties of this plant, in addition to this one; in some of which the fruit is small, orange, nearly globose, and much wrinkled, and in others very large, cordate, deeply-furrowed longitudinally, and dull red or dark green.

The *Guinea* or *African Pepper*, called also *Bird's-Eye Pepper*, is the true officinal article, and the one possessed of the greatest medicinal powers; though the small American species with the smooth and tapering fruit, is nearly its equal. The African species is the *Capsicum fastigiatum*; and is of a shrubby instead of herbaceous growth. Its capsule is rarely an inch long, of a deep orange-red, shining, wrinkled, pointed at both ends, and about two lines broad. The above species *annuum* is, in the ground state, nearly always substituted for the *fastigiatum*; but the round capsules, and the large heart-shaped ones, are much more feeble than the tapering ones.

Capsicum is not a true pepper; but its taste somewhat resembles the peppers, and hence the popular language has attached that name to it. Its capsules, including the seeds, are the most intensely pungent and lasting of all the spices. Its powers depend chiefly upon a soft resin and an oil, both of which are acrid. It yields its entire properties to 98 percent alcohol and to ether; less completely to any dilutions of alcohol; to a very considerable extent to vinegar; largely (but not completely) to water; but solutions of the caustic alkalis, as of potassa and soda, act upon it almost as well as alcohol.

Properties and Uses: The *fruit* is one of the purest of all known stimulants, of great intensity, very permanent in its action, spreading through the system rather slowly, but ultimately reaching every organ of the frame. It creates a sensation of warmth, and finally of biting pungency, in the mouth, stomach, skin, or other part to which it is directly applied. When used in a considerable dose, it excites the stomach strongly, yet is diffused so slowly that for a time it disturbs the equilibrium of circulation and nervous action between the stomach and the adjacent parts; and hence large quantities may be followed, for a short time, by hiccough, and even by a cramping pain in the stomach.

It acts mainly upon the circulation, but also upon the nervous structures. It first shows its power upon the heart and the large and central blood vessels; but finally traverses from the center to the very capillaries. It thus slowly gives increased tone to the circulation—not so materially increasing the *frequency* of the pulse, as giving *power* to each pulsation. In cases where the pulse is enfeebled and very much hurried from putrescent tendencies, as in typhus, malignant scarlatina, phlegmonous erysipelas, gangrenous wounds, threatened absorption of pus, etc.,

capsicum may be used in full quantities, and will be followed by diminished frequency but greater firmness of the arterial action.

This agent is fitted for all forms of depression and atony, especially where these are dependent upon feebleness of either general or local circulation, or loss of nerve power not connected with local irritability. The *stomach* is directly aroused by its action; and will be much improved by its use in those forms of indigestion connected with torpor, sluggishness, and loss of sensibility. In such conditions, it is generally combined with tonics, especially with the more relaxing tonics, as boneset, liriiodendron, etc. Combined in small quantities with *cathartics*, it increases their intensity, and prevents the griping of many of them; and in typhoid and similar cases of depression, such relaxing hepatics as leptandrin or euonymus should always be combined with some capsicum. Its own steady stimulation of the bowels many times leads to defecation; and persons suffering costiveness from a semi-paralyzed condition of the alvine canal, often do best by omitting cathartics and using a large dose of capsicum daily. By sustaining the *portal circulation*, it is of the greatest value in all forms of ague, except distinct gastric intermittents. In the most obstinate forms of this malady, capsicum alone has effected cures after antiperiodics had been used in vain; and its combination with quinia meets an important indication that can not be filled by the latter article. In congestive chills, large or even enormous doses of capsicum are invaluable, and are as potent in relieving the oppressed circulation as quinine is the agitated nerves of such cases. The *secernents* all feel the beneficial effects of the article; and alterative preparations designed for secondary syphilis, mercurial poisoning, etc., where the tone of the system is much impaired, should receive a small portion of it. In degenerate coughs, with a too abundant and tenacious expectoration; in chronic torpor of the kidneys, with a cold skin and sluggish pulse; in uterine atony, general dropsy, and all similar cases of inefficiency and loss of power, the capsicum is almost a necessity—added to the class of agents suitable to the case, for the purpose of so arousing the parts that they will respond to the impressions of the other remedies. (§260.)

This agent is also one of the most powerful arrestors of mortification that the *Materia Medica* contains. To this end it acts in two ways: 1st. By virtue of its antiseptic qualities, which are well known to arrest decomposition even in dead substances. 2d. By its great influence in sustaining the circulatory apparatus; whence it will maintain the best possible flow of blood through every part, procure an early and advanced line of demarkation when gangrene is no longer avoidable, and repel all products of putrefaction so that they will not be absorbed. By these invaluable qualities, it is an agent of great service in all diffusive preparations for the treatment of typhus, receding small-pox, scarlatina, diphtheria, putrid sore-throat, phlegmonous erysipelas, yellow fever, and similar maladies with a putrescent tendency. The quantity given will of course depend on the stage of the malady and the degree of depression; but in malignant cases, where the danger is great, the only error the physician is likely to commit, will be in not giving enough. In malignant scarlatina and diphtheria, it should be used liberally both in drink and as a gargle; while in epidemic erysipelas, the last stages of puerperal metritis, when the effusion of peritonitis or pleuritis has set in, or when pyraemia is about to occur after an operation or from an erysipelalous abscess, the quantity given should be limited only by the patient's ability to receive it. When the black vomit of yellow fever sets in, small and frequent doses will usually stop the emesis by arresting the process of decomposition. For a similar reason, and by virtue of its power to sustain the blood toward the surface, it is a valuable adjunct in the treatment of

cholera. It relieves engorgement of the lungs and uterus, and is of much service in arresting hemorrhages from these and other internal organs. It arouses the vascular system when other agents refuse to act at all; and is superior to any and all agents in what would otherwise be hopeless cases of uterine hemorrhage, bleeding after typhus, etc. It is then generally combined with myrica or other stimulating astringent, and with some prompt diffusive. In the collapsed stage of cholera, of yellow fever, of all clammy sweats; also in asthmatic asphyxia and collapse from burns or other profound shock of injury, it is one of the best agents to secure full reaction. In these and all other cases where pain of a heavy character arises in consequence of approaching gangrene, capsicum relieves the suffering by arresting the decay. (§238.) In the same manner, it relieves the extreme restlessness which usually accompanies such conditions; on which account it is associated with lobelia and cypripedium to secure an antispasmodic action. (§245.) Also in delirium tremens it is the best of all stimulants, in combination with nervines; and is valuable locally in bleeding piles.

As an outward application, capsicum makes one of the best bases of all stimulating liniments. It arouses a strong circulation upon the surface, inducing smarting and redness. It has been pronounced capable of blistering, but this I believe is a decided mistake. Indeed it has a great advantage over all vesicating agents, in the fact that it can be applied to any desired extent, without injuring the skin. In suitable forms, it makes an external remedy of the greatest value for all internal inflammations and congestions, such as dysentery, pneumonia, pleurisy, peritonitis, congestion of the uterus, ovaries, liver, spleen, or kidneys, painful menstruation, irritation of the stomach, etc. This is a large list, but these maladies are all of one class; and the practitioner will lose one of his most powerful means of restoring a balance to the circulation, if he fail to use capsicum over the seat of the congestion. And it should also be used freely—deep congestions bearing enormous quantities of it before it is felt. The Stimulating Liniment is one of the best forms of application. In ague-cake and some other cases, where a slow action is required, it is made into a poultice with demulcents; and it is also used with oleo-resins in making stimulating plasters. It is one of the best agents, both outwardly and by the stomach, in paralysis; and may be applied as a wash, (or mixed with some relaxing extract, or in flour paste,) and used as a plaster in deep paralysis and overwhelming spinal congestion, to the entire length of the spine. In typhus, acute meningitis, phrenitis, and such cases where there is an overwhelming determination of blood to the brain, and the extremities become almost icy cold, it is of much service to apply capsicum, sprinkled on stiff mush or something of the kind, to the soles of the feet. They may be kept on as long as the patient does not complain of them, and renewed at intervals. In putrid difficulties about the throat, its liberal outward application should never be omitted. The Stimulating Liniment is a good form for using it; or the powdered article may be laid thickly upon a slice of raw and salt fat pork, and bound upon the throat. This last is a powerful and valuable application.

Locally, capsicum is an indispensable agent in phagedrenic, malignant, and truly indolent ulcers and carbuncles; in all sloughing sores and on all gangrenous surfaces; and as a gargle in scarlatina, diphtheria, mercurial sore mouth, and all other putrid conditions. For gargling purposes, it is usually combined with such agents as hydrastis, myrica, myrrh, and other stimulating tonics—the capsicum being in smaller proportions, and in such quantities as the case demands.

This agent is rarely used alone, but is generally combined with an excess of other articles. It contains an unusual amount of power in a small bulk, hence its proportion is to be greatly less than that of the accompanying agents. As its own power of diffusion is moderate, it is best to combine it with more relaxing and diffusive articles. When its action toward the surface is sought, it is best combined with such diffusives as asclepias and ginger. It gives intensity to such emmenagogues as hedeoma, caulophyllum and cimicifuga; and the power and promptness with which it acts when in company with cypripedium and lobelia, are truly astonishing. (§260.) Half a grain to two grains, given in demulcents by injection, act with great power toward the surface in cholera, apoplexy, congestive chills, and other forms of collapse.

While an unusual amount of praise has thus been ascribed to capsicum, it is not to be supposed that it can be used everywhere that a stimulant is required. It is best when limited to severe cases; and milder and more diffusive stimuli should always be selected for mild forms of depression; but when decided prostration is advancing, capsicum is superior to all other agents of its class. It should never, however, be used needlessly or without discrimination. A full and hard pulse does not admit it; though a creeping, wiry, unsteady and very small pulse calls for it. It is out of place altogether in inflammatory fever or any inflammatory condition; in gastric irritation, or inflammation, in acute sensitiveness of the throat and lungs, in a hot and burning skin with a large pulse, and in any and every similar condition. It is as much out of place under such circumstances, as fire would be in July, with the thermometer at 100°. It has many times been used with the greatest lack of judgment in such conditions; but such practice is neither rational nor successful. The vast powers and virtues of the agent are not sufficiently known and appreciated; but it will not advance its reputation, nor the cause of science, to attempt its indiscriminate employment. It is proper to add in this place that Dr. Samuel Thomson was mainly instrumental in giving this remedy its true position in the *Materia Medica*. Frequent reference is made to it in the department of Therapeutics, which see.

The dose of the article is usually about one grain. In compound infusions, where the preparation is given at moderate intervals, it is seldom that the strength of more than one-tenth to one-fourth of a grain is given at a dose. As vitality diminishes, the portion may be increased to one or two grains every two hours; or even much larger portions in extreme cases, till its action begins to be manifested. In tonic compounds, one-fourth of a grain, three or four times a day, is usually sufficient. One to two grains, with quinine, make a full dose for ordinary anti-periodic purposes; but congestive chills may require from four to even five grains every three or four hours. It is most commonly given in some fluid form. When used as a powder, it should always be mixed with some mucilage: that of gum tragacanth is best; but elm, gum arabic, thick boiled starch, or even good molasses, will do. It is often incorporated in pills.

Pharmaceutical Preparations: Capsicum enters in the standard Composition Powder; and into the Compound Tinctures of Myrrh, Lobelia, etc. The more distinct preparations worthy of notice at this place, are the following :

I. *Infusion*. Capsicum, twenty grains; boiling water, one pint. Infuse in a covered vessel for an hour. Dose, half a fluid drachm or upward, at such intervals as the case may require. A much stronger infusion is commonly directed, but this is sufficient for all ordinary cases..

II. *Tincture*. Capsicum, in powder, one ounce; diluted alcohol, one quart. Macerate for fourteen days, and filter; or treat the capsicum by percolation. This preparation is used mostly upon the surface and as a gargle; but may be used inwardly in doses of half a fluid drachm or more, in any mucilage. A drachm of this tincture to a pint of simple sirup is called *Sirup of Capsicum*, and is a good preparation. Diluted alcohol does not extract the full properties of the article; and the dregs may be used as a local application, or treated with vinegar in preparing gargles. The standard tincture that I commend in all outward appliances, is made of capsicum, two ounces; absolute alcohol, one quart; macerate for two weeks.

III. *Compound Acetous Tincture*. Capsicum, two drachms; myrrh and hydrastis, each, four drachms; salt, two drachms; cider vinegar, one pint. Macerate the crushed articles at a gentle heat for seven days, and strain. This is one of the most effective of stimulating and antiseptic gargles and washes for all putrid conditions, as in diphtheria, scarlatina, etc. It is also useful many times in allaying the vomiting of cholera and yellow fever. To be used in such quantities as each particular case dictates.

IV. *Stimulating Liniment*. Into one quart of the tincture of capsicum on absolute alcohol, prepared as above, shave two ounces of white castile soap. Maintain at a gentle heat, with frequent agitation, till the soap is all dissolved. (See *Soaps*.) Then add half an ounce each of the oils of origanum, abies, and sassafras. Or the soap may first be dissolved in the alcohol, and afterward one ounce of capsicum added and tintured in the usual way, and the oils added subsequently. This latter method has the advantage of securing the double solvent power of the alcohol and the caustic alkali on the capsicum. The liniment thus prepared, is one of the most powerful and satisfactory I have ever used. It contains no resinous materials to obstruct the surface; and the form of alkali here used improves the action of the capsicum on the surface, and is altogether preferable to ammonia—which is not a solvent to capsicum. This liniment may be used wherever the external use of capsicum is called for. Its action may be intensified, in obstinate cases, by following the appliance with flannels wrung out of hot water, or out of hot soap-suds. I first published this formula in 1852; since which time it has been modified in almost innumerable forms by physicians, and especially by incorporating with it ammonia, turpentine and camphor; but I consider such additions objectionable. It is a “pain killer,” (§239,) and may be used inwardly. For less stimulating purposes, tincture of capsicum may be added to tinctures of xanthoxylum, lobelia, cypripedium, etc.; and such oils as those of absinthium, rosemary, and monarda used according to the objects intended. All tinctures for liniments should be upon absolute alcohol.

V. *Compound Soap Liniment*. Tincture of capsicum and tincture of lobelia, each, half a pint; shavings of common hard soap, three ounces. Digest at a low heat in a close vessel on a sand-bath, till the soap is dissolved; and then add a drachm each of the oils of rosemary and spearmint, and half a drachm of the oil of wormwood. Pour into wide-mouthed bottles as soon as the oils are dissolved. When cold, this makes a jelly-like liniment, or opodeldoc; and is an excellent preparation for old bruises, chronic rheumatism, neuralgia, and other affections requiring a stimulating and nervine treatment.

VI. *Oil of Capsicum*. Pack tightly into a cylindrical percolator, three-fourths of a pound of coarsely-powdered capsicum. Treat it with ether till twenty-four fluid ounces have passed. Distill

this on a water-bath till eighteen ounces of ether have been recovered; and then evaporate all the ether from the remainder. A fatty matter rises on the surface after a time, and this may be removed by filtering through muslin. The oleoresin (called oil) that remains, should be preserved in close bottles. It is a thick, dark brownish-red fluid, exceedingly pungent; soluble in ether and alcohol, only slightly soluble in water. It is too concentrated to use by itself; but may be diluted with a sufficient quantity of alcohol and used in liniments.

CARBON, CHARCOAL

Two kinds of charcoal are used in Pharmacy and Therapeutics. 1st. *Animal Charcoal*, or *Bone Black*. This is prepared by bringing to a red heat, out of contact with the air, the bones of oxen and sheep; and reducing them to powder, which is purified by washings with hydrochloric acid. This powder is rather dense, very fine, and deep bluish-black. 2d. *Wood Charcoal*. This is prepared from a large variety of ordinary woods, that from aspen-poplar being one of the best; and charcoal from corks being one of the most suitable for medical purposes.

Properties and Uses: *Animal* charcoal is chiefly used to remove odors and colors in various pharmaceutical operations. It is employed in deodorizing common whisky by retaining its fusel oil; but vegetable preparations (especially astringents) decolorized by it, lose a considerable portion of their active powers.

Wood charcoal is a great absorber of gases. Different gases are affected by it in different proportions, about as follows: A given quantity of fresh charcoal will absorb, of hydrogen, 17 times its own bulk; of carburetted hydrogen, 50 times; of oxygen, 90 times; of nitrogen, 70 times; of carbonic acid gas, 350 times; of sulphuretted hydrogen, 530 times; of ammonia, 590 times. It also favors various chemical affinities, curiously noted in this; that charcoal saturated with ammonia will take up more carbonic acid than if no ammonia were present—thereby forming a bicarbonate. Charcoal slowly absorbs carbonic acid from the air, and thus in a few weeks will be unable to absorb further; but its original properties can be restored by bringing it to a dull-red heat in an iron retort—thereby driving off the gases it had absorbed.

This charcoal is used internally to relieve flatus in the stomach and bowels, following indigestion. It does not strengthen the digestive apparatus, but merely affords ease from present mechanical distention. For this purpose, from five to ten grains may be given an hour or more after a meal. It does not interfere with the action of suitable tonics; but partially weakens the power of the gastric juice, if given before the digestive process is completed. In bilious diarrhea with frothy stools; in all cases of foetid stools; and in acrid discharges which create tormina, it is also of service. Among cases of the last kind may be named the accumulation of flatus in the last stages of peritoneal inflammation, when the distention of the bowel by gases will cause that “angulation” which prevents stools and causes much suffering. In such cases, from three to five grains may be repeated every two hours; and a subsidence of the tympanitis, and spontaneous movement of the bowels, be obtained.

Charcoal is an antiseptic, whether used internally or externally. For this purpose, it is given in semi-gangrenous conditions of the stomach, and applied to phagedrenic and gangrenous ulcers. It arrests the process of decomposition; but does not aid in preserving the deeper tissues, nor in building up a line of demarkation, nor in securing a granulating surface. On these accounts, it is altogether inferior to capsicum, myrrh, bayberry etc. It is generally applied to foul ulcers in a poultice of one ounce of flaxseed meal, and two ounces of bread crumb.

A useful preparation in acute diarrhea is, two grains each of bicarbonate of soda, rhubarb, and charcoal from corks, given in mucilage once in two to four hours. Moist charcoal is not

nearly so efficient as the article given dry; on which account the best mode of exhibition is in gelatine capsules.

CARTHAMUS TINCTORIUS

SAFFLOWER, DYER'S SAFFRON

Description: Natural Order, Compositae. An annual, one to two feet high, with a smooth and erect stem, branching at the top. Leaves alternate, sessile, ovate, acute, with spinose teeth. Flowers in large, terminal, solitary heads; florets cylindrical, with a long and slender tube; funnel-shaped, border of five narrow segments, orange-red.

This plant is a native of India and Western Asia; but is cultivated largely in Europe and somewhat in America. The florets are used in dyeing. Much of the saffron of the American market is the carthamus; from which it may be distinguished by its red color and its yellow filaments. It has a red and a yellow coloring principle—the former insoluble in water, but very soluble in alkalies, and the one for which the plant is valued; the latter soluble in water.

Properties and Uses: A warm infusion, used in large quantities, is slightly diaphoretic, of the relaxing and nervine order. It is used in children to promote the eruption of measles and for slight colds. It is slightly laxative and emmenagogue, but is scarcely valued in this connection. Two drachms to a pint of boiling water is the usual infusion; and this is given without limitation. It is at best but a trifling remedy, and has received more attention than it deserves.

CARUM CARUIL

CARAWAY

Description: Natural Order, Umbelliferae. A biennial. Stem two feet, narrowed, branched above. Leaves bi-pinnate, with linear segments. Umbels numerous, dense, rarely involucreled. Flowers small, pale; calyx adherent. Fruit oblong, with five equal ridges, strongly aromatic. This plant is indigenous to Europe, but is now much cultivated there and in America. The seeds are much used by cooks and confectioners, and are the medicinal part. They contain from four and a half to five percent of volatile oil, on which their properties depend. This oil is nearly colorless, when new; but age turns it pale yellow, and finally reddish brown. It is obtained by distillation, is lighter than water, and is freely dissolved by alcohol.

Properties and Uses: The *oil*, or its alcoholic solution, is a pleasant aromatic adjuvant to cathartics of a griping nature. It is a good carminative in colics and flatulence, but is seldom employed alone. Dose, one to five drops. The oil may be prepared into a medicated water; or the seeds may be infused.

CARYA ALBA

SHAG-BARK HICKORY

Description: Natural Order, Juglandaceae. The Genus CARYA is in the well-known Hickory family—embracing the hickory-nut, butternut, and pecan-nut trees. The one here to be spoken of, is that which produces the smaller hickory-nut; a tall, straight tree, with its outer bark loosening into plates, easily separated from the middle bark, and giving the tree a rough appearance. Leaves on long petioles, of five leaflets, all sub-acuminate, sharply serrate, and downy beneath. Fertile flowers in clusters of two or three.

Properties and Uses; The *middle bark* of the trunk is a rather acrid stimulant, when fresh; but drying dissipates the too acrid character, and leaves a medicine that is very bitter, stimulating with some astringency, and quite positive and permanent in its action. It is among the positive stimulating tonics—warming the stomach, increasing the appetite, and after a time elevating the force and frequency of the general circulation. It evidently stimulates the gall-ducts, and is a slow cholagogue ; but the results upon the bowels are not strongly marked, and it leaves behind a state of tone that slightly inclines to costiveness. The impression of a dose will usually last three hours. It may be used in languid conditions of the stomach and bowels, with a soft and sluggish pulse, cold surface, and general relaxation of the tissues, incident to chronic cases of biliousness, low jaundice, etc. It is deserving of attention as an antiperiodic; and I am fully of the opinion that preparations may be obtained from it that would prove of value in ague. It has less tendency to close the emunctories than is manifested by the cinchonas, and that is a great desideratum in agents used for intermittents. From three to eight grains of the powdered bark may be given three times a day as a tonic. Diluted alcohol extracts its virtues well; but it contains a principle not soluble in water, and this I apprehend is the antiperiodic element.

It makes an admirable local application in indolent sores, and all low ulcers of a foul and semi-putrid character; for which purposes it may be used as a wash, or sprinkled in small quantities upon a poultice. It should not be applied to irritable sores; nor used internally during sensitive and irritable conditions.

CARYOPHYLLUS AROMATICUS

CLOVES

Description: Natural Order, Myrtaceae. The clove is an evergreen tree of from twelve to twenty-five feet; native, and largely cultivated, in the East Indies. Flowers in corymbs; calyx at first green, becoming dull purplish-red. The general growth of the flower is similar to our single pink, the petals being four and globose in the bud. The unexpanded flower-bud is the medicinal part, and is presented in commerce as a dark-red, cylindrical body, about six to eight lines long, with four short and thick teeth at the summit, inclosing the small globular bud.

Properties and Uses: The *buds* are very aromatic, spicy and warming; and are among the really pleasant spices. Their properties depend mostly upon a volatile oil, which constitutes nearly twenty percent of their weight. It is pale at first, becomes reddish-brown, and sinks in water. But water extracts a very large portion of the property of these buds; and their infusion may be used advantageously. They are stimulant; and possess an irritant quality that unfits them for use where even some diffusible stimuli would be indicated. On this account, they are now seldom used; yet are employed as adjuvants to bitter and cathartic preparations. Added to diaphoretic preparations, they are likely to lead to ultimate dryness and pungent heat upon the skin; on which account I have discarded them from all of my sweating mixtures. The *oil* is a favorite article to use in carious teeth. Its essence may be used in strong cathartic compounds. Dose, of the powder, two to five grains; of the oil, one to three drops. Dr. Thomson used them in his Composition; and they are often added to asclepias and polemonium.

CASSIA ACUTIFOLIA

SENNA

Description: Natural Order, Leguminosae. Genus CASSIA: Calyx five-sepaled, sepals nearly equal, and scarcely united at base. Corolla papilionaceous, of five unequal petals. Stamens distinct, ten, sometimes fewer by abortion; three upper ones often sterile, four middle ones short and straight, three lower ones longer. Legume one-celled, or many-celled transversely, many-seeded. Leaves simply or abruptly pinnate. Shrubs, trees, or herbs.

Several species of cassia are medicinal, of which most are imported from Egypt, but one is American. The imported species are: 1st. *Cassia acutifolia*; A perennial plant, of a shrubby character, growing from one to four feet high, with bright-yellow flowers in axillary spikes, with oval-elliptical leaflets nearly an inch long. This is the true *Alexandrian senna*, and is considered the best. 2d. *C. obovata*; A perennial of shrubby growth, one to two feet high, with yellow flowers in racemes, and the leaflets obovate and obtuse. 3d. *C. elongata*; An annual, with bright-yellow flowers, in axillary and terminal racemes on long peduncles, with narrow and lanceolate leaflets that are smooth above and slightly downy beneath, and about two inches long. The latter species is obtained from the interior of Arabia and India.

Cassia marilandica is one of several species of senna common in America, and is medicinal. It usually grows in masses on alluvial soils, blooming in August; its beautiful locust-looking leaves and bright-yellow flowers always attracting attention. Stem perennial, two to three feet high, round, pale-green, striate, often with scattered hairs; flowers with three erect petals and two drooping, yellow, growing in a leafy panicle from the upper axils; leaflets six to nine pairs, oblong-lanceolate, mucronate, one to two inches long, on channeled petioles.

As found in the market, senna is nearly always adulterated with the leaves, flowers, and pods of other plants. Some of these adulterations are decidedly objectionable. They can be detected by the fact that senna leaves are always unequal at the base—one side being shorter than the other; while the admixtures are equal-sided, and are also either more silvery in appearance, or thicker, stiffer and more wrinkled, than the senna. The senna leaves are brittle, of a faint odor, and a mucilaginous sweetish (but not-bitter) taste. The Alexandrian species is most liable to adulteration.

Senna leaves contain a small quantity of volatile oil, which may be obtained by distillation, but is not active. Water and alcohol extract their medicinal properties—which reside in a purgative principle called *cathartin*. Infusions of senna are precipitated by adding to them any soluble alkaline carbonate, as of soda, potassa, or ammonia; by lime water, sulphate of iron, and nitrate of silver.

Properties and Uses: The *leaves* are the medicinal part of the plant. The imported ones are strongest; but my experience satisfies me that the leaves of *American senna*, as above mentioned, are as good as the foreign in general action, and about two-thirds their strength. I shall, therefore, include them all under this **description** of their properties—merely giving the doses and preparations as founded on the use of the Alexandrian leaves.

Senna is a relaxing and stimulating cathartic, expending its power chiefly upon the alvine canal, acting with considerable promptness, procuring rather free and loose discharges. It first creates a somewhat nauseating impression on the stomach, and relaxation of the pulse; but subsequently there are griping, flatulence, moderate excitement of the pulse, and excitement with engorgement of the abdominal and pelvic vessels. It leaves no tonic impression. Its main action seems to be on the smaller intestines; it is absorbed, and will affect nursing children by being given to the mother. It is best suited for cases requiring a prompt cathartic action, and when the abdominal and pelvic viscera are sluggish. It is a popular physic in treating worms, in recent colds, etc. It is very efficient, but not drastic nor unsafe. Its use is contra-indicated whenever there is any inflammation, irritation, or congestion of the abdominal viscera; in hemorrhoids, and in irritation of the womb and menorrhagia. It is not at all so violent as aloes, yet is not a suitable agent in the cases named. Its griping effect is often very unpleasant to nervous temperaments; but this may be nearly obviated by combining it with the aromatics, as ginger or the spices, or with bitartrate of potassa. Its purgative effect is considerably increased when combined with the laxative tonics, as boneset, gentian, balmony, etc. (§261.) The dose of the powder is from half a drachm to a drachm; which usually acts in two and a half or three hours. It is rarely given in powder—the sirup, infusion, or a confection, being preferred.

Pharmaceutical Preparations: I. *Infusion.* Senna, half an ounce; ginger, sliced, thirty grains; boiling water, ten fluid ounces. Digest in a covered vessel for an hour, and strain. Dose, two to four fluid ounces; or two fluid ounces repeated every two hours, till it operates. An equal quantity of bruised coriander seed may be substituted for the ginger. This infusion is often given with manna.

II. *Sirup.* Senna, three and a half ounces; bruised fennel seeds, ten drachms; boiling water, one pint. Macerate at a gentle heat for six hours, strain through linen with strong pressure, and add three ounces of manna. Put three pounds of good molasses on a water-bath, and evaporate till a cooled portion of it becomes stiff; and to this, while hot, add the above liquor with stirring till they are thoroughly mixed. This is the English Sirup of Senna; and is the most palatable and least griping preparation of the kind. Dose for a child of eight years, one to two fluid drachms every two hours, till it operates. The U. S. P. sirup uses no manna, and sweetens with sugar.

III. *Concentrated Sirup. Fluid Extract.* Bruised senna, one pound. Treat in a percolator with diluted alcohol, till twelve fluid ounces have passed. Set this aside, and continue the process till two pints have passed. Add to this last product eight ounces of sugar, and evaporate on a water-bath to twelve fluid ounces. Mix the two products, and add, by trituration, fifty drops oil of fennel. This is a concentrated sirup, though a similar preparation passes under the name of Fluid Extract. It is valuable on account of its small dose—each fluid drachm representing forty-five grains of senna. Its griping action may be further modified by treating one ounce of sliced ginger with the senna. I am in the habit of using senna in what may properly be called a *Compound Concentrated Sirup*, prepared as follows: Senna and juglans cinerea, each, eight ounces; gentiana ochroleuca and zingiber, each, one ounce. Macerate in equal parts of water and alcohol, transfer to the percolator, and proceed as in the above concentrated sirup. This forms a mild but very reliable cathartic, less griping and exciting than senna alone, and leaving behind a tonic impression. It is also a good vermifuge.

IV. *Tincture*. Crushed senna, five ounces; raisins, freed from seeds, four ounces; coriander and caraway seeds, bruised, each, four drachms. Macerate for forty-eight hours in diluted alcohol; pack firmly in a percolator, and add the spirits till two pints have been used. Express strongly, filter, and add enough proof spirit to make two pints. This preparation (except that a less quantity of cardamon was used for the caraway) was formerly called *elixir salutis*. It is a good carminative and stomachic physic. Dose, one to three fluid drachms.

CASTANEA VESCA

CHESTNUT

Description: This is the lofty chestnut-tree so abundant in many portions of our country, and valued for its sweet nuts. Its alternate leaves are from five to eight inches long, smooth, coarsely serrate, with the serratures mucronate. Flowers monoecious, without corollas; the sterile in long and drooping cylindrical aments; the fertile in clusters of three, inclosed in a four-lobed involucre, which in the ripe fruit becomes thick and leathery, beset with prickles, and becoming a burr inclosing from one to three nuts.

Properties and Uses: The *leaves* of this tree are a mild astringent tonic, with moderate stimulating properties. They are a very popular remedy among Eastern midwives for arresting hemorrhage, staying lochia, and abating recent menorrhagia. They are mild in action, but unquestionably good in such cases; and their gentle tonic influence is an advantage in using them. Probably they would be of service in sub-acute and chronic diarrhea and dysentery. An ounce of the leaves may be steeped in a quart of boiling water, and used freely.

CASTOREUM

CASTOR

The article that has long passed under this name as a drug, is a hard substance found under the prepuce of the penis on the beaver—*castor fiber*. There are two of these on each animal, and they resemble two testicles. They have a strong and unpleasant animal odor, which is impaired by age; and yield their properties to rectified spirits.

Properties and Uses: These glandular bodies have long been used in medicine as antispasmodic and emmenagogue. They seem to possess rather diffusive stimulating and relaxing properties; and have been much commended in painful menstruation, suddenly suppressed menstruation, hysteria, and various nervous affections. Some place great dependence upon their virtues, but at present they are little used. Personally I know nothing of their action; as I have always found efficient articles of a less disgusting origin. The dose in substance is from ten to twenty grains three times a day. A tincture is prepared by macerating two ounces of the bruised castor for seven days in a quart of diluted alcohol. The dose of this is from a half to two fluid drachms.

CATALPA BIGNONIOIDES

CATALPA

Description: Natural Order, Bignoniaceae. This is the beautiful spreading tree so common in the South, and cultivated widely in the Middle and Northern States as an ornamental shade tree. Its very large and nearly heart-shaped leaves, with its long panicles of large and nearly white flowers, at once attract the eye and make it a favorite. As cultivated, it commonly attains a height of thirty feet; and blooms during the latter part of June and early July in this latitude.

Properties and Uses: The *bark* of this tree is a strong bitter, and is among the positive and rather permanent stimulating tonics. It has been pronounced poisonous, but this is not my opinion. It arouses the stomach, and ultimately stimulates the circulation; and the entire list of secretory organs, but especially the skin, is steadily excited to better action under its use. These qualities fit it for cases of extreme languor and debility, where such an alterative tonic is required; and it is my impression that it will there be found equal to the more valued articles of the *Materia Medica*. Lindley, in his *Medical Flora*, says a Brazilian species of catalpa is considered in that country to be one of the most powerful remedies against malignant syphilitic swellings; and it is my opinion, from limited experience, that the bark of our native species will be found valuable in the same connection. Two ounces may be boiled in a quart of water, till a pint of decoction is obtained; of which two fluid ounces may be given four times a day. It may also be made into a sirup.

A decoction of the *pods* is demulcent, with mild relaxant and stimulant properties; and may be used in dry, irritable, and asthmatic coughs, and shortness of breath. The *leaves* are said to form a soothing and emollient poultice, and have been used in irritable ulcers.

CAULOPHYLLUM THALICTROIDES

BLUE COHOSH, SQUAW ROOT, PAPPOOSE ROOT, BLUEBERRY

Synonym: *Leontice Thalictroides*, as now classified.

Description: Natural Order, Berberidaceae. Genus CAULOPHYLLUM: A perennial, glabrous herb, common in moist and rich lands throughout the United States. Stem smooth, simple, naked, purplish when young, one to three feet high, rising from matted root-stalks. Leaves one to each plant, of triternate arrangement, the stem seeming to stand as a common petiole to the first three divisions, which are spreading and large; leaflets (twenty-seven on the one plant) obovate-wedge-form in three rounded and unequal lobes, one to one and a half inches long. Flowers on a terminal raceme, rising from the apex of the stem from the angle of the three petiolets, appearing in April or May, while the leaves are yet small, yellowish-green; sepals six, with three small bractlets; petals six, thick and glandlike; stamens six. Pericarp thin, bursting very early, leaving upon the thick flower-stalk from one to two seeds, about the size of a pea, smooth, round, hard, and turning a dull blue.

Properties and Uses: The *root* of this plant, as a popular parturient among the “medicine men” of the Indians. To Dr. Isaac Smith, of New York, is chiefly due its introduction to the profession. It is a moderate diffusive, stimulating and relaxing in about equal degrees, spending its main powers upon the nervous system. These qualities make it one of the very best of antispasmodics, to relieve nervous feebleness with irritability, as in crampings of the bowels, twitching of the muscles in typhoid and parturient cases, hysteria, painful menstruation, colic, etc. Its efficacy in these cases is remarkable; and it is also a valuable adjunct to other suitable agents in the treatment of puerperal convulsions, epilepsy, and chorea. It enjoys deserved reputation in neuralgic forms of rheumatism, especially that form which passes with some as chronic inflammation of the womb. It sustains the nervous system, but at the same time soothes it; and is of especial service in strengthening and relieving painful functional difficulties of the female generative organs. It is one of the most valuable of all parturients, when the uterine action is becoming weary; in which case it may be combined with the Composition Powder; or with cypripedium, and a very little capsicum (or bayberry) added when depression is considerable. It promotes diuresis apparently by sustaining the pelvic nerves; and in the same way strengthens the uterus in leucorrhoea and insufficient menstruation; yet can not properly be classed as either a diuretic or emmenagogue. By the same kind of action, it is useful in weak kidneys, albuminous urine, chronic difficulties of the prostate, nervous restlessness during pregnancy, and previous to parturition to give tone and comfort to the uterus. For these several purposes, it is generally combined with other suitable agents, such as *aralia racemosa*, *mitchella*, *uva ursi*, *convallaria*, *liriodendron*, etc. The real value of this article in these varied connections, is not fully appreciated; and it is too often laid aside on the decidedly false impression that it is a stimulating emmenagogue of harmful proclivities. I commend it as one of the choicest nervines and antispasmodics of the *Materia Medica*. E. H. Lowe, M. D., of Sandwich, Illinois, tells me its antispasmodic virtues may be used to much advantage in asthma, especially in combination with diaphoretic relaxants. It is a good addition to *hydrastis* and *myrica*, as a wash to aphthous ulcers; to *dioscorea* and ginger for all colics; and may be used with *prunus* and *nymphaea* on weak and

irritable sores. It is rarely used in powder, but mostly by infusion. An infusion of the *berries* is said to be almost infallible for relieving persistent spasmodic vomiting.

Pharmaceutical Preparations: I. *Infusion*. Caulophyllum, half an ounce; boiling water, a pint. Infuse for half an hour in a covered vessel. In parturition and painful menstruation, a fluid ounce of this may be given every sixty or thirty minutes; in hysteria, rheumatism, and other more lingering maladies, one to two fluid ounces may be repeated at intervals of from four to six hours. II. *Compound Infusion*. Caulophyllum and cyripedium, each, half an ounce; trillium, two drachms; myrica, one scruple; boiling water, twenty ounces. Digest for half an hour. This is a remarkably efficient parturient preparation, sustaining, but never overdoing the uterine action, quieting the nervous system, maintaining a steady outward circulation, and anticipating hemorrhage and after-pains. It is not appropriate when the vagina is dry, the os tinea rigid, and the uterus sensitive. Dose, half to a whole fluid ounce every half hour, especially in the latter stage of labor. III. *Tincture*. Crushed caulophyllum, two ounces; diluted alcohol, one pint. Macerate for twelve days, and filter. Dose, one to two fluid drachms, three times a day. A *Compound Tincture* may be made from the ingredients of the above compound infusion, by macerating the drugs in twelve ounces of diluted alcohol. The dose would be from a half to a whole fluid drachm, in warm water, every hour or half hour, in parturition. IV. *Caulophyllin*. This is prepared after the manner of cimicifugin. It varies from a light brown to a nearly white powder, slightly soluble in water, quite soluble in alcohol. It is used for the same general purposes as the root, but is most applicable to chronic cases. It has been commended in gonorrhoea and spermatorrhea. Dose, half a grain to a grain, three or four times a day. V. *Extract*. This is prepared after the manner of the hydro-v alcoholic extracts. It may be used as a basis for pills, where a full antispasmodic action is desired; but I have never been satisfied with any preparation I have met.

CEANOTHUS AMERICANUS

RED ROOT, NEW JERSEY TEA, WILD SNOWBALL

Description: Natural Order, Rhamnaceae. Genus CEANOTHUS: A shrubby plant, three to four feet high, slender, thornless, with numerous smooth and reddish branches. Calyx tubular-campanulate, five-cleft ; petals five, arched and clawed; capsule obtusely triangular, three-celled, three-seeded. Flowers small, white, numerous, crowded in axillary panicles on elongated branches. Leaves oblong-ovate, serrate, three-veined, downy, with soft hairs beneath. This delicate little shrub is common in dry copses throughout the United States, flowering profusely in June. The leaves have the odor and taste of some of the black teas, and were used for a similar purpose during the Revolution. The thick root is red, and makes a fair dye. It yields its properties readily to water.

Properties and Uses: The *root* of this plant is medicinal, but is not very powerful or reliable. It is a mild stimulating astringent, with slight tonic qualities, and reported to be nervine and expectorant. It is principally useful as a wash in sore mouth and weak ulcers; and also in chronic diarrhea as an injection for chronic gonorrhoea and leucorrhoea, and as a local application (by powder) on mild chancres. It is spoken of in syphilis, asthma and bronchitis, but is of doubtful efficacy in these cases, though a good alterant for milder cases. A decoction is made with an ounce of the root in a pint of boiling water; of which one to two fluid ounces may be given two or three times a day. It is sometimes used in compound alterant sirups.

Dr. J. Overholt, of Columbus City, Iowa, informs me that the leaves are an excellent tonic expectorant, with some demulcent properties. He uses them in recent and long-standing coughs; in bronchitis, and convalescence from pleurisy and pneumonia; and in all other cases where there is cough with irritability; dryness and feebleness of the respiratory organs. Dr. Overholt is an old and skillful practitioner, and is entitled to the confidence of the profession. He furnishes the following formula from his experience, and commends it to notice as a sirup that he has used to the greatest advantage in pulmonary complaints: Leaves of ceanothus, and roots of asclepias tuberosa, each, four ounces; symphytum officinalis, marrubium, and root of glycyrrhiza, crushed, each, two ounces; roots of inula, one ounce. Macerate for twenty-four hours in a sufficient quantity of forty percent alcohol to saturate thoroughly. Transfer to a percolator, and add water till one pint has passed; set this aside, and add water till two more pints have passed, to which add four pounds of sugar, and evaporate till two pints remain. Now mix the two products, and add four ounces tincture of cimicifuga and one ounce essence of anise. Dose, from half a fluid drachm to two fluid drachms every two hours or oftener. Tincture of lobelia may be further added for cases that require it.

CELASTRUS SCANDENS

FALSE BITTERSWEET, STAFF-VINE, WAX WORK, ETC.

Description: Natural Order, Celastraceae. Genus CELASTRUS: Climbing shrubs, growing in woods and thickets; with a woody stem an inch or more in diameter, covered with a soft grayish-white bark; twining about the trunks and branches of trees to a great height. Flowers often imperfect, in terminal clusters or racemes, small, greenish-white, and slightly fragrant. Calyx flat, five-lobed; petals five, spreading; fruit an orange-colored and berry-like pod, nearly globose, somewhat three-angled, three-celled. This capsule opens in three valves, which hang upon the plant all winter; and, together with the scarlet aril surrounding the seeds, make a bright Winter ornament. Leaves alternate, ovate-oblong, finely serrated, pointed, thin, smooth, one and a half to two inches long, on petioles an inch long. Flowering in June.

This beautiful climbing shrub is common throughout America, choosing moist places with a deep soil and good shade. The root is very long, woody, half to three-fourths of an inch in diameter, covered with a thick cortex of a bright orange color on the outside. This cortex is the medicinal part. It has a sweet and somewhat nauseous taste. Water or diluted alcohol readily extracts its virtues. Age impairs it.

Properties and Uses: The *root* is a mild and slow relaxant, acting chiefly upon the glandular structures, including the kidneys and skin; but it makes a very general impression upon the system, and seems to influence the absorbents and spleen decidedly. It soothes nervous irritation throughout the frame, tastes slightly nauseous to some persons, and leaves a gentle tonic impression.

This article has been used mostly as an alterative; and deserves far more attention than it receives in all scrofulous cases, whether of glandular swelling or strumous diathesis. Its own action being so largely relaxing, it is best combined with alterant tonics, as menispermum, stillingia, rumex, getiana, etc. (§262.) Such compounds, containing an excess of this agent, are valuable not merely in scrofula, but in nearly all forms of scaly skin diseases, (on the addition of some guaiacum or xanthoxylum,) in secondary syphilis and mercurial cachexia. By some it is spoken of in leucorrhœa and obstructed menstruation; but I have never found it useful in such cases as a class. But it is very good, combined with mild tonics, for young women about the age of puberty, when they get blue bands under their eyes, with general paleness, precarious appetite, nervousness, feebleness, and vaginal weakness. I have obtained a good impression from it in some mild cases of chronic ovaritis.

This agent has a peculiar and valuable action on the kidneys and bladder, soothing and strengthening these organs. I have found it good in the enuresis of nervous children, generally combining it with agrimonia. I have found it an excellent agent for irritable cases of spermatorrhœa—a small portion of it being combined with a large quantity of the Compound Sirup of Mitchella. The late S. B. Dodd, M. D., of Martinsburg, Ohio, furnished me with a detailed account of his use of it in diabetes. He used one ounce of the solid extract with one-fourth of an ounce of extract of hydrastis, softened to the consistence of molasses with a whisky tincture of colombo and dogwood. Of this he gave a teaspoonful three times a day, and

had not known it to fail, in the management of a large number of cases. I have confirmed this observation on many cases of excessive micturation, but not of actual diabetes; but several physicians to whom I have made known Dr. Dodd's experience, have abundantly confirmed it in very bad diabetic cases. J. Weeks, M. D., of Mechanicsburg, Ind., has had a number of opportunities to test it; and has always been successful. In one case in his hands, a soldier shot through the lungs and sent home to die of his wound and diabetes, swelled up enormously with cellular dropsy on every portion of his body, so soon as his diabetes became checked with the celastrus; but Dr. Weeks soon removed this with vapor baths and stimulants, and sent the man back to vigorous army service in three months. It has been used alone with full effect; but probably is best combined with a good tonic.

Outwardly, a strong decoction of this agent makes a good wash in chaffiness of the skin and scaly eruptions, especially when the surface is hot. It is used in poultices, salve, and a strong decoction with flannel, upon glandular swellings, and has a soothing and softening action. It has been highly spoken of outwardly and inwardly in cancers; but it is my impression that this reputation has arisen from its good action on caked breasts and other lymphatic enlargements in strongly scrofulous constitutions. It slowly promotes absorption—which would not be a favorable action in cancers. The salve is a popular application to light burns, irritable and healing sores, etc. Dr. D. Carey, of Carmel, Ind., writes me that he has for fifteen years used a strong ointment of celastrus for piles, with the greatest satisfaction.

Narcotic powers have been attributed to this plant, but I am thoroughly satisfied that it has no such property. From the similarity of common names, it is often confounded with *solanum dulcamara*; and the poisonous properties of the latter are placed upon the celastrus, while the good qualities of the celastrus are credited to the solanum. Druggists too often send solanum when celastrus is ordered, under the impression that the two articles are the same. Botanically, one plant need never be mistaken for the other; and in commerce, the celastrus can at once be distinguished as an orange-red bark, while solanum is a small, dark-purplish and herbaceous stem.

Pharmaceutical Preparations: I. *Decoction.* Crushed celastrus, two ounces; water, one quart. Digest at a low heat, in a covered vessel, for two hours, and strain. Dose, two to three fluid ounces three times a day. II. *Extract.* Two solid extracts of this article are made, the one by water alone, and the other by 80 percent alcohol. They both represent the plant well, but should always be evaporated on a water bath. III. *Fluid Extract.* Finely crushed celastrus, one pound. Macerate in diluted alcohol, transfer to a percolator, and treat with diluted alcohol till fourteen ounces have passed. Set this aside, and continue the percolation with water till three pints have passed. Evaporate this carefully on a water bath to two ounces, and add it to the first product. This is a good preparation, of which from half a drachm to a drachm may be used three times a day. IV. *Ointment.* The bittersweet ointment is commonly prepared by digesting eight ounces of the fresh root in half a pound of lard; straining, and adding two ounces of beeswax. A nicer and much stronger ointment can be prepared by melting four ounces of simple cerate, adding to it one ounce of the fluid extract of celastrus, and evaporating all the moisture on a water bath. If it is desired to have a soft ointment, half an ounce of olive oil may be used in the cerate. In the absence of fluid extract, three drachms of solid extract may be thoroughly softened with alcohol, and then incorporated with the cerate by trituration. Either ointment is a dark reddish-brown

unguent, of much service to soothe light burns, sores, and other irritable surfaces; and in piles Dr. Carey, as above, applies it twice a day. Other preparations will be found under rumex, arctium, and althea rosea.

CENTAUREA BENEDICTA

BLESSED THISTLE, HOLY THISTLE

Description: Natural Order, Compositae. Genus CENTAUREA: Annual herbs. Leaves alternate; heads radiate, involucre of many equal leaves in two series; disk sterile; rays fertile; receptacle naked; pappus wanting. C. BENEDICTA: Stem round, trailing, furrowed, reddish, about two feet long, pubescent; oblong, rough, sinuate, armed with many spines, sessile above, petioled below; disk florets small, tubular, toothed; ray florets large, yellow. June.

This plant is native to the south of Europe, but is now common in America. The leaves have a very bitter and slightly nauseous taste, and a feeble odor. Cold water extracts only a portion of their properties; but boiling water acts on them fully and forms an intensely bitter decoction. By treatment with acids they yield a neutral principle called *cenicin*, which is crystallizable, without odor, soluble in alcohol, sparingly soluble in boiling water, with a bitter character, resembling salacin.

Properties and Uses: The *leaves* are relaxing and slightly stimulating, and belong to the class of diaphoretic tonics, as do boneset and camomile. The warm infusion will promote mild diaphoresis, and soon procure vomiting. As with boneset, the emesis thus procured exerts a depurating action upon the liver and gall-ducts; and this infusion will promote catharsis, with a free discharge of bile. An infusion on cold water is much less nauseating; and is among the more pleasant yet positive relaxing bitters, suitable for weak stomachs, biliousness, and habitual constipation. It deserves consideration as a tonic during the treatment of intermittents; though it is not probable that it is an antiperiodic, as some have asserted. It slowly promotes nearly all the secretions, and may be incorporated with alteratives to advantage. The powder may be given in doses of from ten to twenty grains, three times a day. Half an ounce of the leaves to a pint of cold water, in quantities of a fluid ounce very six hours, is the best tonic dose; and a stronger and warm infusion, in doses of two fluid ounces every half hour, will first procure the diaphoretic and then the emetic actions. The *cenicin* is given in doses of from two to four grains every four hours for intermittents. This plant deserves further attention and it is a mistake for the profession to pass it by as a trifling article.

The following is a good tonic preparation for general debility of females, with a costive tendency: Centaurea, aralia hispida, and liriiodendron, each four ounces; caulophyllum and menispermum, each two ounces; orange peel, two drachms. Treat with three quarts of Sherry wine, by percolation, pressing the dregs strongly. Dose, four to ten fluid drachms, three times a day.

CEPHAELIS IPECACUANHA

IPECAC

Description.-Natural Order, Cinchonaceae. Genus CEPHAELIS: A shrubby plant, perennial, the stem forming several runners at the surface. Leaves opposite, oblong, lanceolate, three to four inches long, seldom more than six on a stem; on short and downy petioles, connected with each other by membranous stipules. Flowers small, white, funnel-shaped, on solitary and erect peduncles, eight to ten in a semi-globose head; a single oblong and downy bract to each flower; and a one-leaved, deeply six-parted, obovate, spreading involucre to the head. Calyx minute. Fruit an ovate berry, soft, fleshy, violet-black, the size of a very small bean, two-celled, two-seeded; seeds pale. Common to Brazil and all South America, from ten to twenty degrees south; flowering in January and February, and ripening in May.

The root of ipecacuanha is the portion used in medicine. It comes to market in pieces three or four inches long, about the size of a small quill ; knotty and wrinkled, with circular fissures; of a grayish-brown color outwardly and white within; the outer portion brittle and the center tough. It has a faint and nauseous odor, and a sickening and feebly aromatic taste. The outer or cortical portion is the active one. It yields about one percent of a peculiar principle called *emetia*; which is said to be an alkaloid, and is the chief acting principle of the root. It contains, also, a little volatile oil, and an acrid, astringent principle in small quantities. Warm water extracts most of its virtues; but light alcoholic menstrua, as wines, act more freely on it. Boiling injures it very much; and the strong astringents, as also isinglass, cause a slow precipitation from an infusion.

Properties and Uses: The *root* has been a very popular nauseant, relaxing all the structures, reducing the pulse, favoring diaphoresis and expectoration, securing thin discharges from the bowels, and in large doses inducing repeated emesis. In pneumonia, hooping-cough, catarrh, spasmodic asthma, and as an emetic for children and feeble women, it has enjoyed a wide reputation. I used to employ it, and know a small quantity greatly promotes diaphoresis and expectoration, and also relieves a hot surface and lowers the pulse. By watching it very closely, I came to reject it from the list of sanative agents for the following reasons: It causes a free secretion of phlegm and mucus in the respiratory organs, but reduces the power of expectorating, and leaves the patient somewhat suffocated and pale. Children become sleepy and dull under its action, and have respiration interfered with, and pneumonia decidedly made worse by depression of the lungs. The extremities and cheeks become cold and pale; the pulse falls, and becomes almost imperceptible; and the nervous centers may be so depressed as to sink into coma. Inhalation of its dust will occasion choking and asthmatic feelings; and one druggist's clerk was nearly killed by it. The vomiting it induces is slow and persistent, and it is accompanied by a sense of extreme languor, and followed by stupor (or somnolent sleep) and continued weakness. Its active principle, *emetia*, has on all sides been pronounced too violent to admit of being used; and the one-sixteenth of a grain killed a dog. Accumulated observations of this kind have satisfied me that it is an unsafe article; and I feel morally certain that I have seen it prescribed by Allopathists and Eclectics, where its use led to fatal results in cases of infantile pneumonia that might have been saved.

CEPHALANTHUS OCCIDENTALIS

BUTTON BUSH, POND OR SWAMP DOGWOOD, GLOBE FLOWER

Description: Natural Order, Rubiaceae. Shrubs, common in wet places, throughout the United States and Canada, five to fifteen feet high. Leaves opposite, or sometimes in whorls of three, without stipules; ovate-oblong, acute at both extremities, on short red petioles, with a tumid base; two to four inches in length. Flowers terminal, in densely aggregated, globose heads; creamy white; calyx tubular, four-toothed; corolla tubular, four-toothed. Blossoms in July and August, when its pretty and somewhat fragrant heads of flowers, more than an inch in diameter, make an attractive appearance. The bark is quite bitter, and yields its properties to water, and to water and alcohol.

Properties and Uses: The *bark* is a slow, but quite decided tonic, of the stimulating and moderately relaxing class. It gives vigor to the stomach and bowels in atonic conditions, and slightly promotes the alvine and hepatic functions, and also that of the kidneys. In some sections a very strong decoction of it is a popular remedy in intermittents, both to sustain the portal circulation and secure a laxative action of the bowels. Several intelligent gentlemen have told me that it is much depended on as an antiperiodic in the southwestern States; and some observations of my own assure me that it will prove an excellent tonic in the treatment of agues. A warm decoction promotes the action of the skin, much as boneset does. In my earlier practice, I noticed some New England farmers gave it to their cattle, to hasten the ejection of the placenta; and this led me to its use in uterine weakness and prolapsus, with leucorrhoea, for all which I have found it decidedly valuable. It has been commended for weakness of the kidneys, aching in the small of the back, and chronic coughs. I am fully satisfied that this article will be found a desirable one, and would respectfully urge its investigation by the profession.

In using it an ounce of the bark may be boiled in a pint of water, strained, and evaporated to half a pint. Of this two fluid drachms may be given three times a day, to promote digestion; or a fluid ounce every second hour, commencing eight hours before the chill, as an antiperiodic. I once prepared a *Fluid Extract*, in the same manner as for boneset, and found it a serviceable preparation.

CERA FLAVA AND ALBA YELLOW WAX AND WHITE WAX

Wax, commonly known as *Beeswax*, is a peculiar secretion of the honey bee, being the substance of which the honey-comb is chiefly composed. The wax that is procured from vegetables is not here alluded to.

Yellow Wax is obtained by slicing up the honey-comb, straining and expressing from it the honey, and then melting the debris in boiling water. After some hours boiling, with occasional stirring, the wax becomes well separated from the impurities, which either settle to the bottom of the vessel, or are dissolved by the water, while the wax itself rises to the surface, and becomes hard on cooling. It is still further purified by a second boiling, and then strained into flat pans. It always retains some peculiar principles, which give it its characteristic yellow color, as well as its taste and smell. It is hard; will break with a granular fracture, but cuts with a smooth surface; softens at a moderate heat, and melts at 142° F. It is a very little lighter than cold water. It is many times adulterated with resin, which gives it a smooth instead of a granular fracture. Cold alcohol will dissolve out the resin, and leave the wax minutely honey-combed. Meal and earthy adulterations may be separated by boiling water.

White Wax is prepared from the yellow wax by various processes of bleaching. The most common method is that of pouring the melted wax in small streams upon a revolving cylinder, where it cools in very thin layers. These are spread in the sun upon linen stretchers, and sprinkled frequently with water. A second, or even a third melting, is necessary to discharge all the yellow color. The total process requires two or three weeks. M. Cassgrand, of France, has patented a method of bleaching it by steam. He melts it by steam, passes it through a coil along with steam, pumps it into a steam-heated pan, where it is washed with hot water, then granulated with cold water, and afterwards exposed to the air and light in very thin cakes. White wax is without taste or smell, harder and less unctuous than the yellow, with a melting point of 140° F., but retaining its fluidity (when once melted) till it reaches a temperature of about 135° F. Its specific gravity is about the same as the yellow wax. It may be partly decomposed and volatilized at a high heat, and its vapor will burn with a pure bright flame. Resin easily unites with it when the two are melted together; the fixed and volatile oils dissolve it readily, soda and potassa solutions form soapy compounds with it, boiling alcohol and ether dissolve it very sparingly, and deposit it on cooling. It is sometimes adulterated with white lead, which will fall to the bottom on melting; with tallow suet, and other fats, which may be detected by their quickly turning lime-water milky.

Pharmaceutical Preparations: I. *Simple Cerate, Spermaceti Cerate.* White wax, three ounces; spermaceti, one ounce; olive oil, six fluid ounces. Melt together the wax and spermaceti; heat the oil and add to the others, and stir the whole till cool. This is a fine protecting cerate for all simple dressings. It is also used as a vehicle for more active preparations, and especially for making medicated cerates by incorporating with it any -solid extract, previously softened with alcohol. II. *Simple Ointment.* White wax, one pound; lard, four pounds; melt together with a moderate heat, and stir till cold. This is a softer preparation than the above, and rather more serviceable in cold weather. It is used for the same general purposes as the cerate.

CERCIS CANADENSIS

RED BUD, JUDAS TREE

Description: Natural Order, Leguminosae. Genus CERCIS: The red-bud tree is quite common on hill-sides throughout the Middle and Western States; and is well known by its peculiarity of thickly covering the branches with small pink-red flowers before the leaves appear in Spring. Calyx five-toothed. Corolla scarcely papilionaceous, the petals being distinct; wing and keel petals long. Stamens ten, distinct. Fruit a compressed legume several inches long. Leaves broadly ovate-cordate, acuminate. Height twenty to thirty feet. Flowers appearing in early May, in small clusters along the branches, and giving the tree the appearance of being covered with small red leaves. The twigs will dye wool a nankeen color; and the wood is finely veined with black and green, and receives a good polish.

Properties and Uses: The *leaves* of this tree possess stimulating and astringing properties, and give promise of making a good tonic alterant. Several practitioners have told me they use it to advantage in low scrofulous conditions, and in secondary syphilis. It slightly binds the bowels; but may be used to advantage in company with menispermum and euonymus. Dr. Bratcher, of Eastern Kentucky, informs me that he makes external use of them in white swelling, especially where the vital action is quite indolent; and that they deserve much esteem in such cases. The article evidently deserves attention.

CETACEUM

SPERMACETI

Spermaceti is a dense fatty substance, obtained from the head of the spermaceti whale—*Physeter macrocephalus*. “The spermaceti whale is from sixty to eighty feet long, with an enormous head not less than thirty feet in circumference, and constituting one-third of the whole length of the body. The upper part of the head is occupied by large cavities, separated by cartilaginous partitions, and containing an oily liquid which, after the death of the animal, concretes into a white spongy mass, consisting of spermaceti mixed with oil. This mass is removed, and the oil allowed to separate by draining. The quantity of crude spermaceti obtained from a whale of the ordinary size, is sufficient to fill twelve large barrels. It is purified from oil and other matters by pressure, repeated washings with hot water, melting and straining, and lastly by repeated washings with a weak boiling lye of potash.” (*U. S. Dispensatory*.)

Spermaceti is a pearly-white mass, a little unctuous to the touch, crystalline, firm, lighter than water, and melting at 120° F. It is affected by heat and the oils very much as white wax is. It is but little acted on by the alkalies, and does not so readily mix with resin.

Properties and Uses: This article is a demulcent after the character of the fixed oils; and has been used in phthisis and irritability of the pulmonary and intestinal mucous membranes. In my estimation, it is to be preferred to cod liver oil. By moistening it with alcohol, it may be reduced to a powder; but it is better when softened with olive or almond oil, and then made into an emulsion with gum arabic and sugar, or suspended in sugar and the yolk of an egg. From ten to thirty grains may thus be given three times a day. At present, it is seldom used internally; but is employed largely in giving firmness and softness to numerous ointments. It mixes readily with lard, white wax, and other unctuous materials; and makes a soothing external application.

Pharmaceutical Preparations: *Cold Cream, Ointment of Rose Water.* Take spermaceti, half an ounce; oil of almonds, two fluid ounces; white wax, one drachm. Melt these together on a water-bath; and when it begins to cool add a fluid ounce of rose water, and stir constantly till it congeals. This is an elegant soft ointment, and a most soothing application to chapped hands and lips, light burns, irritable diseases of the skin, and all excoriated and smarting surfaces. It should be kept closely in glazed vessels. Some formulas omit the rose water, and use instead two drops of the otto of roses, and four fluid drachms of glycerin; but it is difficult to incorporate these ingredients.

See White Wax and Glycerin for other compounds, and bases for ointments.

CETARIA ISLANDICA

ICELAND MOSS

Description: Natural Order, Lichenaceae. This lichen is a native especially of Iceland, but also of Northern Europe and America. It is a membranous perennial; thallus erect, leaf-like, three to four inches high, tufted and divided, varying in color from olive-brown to red-brown, tough, fringed along the edges, stiff and crisp when dry. Found in dry mountainous districts.

Properties and Uses: More attention has probably been paid to this lichen than it really deserves. An ounce of it, washed and picked, may be boiled for fifteen minutes in a pint and a half of water, and then strained. It yields a starchy mucilage, which will gelatinize if concentrated. This is demulcent and nutritious, and is not undeserving of some attention in chronic catarrh, dysentery, and diarrhea. It contains a little bitter principle, which is supposed to make it slightly tonic; but renewed applications of moderate heat seem to destroy this. Boiled in milk and seasoned with lemon and spices, it is often valued as an article of diet in phthisis, and recovery from prostrating maladies.

CHELONE GLABRA

BALMONY, SNAKE-HEAD, TURTLEBLOOM, SHELLFLOWER

Description: Natural Order, Scrophulariaceae. Genus CHELONE: Calyx deeply five- parted, three-bracted. Corolla bilabiate, inflated, contracted at the mouth into two short and gaping lips. Stamens five, one abortive. Seeds broadly membranous and winged, in which this genus is distinguished from Penstemon. C. GLABRA: Perennial. Stem erect, mostly simple, slightly four-sided, two to four feet. Leaves opposite, smooth, sub-sessile, oblong-lanceolate, serrate, acuminate, dark-green and shining above. Flowers mostly in short terminal spikes; each an inch long, white, occasionally tinted with purple-red. August and September.

This herb is common through North America, in rich soils, and in both moist and dry situations, by the edges of woods and sides of fences. Its large flowers are attractive, but inodorous; and their resemblance to the head of a snake or a tortoise, has secured the plant two of its most common names. The leaves are the medicinal portion; and yield their properties to water and alcohol.

Properties and Uses: The *leaves* are a strong and permanent bitter, with about equal degrees of relaxing and stimulating properties. They expend the greater portion of their influence on the stomach; but also exert a decided action on the gall ducts, and a more moderate one on the whole alvine canal. From the latter facts, they have generally been spoken of as cathartic; but they scarcely deserve that term, though they are fairly laxative.

Few tonics are equal to balmony in cases of enfeebled stomach, with accompanying indigestion, biliousness, costiveness, and general languor. It arouses the gastric and salivary secretions, and decidedly improves digestion; also favors the biliary and fecal discharges, and leaves the whole assimilative organism toned. In a similar manner, it is a good adjunct in the treatment of jaundice; and in affections of the skin dependent upon hepatic and alvine inaction, it is a valuable addition to alteratives. It is one of the most suitable tonics in cachectic states, strumous difficulties, dropsies, and recoveries from prostrating maladies, where a laxative tonic is needed with the other remedies. It has been classed among the vermifuges; but is useful then chiefly to give the tone that should accompany and follow anthelmintics. Added to senna and juglans, it increases their cathartic action. It is nearly always grateful to the stomach; but is better calculated for languid and atonic conditions than for any form of gastric sensitiveness. The article deserves all the praise here given it, and possibly more; for I am convinced that, in its own place, it is one of the most valuable laxative tonics of the *Materia Medica*. It is not so intense as the American gentian, but is more stimulating than boneset.

Dose of the powder, five to ten grains, three times a day. An infusion, made of a drachm of the powdered leaves to half a pint of hot water, may be given in doses of half to a whole fluid ounce three times a day. It forms an ingredient in the Spiced Bitters; and other compounds containing it may be found under *frasera* and *juglans*. It is a good addition to such agents as *hydrastis* and *cornus*, in the treatment of intermittents; and to *apocynum* and *populus* in the management of stomach worms. It may conveniently be made into sirup, but most commonly is prepared in what are currently known as "bitters." A *Fluid Extract* is prepared, as in the *eupatorium perfoliatum*.

CHENOPODIUM ANTELMINTICUM
WORMSEED, JERUSALEM OAK

Description: Natural Order, Chenopodiaceae. Genus CHENOPODIUM: Annuals, except that the species here in question has a perennial root. Flowers all perfect, bractless; calyx five- cleft, lobes somewhat keeled, more or less enveloping the depressed fruit; stamens mostly five. C. ANTHELMINTICUM: Stem erect, somewhat angular, nearly simple, nine inches to two feet. Leaves alternate, small, ovate-oblong, attenuated at base, more or less deeply toothed, lower ones almost laciniate-pinnatifid, light green, glandular beneath. Flowers very small, of the same color as the leaves, compactly crowded on long spike-like racemes that are leafless. A common plant on light soils and in dry waste places; having a grayish-green look, and a strong and peculiar aroma that is rather unpleasant. Flowers from July to September. Seeds small, somewhat lens-shaped, grayish-yellow. The C. AMBROSIOIDES is a plant of smaller size, of a yellowish-green appearance, and possessing apparently identical properties.

The qualities of this plant depend on a volatile oil, slightly lighter than water, and which it yields abundantly. This oil is distilled from the seeds; is at first a light straw color, but darkens by age.

Properties and Uses: This is an antispasmodic and vermifuge of considerable repute, and pretty generally effectual in removing the lumbrici from children. The *oil* is generally employed for this purpose; and may be given in doses of from ten to twenty drops, each morning. It may be dropped on sugar, or formed into an emulsion; and after using it a few days, should be followed by a full cathartic dose of leptandrin or castor oil. It is frequently mixed directly with castor oil, one ounce of the former to a pound of the latter; and this, with the addition of small portions of turpentine, forms the M'Lean, Fahnestock, and other vermifuges. In home practice, the plant is often boiled in milk, and two fluid ounces or more given morning and evening; or it is bruised and the juice expressed, and this exhibited in doses of two teaspoonfuls twice a day. Some spice is usually added to these preparations.

This agent exerts a decided influence on the nervous system and uterus. A decoction of half an ounce of the plant to a pint of water is an excellent antispasmodic in colic, uterine spasmodic action, and some forms of hysteria. It is more stimulating than relaxing, and is best used when the pulse is depressed and the surface cold. It promotes menstruation rather decidedly; and in sudden suppression following exposure, and accompanied by suffering, it makes an excellent addition to about twice its own weight of angelica, used in warm infusion. The oil will provoke uterine suffering in pregnancy.

CHIMAPHILA UMBELLATA

PIPSISSEWA, PRINCE'S PINE, GROUND HOLLY

Description: Natural Order, Ericaceae. Genus CHIMAPHILA: Small, shrubby-looking, evergreen, perennial, herbs. Stem six to eight inches, nearly erect, woody at the base. Flowers terminal; calyx five-parted; corolla five-petaled, spreading; stamens ten; capsule five-celled; seeds numerous. C. UMBELLATA: Leaves two to three inches long, half an inch wide, tapering at both ends, coarsely serrate, usually in whorls of fours and sixes, very dark green, tough, shining. Flowers four to seven, on an erect, terminal umbel, light purple, on nodding pedicels. The plant is common in dry woods, usually growing in tufts, flowering in July.

C. MACULATA often appears in market with the above species. Its leaves are in twos or threes, shorter and blunter at the base than in the true pipsissewa, and are always variegated in color—usually having a light stripe through the center. Flowers purplish-white. It possesses nearly the same properties as the above species, but is not so active. Both articles are sometimes called *wintergreen*; but this name is generally given to the fragrant *gaultheria*.

When fresh, this plant is acrid, and has a mild aroma. Boiling water, alcohol, and diluted alcohol, extract its properties.

Properties and Uses: The *leaves* are a mild but agreeable tonic and alterative, acting slowly, and leaving behind a gentle degree of astringency. They act upon the stomach and kidneys chiefly, next upon the skin, and then slightly upon the entire lymphatic system. They are more relaxing than stimulating; and the astringent principle is scarcely obtained except either by long boiling or in the presence of some alcohol. They mildly increase the flow of urine; and are useful in chronic weakness of the kidneys and bladder, cystic catarrh, weakness and aching in the prostate, and in spermatorrhea. They relieve a sense of weight and uneasiness through this entire portion of the organism; and may be combined advantageously with caulophyllum, convallaria, and similar agents, in the treatment of leucorrhoea and gonorrhoeal difficulties. Their action on the lymphatics makes them useful in scrofula and cutaneous affections; and they enjoy with some an almost fabulous reputation for all strumous difficulties; but while this is an over-estimate, they are decidedly of much service in combination with stillingia, celastrus, rumex, and a little gentian. From their combined action on skin and kidneys, they are of service in dropsy and rheumatism; and are said to be peculiarly applicable to cases of lithic acid gravel. They are grateful to feeble stomachs, and generally improve digestion. It must be remembered that they belong to the mild class of agents, and will not meet very depressed cases.

This plant is always given in decoction, extract, or compound sirup. The *decoction* is prepared by boiling an ounce of the leaves in two pints of water, straining, and evaporating to one pint. From two to four fluid ounces of this may be given every three or four hours. A *fluid extract* is prepared in the usual way, of which one fluid drachm would be a dose. A better preparation would be a *concentrated sirup*, a pint of which might be made from eight ounces of the ground leaves, with twelve ounces of sugar; and four ounces of rectified whisky afterward added. The dose of this would be from two to four fluid drachms, three times a day. Chimaphila is an ingredient in the Compound Sirup of Stillingia.

CHIONANTHUS VIRGINICA

FRINGE-TREE, OLD-MAN'S-BEARD

Description: Natural Order, Oleaceae. Allied to the white ash, the privet, and the olive. Genus CHIONANTHUS: Small trees with opposite leaves, flattened branches, and flowers in terminal and axillary racemes. Calyx short, four-parted; corolla tube very short, limb in four long and linear segments; stamens two, very short, inserted on the tube. Fruit a fleshy drupe, with a bony and one-seeded nucleus. C. VIRGINICA: Leaves oval and oblong-lanceolate, of various outlines on the same tree, three to six inches long, leathery, smooth. Flowers on long peduncles, with a smooth calyx; petals an inch long, snow-white; panicles drooping and delicate, the long fringe of the petals giving the clusters a very graceful appearance. Common through the woods of the Southern States, and making a very ornamental tree of moderate size.

Properties and Uses: The bark of the root of this tree is a rather bitter tonic, with an excess of relaxing properties, but stimulating qualities pretty well marked. It promotes all the secretions slowly, but especially those of the liver, gall-ducts, and kidneys. It has been much used as a remedy among the negroes in agues, and lingering intermit tents generally; its merits probably depending upon its tonic and slow hepatic properties, rather than upon any antiperiodic action. An ounce of the dried bark is made into decoction with a quart of water, and boiled down to a pint; and of this two fluid ounces may be given three times a day. A pint of thirty per cent alcohol will form a good tincture with two ounces of bark; and of this two fluid drachms may be given three times a day. It is applied to wounds and scrofulous ulcers, and is said greatly to diminish suppuration and promote healing.

CHONDRUS CRISPUS

CARRAGEEN, IRISH MOSS

Description: Natural Order, Algaceae. Genus CHONDRUS: Frond cartilaginous, nerveless, flattened, nearly cylindrical at the base, dichotomously divided. C. CRISPUS: Fronds thick, three to ten inches long, in wedge-shaped segments, narrow, cloven deeply; the margins tough, almost horny when dry, of a deep purplish-brown color, becoming a dirty yellowish-white when dried.

This species of moss is found on stones along the sea-shore of western Ireland, and also of England and Scotland. It appears in commerce as crisp; twisted, horny-looking masses, which swell up slowly in cold water, and nearly dissolve in boiling water. It contains a large amount of gum-like mucilage, with small quantities of starch and other substances. The mucilage forms a handsome jelly, and is quite nutritious.

Properties and Uses: Carrageen is used for its demulcent influence in bronchial and pulmonary irritation, diarrhea and dysentery, and irritability of the kidneys and bladder. It is most available in recent colds and coughs, where it may be used freely in warm decoction. The *decoction* is made by macerating half an ounce of moss for ten minutes in warm water; then boiling fifteen minutes in three pints of water, straining, sweetening to taste, and flavoring with lemon or some spices. This may be drunk freely. When used chiefly for nourishment, milk should be substituted for the water. The *jelly* is made by using two ounces of the moss to three pints of water, adding half a pound of sugar; and when milk is thus used instead of water, a pleasant and light *blanc-mange* is produced.

CHRYSANTHEMUM LEUCANTHEMUM

OX EYE DAISY, WHITE WEED

Synonym: *Leucanthemum Vulgare*.

Description: Natural Order, Compositae. This is the common field or meadow daisy so abundant in many sections, and so obnoxious to farmers. It is a perennial herb, with an erect and nearly branchless stem from one to two feet high; a large and single capitum of flowers terminating the stem. Heads radiate; rays numerous, white; disks yellow, crowded, flattened; involucre broad, flat, imbricated, with rusty-brown margins. Leaves few, mostly at the base of the stem, small, alternate, cut pinnatifid; radical ones petioled, cauline ones amplexicaul. July .

Properties and Uses: The flower heads of this plant are almost the same in qualities as the *anthemis nobilis*. I have not used them extensively, but am satisfied they will make a remedy similar to the camomile as atonic and antispasmodic. In Central New York it was a popular family remedy for recent colds; and a warm infusion will secure a full perspiration, with capillary stimulation. As a tonic, it seems best suited for nervous depression and hysteria.

CIMICIFUGA RACEMOSA

BLACK COHOSH, RATTLEROOT, BLACK SNAKEROOT, SQUAWROOT, BUGBANE

Synonyms: MACROTYS RACEMOSA of *Eaton*, ACTEA RACEMOSA of *Willdenow*.
BOTROPHYS RACEMOSA

Description: Natural Order, Ranunculaceae. Genus CIMICIFUGA: Perennial and herbaceous. Leaves ternately decomposed. Flowers white, in a long, slender, terminal, leafless raceme; sepals four or five, caducous; petals like stamens, small, clawed; stamens numerous, with white filaments. Fruit dry, dehiscent capsules. C. RACEMOSA: This species of cohosh is a stately-looking plant, with a smooth stem two to four feet high. Leaflets ovate-oblong, incisedly serrate; the tripartate leaves spreading out broadly, and giving the plant an open and yet neat appearance. Stamens about one hundred to each flower, giving to the long raceme a plume-like aspect. The flowers appear in June and July, have a disagreeable odor, and are followed by ovate capsules containing numerous flat seeds.

The *root* is the medicinal portion of this plant. This is an inch, or more in diameter near the collum, dividing into several contorted branches from which spring numerous radicles; blackish on the outside and whitish within; very dense and wood-like, furnishing a gray powder. It has a decided and rather nauseating odor when fresh; and a faint, peculiar, and not pleasant odor when dry. Age decidedly impairs its virtues; and it contains a volatile principle which is easily dissipated by heat. Its taste is rather bitter, and leaves a slightly acrid sensation upon the root of the tongue and the fauces. Lukewarm water and diluted alcohol extract its properties readily; boiling water volatilizes its best qualities; alcohol dissolves a resinous substance it contains.

Properties and Uses: The *root* of cimicifuga has long been known to American physicians as a remedy of decided and peculiar value; yet its true action has been enshrouded in so much uncertainty that the proper places to employ it have not been well defined. After much experience and careful observation in its use, I offer the following account of it, which I believe to be correct, though in many respects different from the **descriptions** usually given: It is moderately prompt and diffusive, but requires some hours to manifest its full action through the system. It is almost purely relaxant, leaving behind only a trifling astringent impression on mucous membranes. Its power is expended chiefly upon the nervous structures, beginning at the peripheries and extending to the brain, including the ganglionic system; through the sensory nerves influencing the heart and pulse, and through the sympathetic nerves making a decided impression upon the uterus. It manifests a distinct action upon the whole class of serous tissues, and a milder action on the kidneys, lungs, and skin. Upon this large range of organs its impression is always relaxant; and that relaxation is not the same in kind as from lobelia, boneset, camomile, or any other agent, but is peculiar to this article alone.

On the *nerves* it acts gradually, yet in the end with decided power—soothing them, relieving pain dependent on local irritation, and proving a good antispasmodic. It thus proves of service in general nervous excitement and agitation; is of decided benefit in hooping-cough and spasmodic asthma; and in periodical convulsions, whether of hysteria or epilepsy, or even puerperal convulsions, it is of peculiar value. Extending its influence to the very brain, it is of importance

(combined with stimuli) in delirium tremens, and exerts a power over chorea such as probably is not exercised by any other remedy. It quiets mental excitement, and calms both body and mind, disposing to a placid sleep, with a sense of relief about the head. At the same time it softens and slowly lowers the pulse, and causes fullness of the capillary circulation, and a gentle increase of perspiration. From these effects it has been pronounced a narcotic; but there is not a shade of narcotic action about it. Large doses, repeated at short intervals, are usually followed by a peculiar feeling of dizziness, which seems to be owing entirely to a too sudden relaxation of the nerve centers, before the other tissues have time to respond to the impression, This feeling will pass away in a few hours: pretty full doses of the powder or infusion may often be given regularly, without causing it at all, and the tincture is the most liable to produce it.

On *serous* tissues it allays irritation, soothes excitement, and relieves sub-acute and chronic inflammation. Its excellent qualities here are seen in the great relief it gives to all forms of articular and neuralgic rheumatism; for which it is one of the most useful of agents. It is also an excellent adjunct to other remedies in the treatment of dropsy, phlegmasia dolens, neuralgia, and irritation of the meninges. Its action in cerebral and cerebro-spinal meningitis is at once peculiar and important—small doses at considerable intervals allaying the great tenderness of the membranes, and also relieving the tendency to spasms; and in the meningeal tenderness that so often proves annoying during convalescence from these maladies, as also in other chronic and periodical suffering in these structures, it is a remedy that deserves the first attention. I think it also deserves attention in puerperal mania.

Its action on the *uterus* is well marked—relieving neuralgia and rheumatism of this organ, proving efficient in painful menstruation accompanied by tardiness, and decidedly and powerfully expediting delivery when the uterine action becomes weary and irritable. In several instances I have found a rigid os uteri relaxing under its influence, and An irritable vagina becoming moist and less sensitive—the labor pains at the same time becoming more regular and effective. It is believed incapable of interfering with gestation; but I have more than once seen its free use, in cases of general erethism, followed by strong premonitions of abortion. Such cases, however, are exceptions; though the article will distinctly increase the menstrual flow. A small portion combined with trillium and cypripedium, is useful for after pains and to maintain the lochia.

This agent also increases the flow of urine a little, and relieves the kidneys somewhat; is spoken of in consumption as a valuable agent to soothe the cough and impart tone to the lungs; and some have gone so far as to pronounce it a distinct diaphoretic in fevers, and an antiperiodic in gastric intermittents. Much reliance should not be placed on it in these connections; though its valuable action on the nervous system may render it a good adjuvant in certain forms of all these maladies. Dr. Horton Howard says a rather free use of a decoction, taken for a day or more before the appearance of the small-pox, will so gently dissipate the virus through the pores as to prevent or greatly modify the eruption. Several physicians of judgment have assured me that this observation is correct. The same careful writer says a poultice of the fresh roots was used successfully by the Indians for snake-bites and other poisoned wounds; and there is reason for believing that this also is correct. For neuralgia and ovarian irritation, it no doubt deserves more attention than it has yet received; but it is not an agent suitable for any malady where the pulse is depressed, the skin cold, the tissues relaxed, and the general sensibilities of the frame reduced.

One advantage connected with this agent, is the fact that it leaves behind a gently toned impression, rather than a relaxed one. While it soothes, it also gently strengthens. Acidity of the stomach will almost wholly prevent its action. The combinations into which it may suitably enter are numerous, according to the end sought; as with *aralia hispida* and *fraxinus* for dropsy, with *cypripedium* and *scutellaria* for neuralgic affections, with *xanthoxylum* or *jeffersonia* or the berries of *phytollacca* for rheumatism, with *liriodendron* and *caulophyllum* in hysteria and other general spasms, etc. The *cimicifuga* should usually be in less quantity than the associated agents.

The dose of the powder is from five to ten grains, repeated at intervals of six or four hours. It is common to give this agent in too large quantities, and at too short intervals; yet from ten to twenty grains have been successfully given every three hours, in severe attacks of chorea. The recent powder is more effective than any other form of the agent; though infusion and tincture are good, and infusion is most generally employed. From five to ten grains, in any mucilage, make a valuable nervine enema.

Pharmaceutical Preparations: I. *Infusion*. Bruised or powdered *cimicifuga*, four drachms; tepid water, eight ounces. Macerate in a covered vessel for half an hour. The usual direction for preparing this infusion, is to boil the root; but boiling, or even the use of boiling water, damages it greatly. Nothing above a lukewarm temperature should be employed. The infusion represents most fully the nervine qualities of the article. Dose, two to four fluid drachms every two or three hours; or two fluid drachms every hour, during parturition or for the urgency of a rheumatic attack.

II. *Tincture*. Bruised *cimicifuga*, four ounces; diluted alcohol, one pint. Macerate for ten days; express and filter. This preparation makes a distinct impression on the brain, and also upon the throat; and is best suited for hooping-cough, asthma, and other spasmodic bronchial affections. It has been commended as the best form in which to use the *cimicifuga* for chronic rheumatism and dropsy; and may be added to a sirup of other suitable articles, both for its medicinal and preservative effects. Dose from fifteen drops to half a fluid drachm every three or two hours, or even every hour. Twenty drops in an infusion of *caulophyllum*, is an excellent parturient.

III. *Sirup*. Eight ounces of the above tincture added to twelve ounces of simple sirup, and the whole carefully evaporated to a pint, make a pleasant sirup that may be used in coughs, and other pectoral affections. The addition of an ounce of tincture of *lobelia* to a pint of this sirup, makes a superior expectorant and antispasmodic preparation for dry coughs, difficult breathing, irritable contractions of the diaphragm, etc.

IV. *Fluid Extract*. Of several formulae for preparing this, I think that of Dr. J. Proctor deserves the preference. It is substantially as follows: Finely crushed *cimicifuga*, one pound; ether, half a pint; alcohol, one pint. Treat in a percolator suitable for volatile liquids, causing it to pass only by slow dropping, till the menstruum disappears above. Immediately add diluted alcohol, till a pint and a half of tincture has passed. Set this in an open vessel in a warm place, and there evaporate it slowly down to half a pint. Meanwhile continue the percolation with diluted alcohol till two pints have passed; evaporate this on a water-bath to eight fluid ounces; and mix it gradually with the first product. Let it stand twelve hours; filter through muslin; and dissolve the resin on the strainer with a couple of ounces of alcohol, and add to the filtered liquid. This is a

powerful and convenient preparation, and may be used for the ordinary purposes of the root. Dose from five to fifteen drops.

V. *Extract*. A solid hydro-alcoholic extract may be prepared in the method usual for extracts of this class, observing to evaporate on a water-bath at a moderate temperature. Thus made with care, it is a good antispasmodic and nervine, to incorporate in pill masses. Associated with quinine, it decidedly favors an antiperiodic result. Dose, from two to four grains, three times a day. An extract prepared according to the common direction of raising the liquids to the boiling point, is nearly inert. Another, and a still better extract, and the one adopted in the U. S. Pharmacopoeia, is made by mixing the two classes of tinctures obtained in the above process for preparing the Fluid Extract, and evaporating these on a low water-bath, with constant stirring. The combined use of ether, alcohol, and water, as menstrua, obtains all the virtues of the plant.

VI. *Cimicifugin-Macrotin*. This is a resinoid, prepared after the same manner as leptandrin. Its powder is a faint yellow. It represents the plant only in part; and though it is in the main a fair preparation, I do not esteem it as highly as many do. It is mainly used in combination with tonic resinoids for its influence on the uterine organs, toward which it seems to act freely. I have used it to some advantage in sub-acute and chronic meningeal irritation. It may be exhibited as powder, or in pill mass. Dose one-fourth to half a grain every six or four hours.

CINCHONA

BARK, PERUVIAN BARK, JESUITS' BARK

Description: Natural Order, Cinchonaceae. Genus CINCHONA: "Evergreen trees or shrubs. Leaves opposite, entire, petiolate; stipules inter-petiole, usually free, and soon deciduous. Flowers cymose-paniculate, white, or usually roseate-purplish, very fragrant. Calyx with a turbinate tube, connate with the ovary, pubescent; limb superior, five-toothed, persistent, the teeth valvate in aestivation. Corolla salver-shaped, with a roundish tube; limb five-cleft, the segments lanceolate, valvate in aestivation. Stamens five, the filaments inserted on and adnate to the lower part of the tube; anthers linear. Ovary crowned with a fleshy disk; ovules numerous, peltate; style simple, stigma bifid. Capsule ovate, oblong, or lance-linear, grooved on both sides, crowned by the limb of the calyx, two-celled, many seeded, septical, dehiscing from the base to the apex. Seeds winged." (*Pereira.*) To this may be added that the really medicinal Cinchonas have woolly blossoms; while the allied Cascarillae have smooth blossoms.

The Cinchonas are natives of South America, in countries lying between the tropics; growing in the valleys of the Andes at an elevation of from four thousand to ten thousand feet above the sea. The best qualities are found in the hot valleys of Bolivia and Peru; but a large portion is obtained from Ecuador and New Granada. There are numerous species, all apparently possessing the same general properties, but differing materially in degrees of strength. The following are the most important kinds—described in the order of their value:

C. CALISAYA. *Yellow Bark.* There are, according to Weddell, two varieties of this, only one of which is the true or medicinal. It is a magnificent tree, two to three feet in diameter, sixty to one hundred and twenty feet high, naked and erect, elevated above all the other trees of the forest, with a large leafy head. Leaves four to six inches long, and nearly half as broad, of a velvety appearance. Corolla rose colored, with a tube four lines long, and fringed edges. It is found almost exclusively in Bolivia and South-Western Peru, on the declivities of the Andes, at an elevation of six thousand feet or more. Flowers in April and May. The bark is derived from both the trunk and branches. The trunk bark of true Calisaya comes to market in quilled (rolled) pieces, a few inches to two feet long, a quarter of an inch to two inches in diameter, and of variable thickness. It generally is covered by its rough, cracked, brown and inert epidermis. The derm (or fiber) itself is of a tawny-brown color, with a faint orange tint, of a very fine and short fiber, furrowed distinctly by the fissures in the epidermis, and of an intense and peculiar bitter taste without much perceptible astringency. That from the branches is flat, rather browner and less brittle than the quilled variety, not covered with the epidermis. It is not so strong as the bark from the trunk. The Calisaya is now admitted to be better than any other species, though the preference was for a long time given to the *pale* barks. Spurious barks are frequently introduced as Calisaya; but they lack materially in the density, shortness of fiber, brittle fracture, and intense bitterness which belong to the quilled variety of the true article. The genuine Calisaya may further be known by the facts that one hundred grains of it will yield not less than two grains of pure quinia, and that its quinia is readily soluble in dilute sulphuric acid.

C. CONDAMINEA (var. LANCIFOLIA.) *Pale Bark, Crown Bark.* This is a small and branched tree, a foot in diameter and fifteen to twenty feet high, the lower branches usually horizontal.

Leaves about four inches long, very smooth and shining above. It is principally found in the Loxa forests of Ecuador; and is now much cultivated in somewhat open grounds, at an elevation of eight thousand feet. Several varieties—as *pallida*, *macrocalyx*, *crispa*, *chahuarguera*—Yield a product of the same general character. Its bark varies in color from a pale-red to a yellowish-red, the color not being so deep as in *Calisaya*. One variety (and a truly good one) is somewhat rusty-red; and nearly all the varieties are cinnamon-red on the internal surface, the fractured surface being much lighter—even to a pale lemon tint. The yellow tints are most in repute, and are second only to the true *Calisaya*. They come in quills, which easily split lengthwise, and break with a short fracture; the fiber is rather long, the density is not equal to the *Calisaya*, they all have a distinct aroma, and their taste is decidedly astringent.

C. RUBRA. Red Bark. This is a tree from twenty to forty feet high, with an erect trunk branched above. Leaves large, broadly ovate. Other species yield a bark almost identical with this. It appears in commerce in flat and slightly incurved pieces, not often in quills; outer surface brown or reddish-brown, inner surface red, fractured surface brick-red, fibers fine. Its taste is very bitter and astringent. Inferior varieties of this and similar species, are among the most common forms of Peruvian bark. A really good article is nearly equal to the pale barks; but the market seldom presents any but the very ordinary specimens.

In all, about twenty-five species of *Cinchona* are medicinal; but the other species are easily arranged under the above three heads of Yellow Pale, and Red. The variety *lancifolia* is the one now most abundant and in most common use—true *Calisaya* being very scarce.

History: The history of the introduction of this agent to the profession, is a marked illustration of the astounding bitterness with which learned men will oppose the progress of knowledge. The following succinct account of the matter is copied from the *Institutes of Medicine*, by Prof. M. Paine, who certainly is not to be suspected of any disposition to portray the bigotry of his own branch of the profession in any stronger terms than it deserves:

“*Condamine* [a French scholar who thoroughly investigated the botanical and medical history of this plant in 1738] says that the Countess of *Cinchona*, wife of the Viceroy of Peru, carried the bark to Europe in 1640; from which circumstance, and from her previous connection with the introduction of the bark into use, *Linnaeus* immortalized her name [by calling the genus after her]. The Countess brought the bark into use in Peru by a first experiment upon herself, at the suggestion of the *Corregidor* of *Loxa*. She then transferred its patronage to the *Jesuits*, [at that time so active in South America,] from whom it became known as ‘*Jesuits’ Bark*’. The bark was by them early carried into Spain and Italy. The commendations which it received from the priesthood were not sufficient to establish its success everywhere; for even in Spain the physicians were either disposed to reject the remedy, or to meet it with opposition. But its demonstrations were such in the Italian climate that *Pope Innocent X* made it the subject of a communication to the Church; and cooperated with the Italian physicians by directing the publication of their report, in which the curative virtues of the bark were set forth with all the confidence that has been warranted by subsequent experience.

“This report soon became a target for those who had been hostile to the bark. The warfare was begun by *Chifletus*, who met with a partial failure in the use of it in one case; and proceeded to

denounce it in such violent terms that it lost many of its warm friends, and rekindled the animosity of its opponents. Chifletus boldly assumed that all the Roman and other encomiums were mere pretense; and that the bark was not only useless as a remedy, but absolutely pernicious, and should be utterly proscribed by the profession. He challenged any well-authenticated cases of cure; and by this arrogant style he attracted the attention of no small part of Europe. The credulous came to believe his assertions, and the evil-disposed united in a crusade against the article. Chifletus was hailed as a great public benefactor for having relieved the world of a scourge. His publication was reprinted in the language of different European countries, and for a while the whole profession appeared to acquiesce in the justice of the decision.

“But this is only a passage in the early history of the Peruvian bark. It is scarcely possible for us to appreciate the angry and vindictive reproach heaped upon it. Nor was this condemned article ultimately rescued from the trammels of ignorance and prejudice by its *proper guardians*, but by a learned Jesuit, who once more bore it aloft by unequivocal proof of its extraordinary control over the great bane of Italy. From that time opposition became more and more feeble, and the merits of the remedy were gradually established. But we see in the nature of the hostility which was for a while waged by a great part of the profession against this invaluable remedial agent, and in the very face of its triumphant success, a disposition to trample on the best interests of society, when professional pride, or cunning jealousy, or malevolent envy, may hope for gain.” To the above remarks of Dr. Paine may be added the fact that the opponents of Peruvian bark denounced as quacks all who used it, and sought their restraint by law. Communities, and even nations, were agitated by the quarrel; and while the *people* upheld the article, the *doctors* in the main condemned and derided it—even, as our author remarks, “trampling on the best interests of society.” And its final adoption into general use was not at all due to the profession, but to those wholly outside of the profession. The names of its defamers are now known to medical history only for the malevolence and untruthfulness of their assertions against it. The quarrel over it in every respect resembles the modern Allopathic warfare against Lobelia; and the latter will as surely ride triumphantly into universal favor in spite of Allopathic detraction; and the physicians who have unjustly maligned it, will as surely be forgotten, or remembered only for their passionate hostility to truth.

Composition: The various species of cinchona have undergone numerous and careful manipulations; and a large variety of products obtained, according to the mode of procedure. Among the unimportant products may be mentioned a volatile oil, an insoluble red coloring matter, a yellow coloring matter, kinic acid, and others. Tannin exists in appreciable quantities in some varieties, especially the red barks. But the characteristic qualities of the article are dependent upon an alkaloid principle, which, according to the procedure, is obtained in different forms—all of which possess properties in common, though varying in physical characters. These are, 1st. *Quinia*, or *Quinine*. This principle abounds most in calisaya bark; is obtained in white and flocculent crystals, intensely bitter, inodorous; readily soluble in alcohol, ether, and the fixed oils; soluble in four hundred parts of cold and two hundred and fifty parts of boiling water; and forms various salts with acids, of which the most common is *sulphate of quinine*. 2nd. *Cinchonia*. This also is a white, crystalline substance. It is scarcely soluble in ether or the fixed oils; soluble in boiling alcohol, which deposits a portion of the crystals on cooling; almost insoluble in cold water, and slowly soluble in two thousand five hundred parts of boiling water;

is very bitter, but imparts its taste slowly; is so decidedly alkaline in its character as to neutralize the strongest acids; and most of its salts are soluble in water. 3rd. *Quinidia*. This is nearly the same as quinia, but crystallizes in anhydrous, hard prisms, of a glassy appearance. It is less soluble and not so bitter quinia; melts and becomes a wine-yellow liquid at 347° F.; and acts toward acids as quinia does. 4th. *Quiniodine*, or *Chiniodine*. The term amorphous (or uncrystallizable) quinia, has been given to this product. It remains in the mother liquors, after sulphate of quinia has been separated by crystallization. It is precipitated from these liquors as a rather resinous, brownish mass, possessing the ordinary appearances of an extract, completely soluble in alcohol and dilute sulphuric acid.

Different barks yield the above alkaloid principles in varying proportions. The following is a condensation of some excellent tables given on this point by Pereira :

100 parts <i>Yellow Bark</i> .	Quinia.	Cinchonia.	Quinidia.
Calisaya, best large quills,	5.00	0.06	0.64
Calisaya, flat pieces, with epidermis,	2.5	0.06	0.05
100 parts <i>Pale Bark</i> .			
Crown bark, large and best quills,	2.07	0.35	1.43
100 parts <i>Red Bark</i> .			
Best quality,	2.65	trace	1.51
Average,	1.9	“	0.9
Orange bark,	1.15	“	0.62
Carthagea bark,	1.00	“	1.00

Properties and Uses: An account has already been given of the violent opposition through which this agent had to battle for a place in the *Materia Medica*. Since it has been received there, the profession has hurried to an opposite extreme of attributing to the agent almost miraculous powers—employing it in almost every form of disease, and prescribing it lavishly for conditions to which it has no fitness whatever. Such indiscriminate use and laudation are unwise. They have grown out of two errors: *First*, the practice of prescribing for disease by name, instead of for conditions; *second*, because the action of the article on *tissues* has not been studied with sufficient care. It is a delicate task to venture a **description** of the true character and appropriate uses of the agent, especially as I therein differ materially from some general opinions; but my views are based upon careful and persevering observation, and are given with the conviction that they are correct. The *bark alone*, and not its pharmaceutical products, is here spoken of.

This *bark* is a slow and very permanent stimulant of the astringing order to the nervous structures. Beginning its action upon the stomach, it slowly and steadily extends its impressions through, *first*, the sympathetic nerves; *second*, the sensory nerves of the frame at large; *third*, the spinal cord and brain. It will scarcely reach this third circle of influence, unless given in a considerable quantity, or continued for some time. Accompanying this stimulating action is its distinct astringent influence— more marked in the red than the Calisaya bark, and most marked in the pale varieties. This astringency is also manifested upon the nerve structures, causing a protracted state of tension in them. Through the nerves, the agent reaches nearly all the organs of the body, thereby leading to increased sensibility and excitement, and inducing a peculiar and marked state of tension everywhere. By thus indirectly affecting the system at large, it causes excitement of the stomach and throat, with dryness; constipation, and warmth throughout the bowels; increased frequency and hardness of the pulse after a time, and dry warmth upon the surface; a general diminution of the secretions; finally a throbbing headache, and perhaps giddiness, with a general feeling of increased firmness of the muscular and other structures, as if the patient were “strung up.” These results advance slowly, generally requiring from four to six hours; and may not entirely pass away under ten or twelve hours. When the stomach is sensitive, it occasions an oppressive sense of heat in this organ; and large doses may excite protracted nausea, or even vomiting, with considerable irritation. It seldom improves the appetite much; but will, in the conditions just named, impair the appetite. It will exasperate all febrile excitements, and induce gastric tenderness; and full or continued doses will give a ringing sound in the ears, with partial deafness.

From such a view of the action of cinchona, its uses and misuses become plain and definite. It is valuable in conditions of atony and laxity of the tissues; and where there are excesses of secretion consequent upon such atony. It is utterly inappropriate when the structures are tense, when there is febrile or inflammatory excitements, dryness of the tongue and fauces, nervous irritability, and a deficiency of secretion; and when harm may ensue from diminishing secretions and excretions. It is not, therefore, a distinct tonic; for it only occasionally improves digestion. It is an entire misnomer to call it a febrifuge; for it will increase febrile excitement, and do injury by causing a retention of secretions at the very time when the safety of the patient depends upon having the secretions eliminated freely. It is by being employed so freely in the latter conditions that this article and its alkaloids have worked such immense mischief, causing the retention of animal poisons, and driving the nervous centers with an unnatural vehemence which leads to their permanent exhaustion, and to an almost incurable roaring in the ears, and dizziness. For similar reasons, this agent serves but a poor purpose in chlorosis and anaemia—maladies that require freedom in the assimilative organs, while the cinchonas limit that freedom by inducing too much tension.

The chief use of this article is as an *antiperiodic*. Its principal reputation is in averting the “chill” of ague and other intermittent difficulties. Its place in such maladies has been misunderstood, and therefore its powers have been overstated. As the chill is dependent upon recession of blood from the surface to the portal organs, and in itself constitutes nature’s first step in the effort to restore the circulation to a balance, successful medication must fulfill three indications: *first*, remove the hepatic obstructions and accumulations which are the prime disturbers of the circulation; *second*, sustain the firmness of the nervous tissues, so as to avert that relaxation of these structures which really forms the chill; *third*, secure a full outward circulation, so that the

heart and arteries shall be sustained simultaneously with the nerves. Now the cinchonas fill only the second of these requirements; and, though that is important, it is wholly insufficient without the other two. Hence it is that the cinchonas and their alkaloids may “break the chill,” by virtue of their giving the nerves the tension lacked at that especial time; but such agents, and all agents that act like them, can never permanently *cure* an intermittent—as overwhelming experience testifies. Any successful attempt at cure demands a thorough purification by an emetic or cathartic some hours before the chill; the support of the arterial system coetaneous with that of the nervous system; and an intermediate treatment that will maintain the tone and activity of the digestive and hepatic apparatus. From this outline, it will be seen that the only proper use of bark in the management of intermittents, is to anticipate the nervous relaxation. Hence it is best to begin the use of the agent from three to six hours before the chill, using a suitable dose each hour and a half or two hours, and not giving any of it nearer to the chill than one hour. By this method, the slow advances of the nervous relaxation are anticipated; and yet the tension induced by the bark is mainly gone before the febrile action sets in—to which the influence of this agent would give greater intensity, and add much headache and nausea. The antiperiodic dose of the powdered bark is about ten to fifteen grains, if but one dose is given an hour before the paroxysm; or five to ten grains, if three hourly doses are used. It is decidedly preferable to add from a grain to a grain and a half of capsicum to each dose, to sustain the arterial action; but a suitable quantity of hydrastine should take the place of capsicum in gastric intermittents, or it may be made an addition with the capsicum whenever the patient is nervous. Some have advised the use of the agent during the fit, rather than fail of using it; but this rarely shortens the chill, will almost surely nauseate the stomach and turn the patient against any further use of the agent, and will aggravate the suffering during the febrile stage. This kind of practice does not accord with the nature of the agent or the wants of the system; neither is it a suitable agent to use during the intervals between the paroxysms, when hepatic tonics and arterial stimulants are needed.

In bilious and other remittents, this agent has procured but indifferent results; and the same may be said of its use when any visceral disease, or inflammatory disturbance, accompanies distinct intermittents. In these latter cases, the agent will almost invariably prove harmful. In any periodical recurrence of suffering, where the nerve tissues become relaxed and there is no tendency to excitement or engorgement of the brain, it is often of much service; as in such forms of periodical neuralgia, rheumatism, diarrhea, headache, etc. It is sometimes beneficial in chronic congestions, (improperly called inflammations—see my treatise on Surgery,) when the system is much enfeebled; but is then merely a secondary agent. In other atonic difficulties it is useful, as in mortification, passive hemorrhages, passive menorrhagia, chronic leucorrhœa and diarrhea with laxity of fiber, etc. It may also be employed in low cachectic conditions, during convalescence from small-pox and other prostrating maladies, in exhaustion from excessive suppuration or sweating, etc. But even in such difficulties, the agent is admissible only when the general tonicity and firmness of the fibers are greatly reduced, and should not be used while inflammatory excitement remains.

From what has been said, it will be seen that the term *febrifuge* is a misnomer, as applied to this agent. Yet under the use of this title, practitioners have been led to employ it in typhus, typhoid, scarlet, and continued fevers; and it is largely relied on as almost a specific in typhus affections. This is a decided error, and has unquestionably wrought great mischief. In typhoid, the nervous system does indeed need sustaining; but not with that peculiar forcing and tightening influence

that belongs to cinchona. And the manner in which this agent represses the secretions, and thereby causes an accumulation of morbid and semi-putrescent materials in the system, is a most unfortunate influence to exert in any such cases. Again, it is an unsuitable article wherever there is the least tendency to gastric or intestinal irritation; and that is a common and most undesirable condition in typhoid cases. The dry tongue of typhus also points out its unfitness for such cases. The idea of then sustaining appetite and digestion by its use, shows an utter ignorance of the action of the article; for it will do nothing of this kind, but will merely fasten the more firmly upon the system the very putrescence which is the cause of the failing appetite and digestion. Its use in typhoid difficulties will prolong the fever and the coma, increase the turgescence of the brain and the irritability of the bowels, and increase the liability to tedious convalescence and to deafness. I have seen such immense mischief wrought by the article in this connection, that it is a duty for me thus warmly to caution the profession against this wild misapplication of the agent. After *all* febrile excitement has passed by, and the emunctories have been opened fully, and morbid materials have been removed effectually, the bark may be used in moderate quantities to give tone to the nervous system—provided that the tongue is moist, the urine free, and all intestinal irritability has disappeared.

Employed outwardly, this agent is an astringent and moderately antiseptic article for weak and degenerating ulcers, aphthous sores, etc. It is not often used in such connections, but is excellent.

The dose as an antiperiodic has already been mentioned. As a nervine tonic under other circumstances, the dose of powder is from two to five grains, three times a day. Immense doses are often given, but are seldom borne well. The powder is rather bulky, and is often disagreeable to the stomach; on which accounts it is now usually given by infusion, though its alkaloid preparations have almost superseded it. But the bark itself has been known to succeed in intermittents after sulphate of quinia had entirely failed; and it unquestionably contains good virtues that can not be retained in any of the alkaloids. Usually, it is more easily taken, and probably more beneficial, when combined with some aromatic. Among the most suitable of these are ginger and the prickly ash, or serpentaria when not contraindicated. Orange peel, cascarilla, etc., are also much used with it. Sometimes the bark incites purging, especially if the bowels and liver have not been put into good condition before its use; in which case, after attending to the biliary organs, the bark should be combined with some hamamelis. In agues, a moderate portion of alkali is a good addition; while in lingering dysentery and diarrhea, with a periodical exacerbation, a small portion of lemon juice is often a grateful adjunct, and makes its alkaloid principles more soluble.

Pharmaceutical Preparations.

I. *Decoction.* Yellow cinchona, in coarse powder, one ounce; water, one pint. Boil gently in a covered vessel for ten minutes; strain through muslin, and add water upon the filter till a pint is obtained. When cold, it deposits a portion of its tannates, leaving the clear liquid less astringent than it otherwise would be. The Allopathists often add a minute portion of sulphuric or hydrochloric acid, which dissolves this precipitate and gives additional strength to the decoction; but the practice is objectionable, though if the tannate is desirable, a very little lemon juice or good vinegar will dissolve a considerable portion of it, and leave a neutral compound. Dose, one

to two fluid ounces. The decoction may be flavored by adding a small portion of sirups of ginger and cinnamon, or of orange peel. The red bark is not used in this preparation, unless especially desired for its greater astringent property.

II. *Tincture*. Yellow cinchona, four ounces. Crush into coarse powder and macerate in diluted alcohol for forty-eight hours, with occasional agitation. Transfer to a percolator, and treat with diluted alcohol till twelve ounces pass. Press the dregs strongly; filter the product, and add it to the first liquid; and add enough spirit to make one pint. Dose, one to two fluid drachms. The diluted spirits act well upon the bark, and solve most of its properties. It is a better representative of the drug than any watery preparation. It is seldom used except as an adjunct to decoction of cinchona, or the solution of sulphate of quinia. The U. S. officinal tincture directs eight ounces of the bark and the passage of two pints of diluted alcohol by percolation. The pale or red barks may be used, if desired; and a lighter preparation may be made by employing Sherry wine instead of alcohol.

III. *Compound Tincture*. "Red cinchona, powdered, two ounces; orange peel, bruised, one and a half ounces; Virginia snakeroot, three drachms; saffron and red saunders, each, a drachm. Macerate with diluted alcohol for forty-eight hours; transfer to a percolator, and treat with diluted alcohol till twenty fluid ounces pass." (*U. S. P.*) This is a pleasant and mild preparation, and probably one of the most agreeable forms for using this agent as a tonic and stimulant for convalescence.

IV. *Extract*. A hydro-alcoholic extract is prepared by first macerating a pound of the bark in alcohol, and treating it by percolation till four pints of alcohol have been used; then continuing percolation with water till six pints have passed; bringing the two liquids to the consistence of honey, then mixing them and completing the evaporation. It is sometimes used in pill, of which the full antiperiodic dose is from five to ten grains, with one grain of capsicum. The yellow bark alone is used.

V. *Fluid Extract-Concentrated Sirup*. Yellow cinchona, in coarse powder, one pound. Moisten with diluted alcohol, and pack it firmly in a percolator after ten hours. Exhaust by dilute alcohol, (using about four pints,) evaporate on a water-bath to two pints, add a pound and a half of sugar, and strain while hot.. Or the clear liquid may be poured off, the precipitate dissolved in eight ounces of alcohol, the sugar added to this, the first liquor then returned, and the whole carefully evaporated to two pints. By the latter process, it will be nearly free from turbidity. Each fluid drachm of this represents a half drachm of the strength of the bark, or about one grain of quinia. It is a pleasant and acceptable preparation.

Sulphate of Quinia-Quinine.

Preparation: It has already been stated (p. 350) that the alkaloid *quinia* is a prominent active property of the cinchonas. This principle is obtained in the form of a neutral salt with sulphuric acid (the common *quinine* of the shops) by the following process: Boil forty-eight troy ounces of the bark (coarsely powdered) in thirteen pints of distilled water, containing nine troy drachms of hydrochloric acid. Strain through muslin, and treat the bark in the same manner twice more, mixing the products. The three alkaloids, quinia, quinidia, and cinchonina, are contained in the

bark in combination with kinic and kivinic acids, in which form they are nearly insoluble; but they are separated from these acids, and brought into a soluble form, by the above hydrochloric acid. The liquids above obtained are made hot, and into them is slowly mixed five troy ounces of fresh powdered lime, stirring constantly. The lime neutralizes the hydrochloric acid, and the three alkaloids, being in themselves insoluble, fall to the bottom, while the hydrochlorate of lime remains in solution. The precipitated alkaloids carry down some excess of lime, and also an insoluble compound of lime and coloring matter. This conglomerated precipitate is then to be thoroughly washed with distilled water; and afterward dried and powdered. This powder is then to be digested with boiling alcohol; repeating this digestion with fresh portions of alcohol till the liquid ceases to be bitter. The alcohol dissolves out the three alkaloids. From the liquids thus obtained, the alcohol is distilled off till the mass becomes viscid. Upon this are now poured four pints of distilled water, which is then brought to the boiling point; and to this is carefully added enough sulphuric acid to combine with the alkaloids—the acid being a few drops only in excess of absolute neutrality. One and a half troy ounces of animal charcoal are now mixed with the liquid, the whole brought to the boiling point for two minutes, and strained while hot. The sulphate of quinia is almost insoluble in water, while the sulphates of quinidia and cinchonia are moderately soluble; hence the two latter salts remain in solution in this liquid, while the former salt slowly falls as a crystalline precipitate when the liquid cools. This precipitate is then carefully dried on blotting paper; when it yields the white, feathery crystals known as *quinine*.

The mother-water in the last step of the above process contains a little quinia; and this may be precipitated by some water of ammonia, and the precipitate made to yield the sulphate of quinia as before. From the liquid then remaining, the other alkaloids may be obtained.

Properties and Uses: The sulphate of quinia is a neutral salt; and no estimate is to be formed of it on account of the presence of sulphuric acid, as some ignorantly suppose. (§32.) It is inodorous, white; in long, flexible and silky crystals, which effloresce a little in the air. One grain is soluble in eighty grains of cold alcohol of sp. gr. eighty-five; or in seven hundred and forty grains of cold and thirty grains of boiling water. The saturated solution formed by boiling, again precipitates on cooling. Insoluble in ether. Partially soluble in glycerin. Its purity may be tested as follows: Put into a test-tube ten grains of quinine, sixty grains of ether, and ten drops of standard spirits of ammonia. Shake, and leave to rest. Two transparent and colorless layers form in the liquid; and pure quinine will leave no white or crystalline powder at the line of contact between these liquids: Quinine is decomposed by alkalies and their carbonates, and therefore should not be given in company with them. Astringent infusions also decompose it, forming insoluble tannates of quinia.

The action of quinine upon the system is nearly identical with that of the bark itself, though not astringent; but it stimulates the cerebral center much more decidedly, and is so much the more liable to cause dizziness and ringing in the head, and to leave behind a wretched sense of tightness and roaring—and also to cause deafness—if used before the emunctories have been put into good action. It may easily be pushed so as to exhaust the brain by over-stimulation, and leave a pernicious state of mental enervation, with a persistent, turgid condition of the encephalon and the meninges. Though most intensely bitter, it is often better received by the stomach than the bark; though large doses excite local irritation. It is a common suspicion that this article is poisonous, and I was at one time inclined to share in this belief; but careful

observation has satisfied me that such is not the case. The mischiefs following its use, occur when it is used in quantities to force the nervous system beyond all natural bounds; and when it is given before morbid materials have been eliminated—these materials being thus fastened into the system, where their corruption causes great injury. The extent to which this article is often given, and the lack of judgment as to the time for giving, are in some cases utterly indiscreet and discreditable. It is the most powerful of all antiperiodics; but is less aromatic, and also less of a general tonic, than the bark itself.

One grain of quinine represents from thirty to fifty grains of ordinary bark; hence doses of ten to twenty grains of this salt, as some physicians tell of giving, are manifestly monstrous. The law of limitation in the frame forbids the idea that any such doses are allowable. (§19.) The system does not need, and will not accept, any such driving. Two grains of these light crystals represent a bulk nearly as large as a grain of Western corn; and half that bulk, or one grain, is a fair ordinary dose. Half a grain is usually enough, if repeated at intervals of two or three hours for a suitable period before a chill. As with the bark, a grain of capsicum is almost a necessary adjuvant to every dose. But in severe congestive chills—where the breathing is hurried, the voice tremulous, the pulse creeping, and the nervous system greatly agitated—it would be nearly useless to give these small doses. Two grains, (often spoken of by physicians as ten grains,) with two grains of capsicum, may then be employed every four or three hours, *without interruption*; but in such cases it is even more imperative than in ordinary agues that the biliary apparatus be vigorously acted on by hepatics with stimulants, and that strong and diffusive stimulating drinks and enemas be pushed steadily.

Compound Tincture of Quinine: The London preparation directs to dissolve five drachms and a scruple of quinine in two pints of tincture of orange peel. A fluid drachm of this, containing a grain of quinine, is a full dose. My own method is, to dissolve sixty grains of the quinine in twelve ounces of the Compound Tincture of American Gentian, and add four ounces of Ginger Sirup. Each fluid drachm of this preparation contains about half a grain of the quinine; and is usually well received by the stomach.

Compound Pills of Quinine: Sulphate of quinia, thirty grains; capsicum and gum arabic, in powder, each ten grains; soften the quinine with a little vinegar; mix the powder intimately, form into a pill mass with honey, and divide into forty pills. Each pill contains three-fourths of a grain of quinine, and one-fourth of a grain of capsicum. I prefer this to the pill of the U. S. Pharmacopoeia—which uses two scruples of quinine and omits the capsicum. A quinine pill now common in the shops, is the simple quinine softened into a pill mass by the aromatic sulphuric acid. Each pill contains about four grains; but it is an objectionable preparation on account of the excess of sulphuric acid.

Quinine with Tannic Acid: Take fifteen grains each of quinine and tannin, and triturate (by gradual additions) with two ounces each of sirup of ginger and simple sirup. This is a somewhat empirical preparation; but I have found it peculiarly serviceable in the agues of children; and also in dysentery and diarrhea, when the acute symptoms have passed by, and the patient is feeble and has periodic exacerbations. It commends itself for the little folks by its being much more palatable than many other preparations containing quinine. Dose, for a child, half a fluid drachm every six hours in periodic diarrhea; and the same at proper intervals in ague.

Quinine enters into many other compounds; among the more fashionable of which are preparations with pyrophosphoric acid and iron, in sirup. These are pleasant, but are decidedly objectionable to the Physio-Medicalist. It seems probable that the solvent powers of glycerin may be used to advantage in exhibiting this article.

Sulphate of Cinchonia.

Preparation: Take the liquor left after the quinine has been obtained, and add solution of soda gradually, with stirring, till the liquor has become slightly alkaline. On standing, a precipitate falls; and this is to be collected on a muslin filter, thoroughly washed with water, and dried. Then wash it repeatedly with small portions of alcohol, to remove all traces of other alkaloids. Mix the residue with eight times its weight of water, heat it, and gradually add diluted sulphuric acid till the liquid presents a faint trace of acidity. Then boil it with a small portion of animal charcoal, strain, and set it aside to crystallize.

Properties and Uses: This is a salt in short, prismatic, white, shining crystals. It dissolves in fifty-four parts of cold, in much less boiling water, in seven parts of alcohol, and very sparingly in ether. Its action is very nearly that of quinine; but it seems to act more upon the nervous peripheries and less upon the brain, and hence is not so liable to over-string the nerve centers. It is cheaper than quinine; and some practitioners decidedly prefer its therapeutical action. Dose, as a tonic, one to two grains; as an antiperiodic, five to ten grains. It can be prepared in tincture, etc., the same as quinine.

Quinoidine. Chinoidine.

By evaporating the liquor left after obtaining the quinine, a dark-colored, extractive substance is obtained, which contains both quinia and cinchonia, and has been used under the name of *Extract of Quinia*. But if the above liquor is treated with an alkaline carbonate, there will fall down a brownish-yellow mass, of a somewhat resinous character, and not crystallizable. This is called *Chinoidine*; and seems to contain both quinidia and cinchonia, It has excellent antiperiodic properties. In the hands of several practitioners of my acquaintance, it has acted as if a diffusive and stimulating nervine; and seems to deserve further careful notice, Z. Hockett, M. D., of Anderson, Ind., gives me the following as his mode of using these articles: Chinoidine, in fine powder, twenty grains; oil of capsicum, five drops; podophyllin, two grains; sugar, one ounce. Triturate, and make into eight powders; of which give one every two hours, commencing five hours before the anticipated chill. After the chill use, Compound Tincture of Cinchona bark, six ounces; Fluid Extract Taraxacum, two ounces: half a fluid ounce three times a day, Every sixth day, repeat four of the powders. He says in no instance has this course failed him; and that it has succeeded completely in some cases that had been treated unsuccessfully on other plans for three years, He gives a small portion of lemon juice, or cider vinegar, after each powder, which aids the solubility of the Chinoidine.

CIRSIUM ARVENSE

CANADA THISTLE

Description: Natural Order, Compositae, It would be superfluous to give any detailed **description** of that pest to all good farmers—the Canada thistle. Suffice it to say that it contains qualities which really are deserving of medical investigation; and it will be a pleasant thing to know that the unfriendly herb may yet be put to some good uses.

Properties and Uses: The *roots* are slightly demulcent, with stimulating and mildly astringing properties. An ounce simmered in a pint of milk is a family remedy for low forms of diarrhea and dysentery, after the acute symptoms have subsided.. Two fluid ounces of such a decoction may be taken every two or three hours. An infusion is said to expedite labor very effectually, when the nervous system has become fatigued-also anticipating after-pains and flooding, I knew one gentleman to use a sirup of this root in long-standing coughs, where the expectoration was free and the lungs feeble; and he also used a wine tincture in mild leucorrhoea and prolapsus. The *leaves* made into a decoction and used somewhat freely, are said to increase the flow of milk, and gently to overcome hepatic obstructions; and the juice makes a rather soothing wash (or ointment) for irritable sores, tender eyes, and piles.

CISSAMPELOS PAREIRA

PAREIRA BRAVA, VELVET LEAF

Description: Natural Order, Menispermaceae. Woodville describes this as “A climbing shrub. Stem round, often covered with a close down, twining up and over great trees. Root woody, branching. Leaves large, roundish, peltate, sub-cordate, smooth above, covered beneath with silky pubescence. Flowers small, dioecious; male four-sepaled, four-petaled, corolla cupshaped, stamens monadelphous; female one-sepaled, one-petaled. Drupe roundish or somewhat reniform, scarlet, hispid, compressed.” It is a native of the West Indies and Spanish South America; the greater portion that is found in commerce is obtained from Brazil.

The root is the medicinal portion. It comes in pieces from a few inches to a couple of feet in length, usually cylindrical or oval, sometimes split lengthwise. The bark is grayish-brown, wrinkled lengthwise, with ring-like elevations; interior yellowish-gray, porous, woody, coarsely fibrous. It has no smell ; but its taste is at first sweetish and aromatic, and afterward intensely bitter. Water extracts its virtues.

Properties and Uses: The *root* acts mildly and somewhat slowly, first manifesting a relaxing influence with a little stimulation, and afterward exerting a gentle astringent-tonic influence. Its principal action is directed toward the kidneys and urinary passages; and it mildly increases the urinary flow, relieves lingering irritation of the bladder and urethra, and diminishes mucous discharges from the urino-genital membranes. It is employed in catarrh of the bladder, chronic gonorrhoea and leucorrhoea of a mild grade, and chronic congestion of the bladder and prostate. It was at one time in high repute for all forms of gravel; but it has no material connection with such maladies, except that it maintains a better action of the kidneys and relieves irritation— especially in cases of oxalic acid gravel. In most respects it is similar to the *uva ursi*, and some look upon it as superior to the latter article. It is not used in powder. An ounce to a pint of boiling water makes the ordinary infusion; dose, one to two fluid ounces every four hours.

Pharmaceutical Preparations: I. *Decoction.* Pareira, one ounce; water, a pint and a half. Boil fifteen minutes, and strain. Dose, a fluid ounce or more. II. *Fluid Extract.* Pareira, one pound. Macerate in water for twenty-four hours, treat by percolation till exhausted, evaporate to thirteen fluid ounces, and, when cold, add three ounces of dilute alcohol. Filter through paper. Dose, half to a whole fluid drachm. This is the method of the London and United States Pharmacopoeias; but in reality is not a fluid-extract at all, but simply a liquid extract diluted and preserved by liquor. The true fluid extract is to be prepared with diluted alcohol, as in the case of boneset. Dose, half a fluid drachm.

CITRULLUS VULGARIS
WATERMELON

Description: Natural Order, Cucurbitaceae. This is the common watermelon of our gardens, so much cultivated for its large, juicy, and saccharine fruit. It is unnecessary to give any detailed **description** of it. A variety is called the *citron*, and its thick rind is sometimes preserved; though this is not the imported and fragrant citron, which is found in shops as a confection and is a variety of the lime-tree—*Citrus limetta*.

Properties and Uses: The *seeds* of watermelon contain a large quantity of mucilage, and probably some relaxing properties also. These virtues exist mainly in the husk, and may be extracted by hot water without breaking the seed open. This mucilage is pleasant, and not ropy; and acts well upon the stomach, bowels, kidneys, bladder, and urethra in all acute inflammatory conditions of these organs. It is principally used in acute renal difficulties and scalding of urine; and not only protects the passages, but increases the flow of the watery portions of the urine. It may also be used as a drink in acute dysentery. Two drachms of the seeds may be infused for an hour in a quart of hot water, and the infusion drank freely, at intervals of two hours.

CITRUS AURANTIUM

ORANGE PEEL

Description: Natural Order, Aurantiaceae. The genus to which the orange belongs is composed of small evergreen trees, native to China and India, but now completely domesticated in Southern Europe, and both American continents in the warm latitudes. Its leaves are ovate and shining, its flowers very fragrant, and its fruit large, bright-colored, succulent, fragrant, and usually of a grateful acid taste. Besides the two varieties of sweet and bitter oranges, the genus embraces limes, shaddocks, citrons, lemons, bergamots, and limes. The *C. aurantium* is the *sweet orange*. Tree about fifteen feet high; trunk round and much branched, covered with a shining greenish-brown bark. Leaves ovate, entire, pointed, smooth, filled with very small pellucid oil-glands, fragrant when rubbed; on winged petioles an inch long. Flowers large, white, very fragrant, single or in clusters; calyx broad and flat, toothed; petals oblong, concave, glandular; filaments di- or triadelphous at base. The fruit is our well-known orange, which has internally the structure botanically classed as a berry, (as in the gooseberry;) the outer rind being fragrant and medicinal, and the inner rind fungous and insipid. The *C. bigaradia* is a variety of this, known as the *bitter* or *Seville orange*, and differs from the former only in its outer rind having a bitter taste added to its aroma.

Orange flowers yield, on distillation, a small quantity of the oil *neroli*—a remarkably fragrant oil much used in perfumery. A somewhat different aroma is obtained by distilling water from off the flowers at a moderate temperature—the water itself being deeply impregnated with the volatile perfume. Both these preparations are made in Italy and France from the flowers of the Seville orange. The rind (or peel) also contains an essential oil, which may be obtained by distillation or expression. It has a flavor similar to the oil of lemons, and is used in perfumery and confectionery. It soon acquires a turpentine smell. The outer peel of the orange is of a warming taste, that of the Seville variety being rather bitter. It yields its properties to water and alcohol. Heat greatly impairs its qualities.

Properties and Uses: This article is a mild and grateful aromatic stimulant and relaxant, of moderate tonic properties. It warms the stomach, improves the appetite, and aids the expulsion of wind. It is rarely used alone; but is employed almost exclusively as an adjunct to the very bitter tonics and strong cathartics, to relieve their unpleasant taste and counterbalance their too local action. It is an excellent article for this purpose, being effective, and at the same time grateful to the stomach. It is chiefly employed thus in compounds of gentian, cinchona, quassia, and horseradish; though a small quantity of it is a grateful addition to many milder tonics. In substance, from ten to twenty grains may be given three times a day. The orange-flower *water* is used as a flavoring material in cerates and other preparations.

Pharmaceutical Preparations: I. *Confection*. Grate one pound of the fresh outer peel of orange; and slowly add to and beat in with it three pounds of pulverized sugar. It is a pleasant vehicle in which to exhibit very bitter powders. II. An *Infusion* is prepared by macerating for fifteen minutes, in a covered vessel, with a pint of hot water, two drachms of lemon-peel, half an

ounce of orange-peel, and a drachm of cloves. One or two fluid ounces of this may be used three times a day in languid conditions of the stomach, or any suitable tonic, as liri dendron or columba, may be infused with it. III. *Sirup*. Add a pint of boiling water to two ounces of dried orange-peel, well bruised; macerate in a covered vessel for twelve hours; strain off with pressure, and dissolve in it two and a half pounds of white sugar. Two fluid ounces of proof spirit may be added. Or a sirup may be prepared by adding a fluid ounce of the tincture to a pint of simple sirup. It is used only as an adjuvant, or a vehicle for administering other agents. IV. *Tincture*. Dried orange-peel, three and a half ounces; diluted alcohol, two pints. Macerate for seven days, express and filter. It is used as an adjuvant with cinchona, gentiana, and other tonic preparations.

CITRUS LIMONUM

LEMON

Description: Natural Order, Aurantiaceae. The lemon is botanically in the same genus with the orange; and is so closely allied to it in every thing but the shape, color, and flavor of its fruit, that many botanists consider this plant to be merely a variety of the other. The **description** of citrus aurantium will therefore answer for the lemon.

Properties and Uses: The thin outer rind of lemon-*peel* is the part mostly used in medicine. It abounds in pellucid dots, which contain the oil of lemon. The peel is sliced or grated off, so as not to include the spongy and inert layer of rind below; and this forms a warming and bitter aromatic, quite similar to the orange-peel in its general character, and usable for the same purposes. Its chief employment is as an adjuvant and flavoring to other tonics of a more intense local action. Its most usual preparation is that of a tincture, in which two and a half ounces of the peel are treated with diluted alcohol by percolation and pressure so as to obtain a pint of tincture.

The *oil* is obtained from the fresh peel, either by distillation or pressure; and is mostly imported from Spain and Portugal. It is of a pale yellow color, and a very agreeable odor. It is seldom used for any other purpose than a perfume.

The *juice* of lemon pulp is a sharp but agreeable acid, and one of the most effective and useful of all the vegetable acids. Like other articles of the class, it is used in all scorbutic tendencies; and in the preparation of refrigerant drinks in all febrile cases that admit the use of an acid. Such a drink (lemonade) used quite warm and in liberal quantities, disposes to diaphoresis. A warm infusion of flaxseed made moderately acid with lemon-juice, and used on retiring, is a popular and often effective remedy for securing a free sweat in recent colds. This juice is sometimes used in the same way in bilious-remittent and rheumatic fever; and it has also lately become somewhat popular in acute gouty forms of rheumatism—the juice, mixed with sugar and a very little water, being given in doses ranging from two to four fluid drachms three times a day. It is an easy matter to use more lemon than the system should have, at any time. *Effervescing draughts* may be made with this article instead of with citric acid—three and a half fluid drachms of the juice neutralizing twenty grains of the bicarbonate of potassa. Such draughts often have an agreeable effect upon nauseous stomachs, and sometimes afford relief in the sympathetic vomiting of pregnancy; also allay nervous febrile excitement in some cases, and afterward act on the kidneys. Yet they really remove no source of disease, and it is my impression that the system is not benefitted by their employment. Citric acid, manufactured from lemon juice, is often substituted for this article; but it is not the same as this juice, and is not a commendable agent. (See *Citric Acid*.)

Lemon Sirup: Two ounces of fresh lemon-peel, grated; one pint of strained lemon-juice; two pounds and a quarter of refined sugar. Dissolve the sugar with the other ingredients in a covered vessel, on a water-bath or by a steam heat; then strain. This is an excellent refrigerant and stomachic preparation, and may be added in suitable quantities to water and barley-water as a drink. The sirup of the U. S. Pharmacopoeia dissolves forty-eight troy ounces of sugar in a pint

of lemon-juice, omitting the peel. The common lemon sirup of commerce is made of citric acid, and is not a good article for the stomach.

COCCULUS PALMATUS

CALUMBA

Synonym: *Menispermum calumba* of Roxbury; *Jateorhiza calumba* of Miers.

Description: This is a climbing annual plant, native to Mozambique and eastern Africa, and cultivated in parts of India. The stems are herbaceous and twining; root perennial, fasciculated, fleshy, one to three inches in diameter, brownish without, deep yellow within. Leaves alternate, large, nearly round in outline but rather evenly seven-lobed, margins wavy, on long hairy petioles. Flowers on solitary axillary racemes; small, green, dioecious. Calyx six-sepaled; corolla six-petaled; stamens six; pistils three. Fruit about the size of a hazel-nut, densely covered with long spreading hairs, either drupaceous or a berry.

The fusiform roots of this plant appear in market in thin slices transversely. "The slices are flat, circular or oval, mostly two inches in diameter and from two to four lines thick, grayish- yellow, bitter." (*Pereira.*) The root is often worm-eaten. Its powder has a greenish-yellow tint, a faint smell, and an aromatic bitter taste. Water, alcohol, diluted alcohol, and ether extract its virtues, which most abound in the cortical. It contains starch; a colorless neutral principle named *calumbin*; and an alkaloid *berberia* or *berberin*.

Properties and Uses: The *root* is a bitter of the more relaxing order of tonics, stimulating only to a very moderate degree, and having a slightly demulcent character. It resembles the American article of a similar common name, (*Frasera Carolinensis*), but is much pleasanter and not at all astringent. Its chief action is upon the stomach; and it is admirably suited to feeble conditions of this organ, with want of appetite, indigestion, flatulence, and vomiting. It never excites nausea, but on the contrary is an excellent agent to allay all forms of sympathetic vomiting, as in pregnancy; and few tonics are so well received by weak and irritable stomachs. During convalescence from fever, diarrhea, and dysentery, it is one of the most useful tonics; and it exerts a very mild influence on the hepatic apparatus, which well fits it for numerous cases of biliousness. It imparts a desirable tonic influence to the bowels. Some class it among the very powerful tonics, like gentian; but this is a mistake, for it is altogether a milder article, and suited for quite other conditions than those to which the gentian is applied. It is generally compounded with other tonics and with aromatics; and deserves more attention than it receives in America. Dose of the powder, ten to twenty grains three times a day.

Pharmaceutical Preparations: I. *Infusion.* Calumba in coarse powder, six drachms; boiling water, one pint. Macerate for an hour. Dose, eight to twelve fluid drachms three times a day. By adding a few grains of dill seed or fennel, the flavor is much improved. II. *Tincture.* This is prepared by macerating two and a half ounces of calumba in a sufficient quantity of proof spirit; transferring to a percolator, and adding proof spirit till one pint in all has been used; then pressing the drugs strongly, and adding enough spirit to the liquid to make the product one pint. Dose, half a fluid drachm to two fluid drachms. This is often added to other tonic preparations, or to such nervine aromatic infusions as may be in use for excessive vomiting. This agent is an ingredient in the compound wine of comfrey.

COCHLEARIA ARMORACIA HORSERADISH

Description: Natural Order, Cruciferae. This is the well-known horseradish, cultivated in our gardens for the value of its root as a table condiment. The root is fleshy, long, tapering, white, perennial, and extremely pungent. Numerous radical leaves-nearly a foot long, wavy, and oblong-rise directly from the root; and in the center of these rise one to several stems two or three feet high, bearing a number of small, sessile, lanceolate, toothed leaves, and corymbose racemes of small, white flowers, with the cruciform arrangement of the petals. June.

The root of this plant, when scraped, gives off an extremely pungent odor; and its taste is hot and acrid, especially if gathered in autumn. It contains a very small quantity (one part in ten thousand) of a pale-yellow and very volatile oil, which may be obtained by distillation with water. This oil is extremely acrid, and will cause blistering; but it is readily dissipated by heat, and the medical properties of the dried root are not dependent on it. This oil is identical with the *volatile* (not the *fixed*) oil of mustard; and its development seems to depend upon a chemical reaction that takes place in the presence of water when at a nearly boiling temperature. Vinegar acts well on the dried roots; and water and alcohol extract most of their virtues.

Properties and Uses: The *fresh roots* are excitant to a high degree, and will provoke inflammation and blistering. The *dried roots* are not possessed of these powers, but form a pleasant, efficient, and somewhat sharp glandular stimulant. Their chief powers are expended on the kidneys and skin, and they gradually raise the general capillary and then the arterial circulation; but a considerable portion of their influence is expended upon the stomach, and some upon the gall-ducts and the secretions generally. The roots arouse a gentle warmth and fair gastric secretion in the stomach; and are good in decidedly atonic, viscid, and semi-paralyzed conditions of that organ. It steadily increases the flow of urine, and the amount of insensible perspiration; procures warmth of the surface, and greater fullness and firmness of the pulse, and favors an increase of alvine action. It is useful only in very sluggish conditions; and should not be given in any case of local or arterial excitement, nor to sensitive patients. The manner in which it arouses to the general casting out of excretions, makes it peculiarly useful in all half-paralyzed and viscid conditions, where accumulations of tenacious mucus clog the secretions. Such conditions are common in dropsy; and are also met in some cases of jaundice and rheumatism. The article is most suitable in chronic cases; though a warm infusion used very freely, the patient being well covered, will usually incite a remarkably copious diaphoresis, and may be given in dropsies. Half a drachm to a drachm of the grated root may be given three times a day.

Pharmaceutical Preparations: I. *Compound Spirit of Horseradish.* Sliced horseradish, twenty ounces; bitter orange peel, twenty ounces; bruised nutmeg, half an ounce; proof spirit, one gallon; water, two pints. Mix, and distill off a gallon with a moderate heat. This is a preparation of the U. S. Pharmacopoeia, mostly used as a stimulating addendum to various diuretic preparations. Dose, one to two fluid drachms. II. *Compound Tincture.* Horseradish, (dried,) mustard seeds, juniper berries, barberry bark, orange peel, each two ounces; cider, slightly fermented, three pints; diluted alcohol, one pint. Macerate one week, press, and filter. This is a

preparation of my father-in-law's, the late Dr. J. Masseker, of New York; and by him was used largely and successfully in dropsies with biliousness. Dose, half to a whole fluid ounce three times a day.

COLLINSONIA CANADENSIS

HARDHACK, HEAL-ALL, HORSE WEED, OX-BALM, STONE ROOT

Description: Natural Order, Labiatae. Genus COLLINSONIA: Strong scented herbs; with large, ovate and petiolate leaves; and yellow flowers in a terminal and leafless paniced raceme. Calyx ten-striate, upper lip truncate and three-toothed, lower lip two-cleft; corolla exserted, ringent; stamens two, long exserted. C. CANADENSIS: Indigenous plants, growing in rich and moist woods and fields. Stem four-sided, three to four feet high, often very smooth, but sometimes slightly pubescent. Leaves few, thin, three to four inches .long, two to three inches broad, acuminate, coarsely serrate, abrupt or subcordate at base. Flowers in large, loose, compound racemes; corolla half an inch or more in length, yellow tinged with green, the lower lip elongated and fringed, exhaling a lemon odor. July to September.

The root of this herb is medicinal. It is perennial, knotty, rough, very hard, dusky brown, throwing out many slender fibers, and of a somewhat unpleasant balsamic odor when fresh. From the confusion that arises from similar common names, it is necessary to distinguish this particular hardhack from the shrub *Spirea tomentosa*; and also to note that *Ptelia trifoliata* and *Scrophularia marylandica* are frequently called heal-all.

Properties and Uses: The *roots* yield their properties to hot water and to diluted alcohol. They are mildly stimulant, with very moderate astringent qualities, and somewhat diffusive. They act upon the nerves, skin, mucous membranes, and kidneys; and leave behind a gently tonic impression. They are most useful in nervous headache, colic pains, and nervous forms of dysmenorrhea; and have been used to good advantage in light cases of leucorrhea and persistent laxity of the bowels. Their soothing and tonic impression is very good in nearly every form of moderate female nervousness; and the agent is an excellent addition to such more pure nervine tonics as lirioidendron and leonurus. It is mostly in cases like the above that their diuretic action is noticed, as in other cases they act but lightly on the kidneys, though a good agent in catarrh of the bladder and sub-acute gonorrhoea. The *leaves* are reputed excellent as a fomentation in painful swellings, sprains, bruises, etc. The fresh roots are extremely nauseating. Dose of the powdered root, twenty grains three times a day. It is nearly always used as an *infusion*—an ounce of the crushed roots infused for an hour in a quart of boiling water, and from one to two fluid ounces given every four or three hours. An excellent *fluid extract* is prepared from it after the manner for eupatorium perfoliatum. As one of the light yet efficient nervine diffusives, this agent deserves much attention.

COMPTONIA ASPLENIFOLIA

SWEETFERN, SPLEENWORT, SWEET-BUSH, RICKET PLANT

Description: Natural Order, Myricaceae. This little shrub, about two feet high, is rather common in light soils and dry situations, in all the middle and western portions of America. The main stem is covered with a rusty brown bark, the branches are reddish, and the young shoots downy white. Leaves numerous, three to four inches long by half an inch wide, on short petioles, deeply divided into a number of rounding lobes. Flowers monoecious, in aments; staminate aments long, cylindrical, terminal and lateral, each flower subtended by a single reniform-cordate bract, three-staminate; pistillate or fertile flowers in dense, round burrs or heads, situated below the barren aments, with six calyx-scales, two styles, and producing an ovoid nut with a single cell. The whole plant has a sweet spicy odor, especially the leaves.

Properties and Uses: The *leaves* and *shoots* are fragrant, and mildly tonic—rather of the order of aromatic stimulants, and leaving a slight astringent impression upon the mucous membranes. They very gently promote digestion, especially in convalescence from acute forms of disease; and appear to exert an excellent influence upon the mesenteries and general assimilative apparatus, on which account they are good in scrofulous, rachitic, and mesenteric debility. The article is mild, but excellent in recent cases of leucorrhœa, especially if added to such agents as convallaria and leonurus; and is a popular family remedy in sub-acute diarrhea and laxity of the bowels. The people often attach much value to a pillow of the leaves for rachitic children. It has a good influence in feeble lungs, especially in old and “wet” coughs, and in spitting of blood. I have used it with some benefit in catarrh of the bladder; and am under the impression that it will be found a good nervine tonic in chronic cystic difficulties. It is principally exhibited by decoction—two ounces of the leaves digested in a quart of water for an hour, in a closed vessel; pressed, and two ounces of the fluid given three times a day. Boiling in an open vessel injures its soothing properties, and obtains more of its astringency.

CONVALLARIA MULTIFLORA
GIANT SOLOMON'S SEAL

Synonym: POLYGONUM MULTIFLORUM

Description: Natural Order, Liliaceae. This is a true Polygonatum, and should never have been classed under the genus Convallaria; but professional habit has now so fastened it in the latter group, that it seems preferable to retain this name for the present. The following **description** is from Professor A. Wood, under Polygonatum: "Generic characters: Perennial-rooted plants; rhizome horizontal, thick; stem erect or curving; flowers axillary, pendant, greenish-white. Perianth tubular; limb short, six-lobed, erect; stamens six, included; ovary free, three-celled; style slender, included; berry globular, three to six seeded. P. MULTIFLORUM: Stem recurved, smooth; leaves arranged in two rows, two-and-a-half to six inches long, one-third as broad, more or less clasping at the base, smooth and glossy above, paler and generally pubescent beneath; peduncles round, branching, scarcely a fifth as long as the leaves, axillary, one to four-flowered; berries dark blue or blackish when ripe." In some varieties of this species, the stem is from five to seven feet high, and much recurved at the top.

Smilacina racemosa is another of the lily family that often passes under the name of Solomon's Seal; and the *roots* of the two plants are probably of the same qualities, and usually appear mixed in commerce. The following characters of the *Smilacina* will at once distinguish it from the above plant: Rhizome creeping, zigzag, slender; stem with *a thick cluster of white flowers at the summit*; flowers not tinted with green, very numerous, and forming an oval and compact panicle of racemes; perianth spreading; stamens longer than the perianth; leaves nearly sessile but not clasping, minutely downy, numerous; stem eighteen inches to two feet high. The roots of this genus are sweetish; and the red, dotted, large (pea-sized) berries are fragrant and somewhat spicy.

The roots of these plants are sweetish, of a mucilaginous toughness, leaving behind a mildly bitter taste. They yield their qualities to water and diluted alcohol; are much impaired by heat; and undergo deterioration by long keeping. They retain a peculiar moist, leathery character that does not admit of their being powdered; but by great care they may be partially kiln-dried and then reduced to a coarse mass. In general, however, the article thus treated is injured; and the coarsely sliced roots, well bruised in an iron mortar, will be found a more satisfying remedy.

Properties and Uses: This *root* is moderately demulcent, and contains mild tonic properties about equally relaxant and stimulant. Its mild taste has created an opinion that it is nearly inert as a remedy; but in its own place it will be found among the most desirable articles of the *Materia Medica*. Its influence is expended slowly, and is chiefly directed to the mucous membranes; and it is soothing to these structures, diminishing excessive mucous discharges, and exerting upon them a gentle tonic impression. These qualities fit it for use in all sub-acute and chronic irritation and weakness of those tissues, where the system is not profoundly depressed, but the local difficulty is

connected with general feebleness and irritability. The local and general nervous tissues seem also to feel this soothing and strengthening action. The mucous structures of the vagina and uterus are particularly influenced by it; and it is one of the most desirable agents in all ordinary forms of leucorrhœa, simple prolapsus, and female weakness in general. Its combination with suitable tonics will secure from the latter a more distinct influence upon the uterine organs, (§140, 267;) and I prize it very highly in all such connections. Though not of itself sufficiently stimulating to meet very depressed cases, its association with such more positive agents as hydrastis and viburnum will obtain happy effects. It exerts a good impression on the kidneys, bladder, and prostate gland; relieving them of lingering congestions and catarrhal discharges. Though little used with reference to its action upon the lungs, it will be found a superior article in coughs during convalescence, and in chronic coughs with local feebleness, especially when the expectoration is rather free and the respiratory passages sensitive. In these cases it may be combined with such agents as prunus, liriiodendron, and lycopus. It is a good soothing agent in irritable piles, where a decoction may be used freely; and may be used to much advantage in chronic inflammation and pain in the bowels, and in chronic dysentery. Very large doses will gently move the bowels. The fresh roots, bruised and boiled in milk, make a fair external application to bruises, light burns, lingering sores of an erysipelatous character, and other affections of the skin where there is a stinging sensation.

The *berries* of the smilacina, as above, may be tinctured in twenty-five per cent. alcohol; when they make an aromatic tonic very grateful to the stomach, and one that has repeatedly proven of decided value in the treatment of leucorrhœa.

Pharmaceutical Preparations: I. *Decoction.* Bruised roots of Solomon's Seal, three ounces; boiling water, twenty ounces. Macerate in a covered vessel, with a gentle heat, for an hour; then add caulophyllum and grated orange-peel, of each a drachm; in ten minutes strain and express, and add two ounces of Sherry wine. This is an elegant tonic preparation for monthly leucorrhœa; especially when menstruation is somewhat painful. The wine may be omitted. Dose, two fluid ounces three or four times a day. The convallaria can not well be made into a sirup, as it is too easily injured by heat; but it enters into several elegant preparations on wine, of which the most valuable are the Female Tonic mentioned under liriiodendron, and the Compound Wine of Comfrey.

CONVOLVULUS SCAMMONIA SCAMMONY

Description: Natural Order, Convolvulaceae. A twining plant, growing wild in Western Asia and in portions of Greece and Turkey. Stems fifteen to twenty feet long, numerous and smooth; leaves alternate, arrow-shaped, smooth, and on long petioles; flowers an inch or more in length, funnel-shaped, pale yellow, axillary; sepals five, obovate; bracts awl shaped; stamens and styles shorter than the corolla. The roots are perennial, two or more inches in diameter at the top, tapering, three or four feet long, brownish without, whitish within, with an acrid milky juice, succulent. This root abounds in a resinous material, which may be obtained from either the fresh or the dried plant.

Scammony is valued for its *resin*, which is the medicinal portion always alluded to in Pharmacy, and which passes under the various names of *Scammony resin*, *Virgin scammony*, and *Lachryma scammony*. Mr. Maltass, in the London Journal of Pharmacy, gives a detailed account of the preparation of this resin; from which the following particulars are condensed:

While the plant is in full flower, a slanting incision is made in the root about an inch below the crown; and a shell placed below this catches the milky sap, which flows freely during the cool hours of the day. Plants about four years old, and those growing on dry and poor soils, are best; and one root yields from sixty to one hundred grains of resin. The juice is gathered from the shells into a copper vessel, thoroughly mixed, and afterward dried completely on skins, in a shade. It comes to market in small, broken masses; of a nearly black color, resinous, of a cheesy smell, and readily forming a milky liquid when moistened with either water or saliva. Its powder is ashy-brown.

Properties and Uses: The resin above described is the part used. It is an active stimulant, operating on the bowels, and producing prompt watery stools. It will usually cause an evacuation in two hours, and often proves griping. It is less irritating than gamboge, and less bitter. and nauseous than jalap. It is wholly inadmissible in dry, irritable, and inflamed conditions of the bowels. Large quantities will prove very drastic. It is useful only when a prompt action of the bowels is important, and in very sluggish conditions. It may be added in small quantities to more relaxing and active agents, as leptandra. Its small dose is its chief recommendation, as its action is too vigorous to make it a suitable agent for common use. Dose for an adult, ten to fifteen grains. It is usually best to mix the powder well with fine starch or elm.

Pharmaceutical Preparations: I. *Confection*. Powdered scammony, three ounces; powdered ginger, one ounce and a half. Rub these into a uniform mass with three ounces of simple sirup and an ounce and a half of clarified honey; and then add one fluid drachm oil of caraway, and half a fluid drachm oil of cloves. It forms a warming and prompt cathartic. Dose, thirty to fifty grains; for a child, three to ten grains. II. *Emulsion*. Four grains of powdered scammony triturated slowly with two ounces of milk, form a nearly tasteless purgative dose for a

child. III. *Compound Powder*. Four ounces of scammony, one ounce of ginger, and one drachm of caulophyllin, make the least griping of all the scammony compounds. Dose, ten to fifteen grains; for a child, as a cathartic in worms, five to eight grains.

COPAIFERA OFFICINALIS

COPAIBA, COPAIVA, BALSAM COPAIVA

Description: Natural Order, Leguminosae. This is an elegant and lofty tree, native to Martinique, Trinidad, and other West India islands; and also to Venezuela, Carthagen, and other South American provinces, in forests with the myrsine. Woodville gives the following botanical **description:** “Leaves alternate, large, and pinnate, composed of from two to five pairs of ovate, entire, obtusely acuminate leaflets, two or three inches in length, rather narrower on one side than the other, smooth, pellucidly punctate, somewhat shining, and on short footstalks. Flowers whitish, in terminal branched spikes. The fruit is an oval, two-valved pod, containing a single seed.”

The copaiva tree yields an oleo-resinous juice, of a peculiar balsamic character, for which it is valued in pharmacy. This juice flows from deep incisions which are made into the trunks of the trees; and is a very thin, colorless fluid. In a short time it becomes a little thicker, and acquires a faint amber tint, but remains transparent. As it appears in market, it is of a pale yellow color; thicker than olive oil but not so thick as castor oil; of a peculiar and penetrating balsamic odor, and a nauseous and somewhat hot taste. Water does not affect it; but it is soluble in alcohol, the fixed and volatile oils, and ether. Caustic alkalies, as of potassa and soda, and also the alkaline carbonates, when in very strong solution, will dissolve it perfectly; but weak solutions become milky. It dissolves magnesia; and forms rosy compounds when mixed with lime, soda, and other alkalies and alkaline earths. When triturated with one-sixteenth its weight of magnesia, or of freshly-slacked lime, it gradually solidifies—the magnesia uniting with its resin and absorbing its essential oil.

By being exposed to the air, this balsam loses a portion of the volatile oil it contains, and on which its remedial virtues depend; and finally becomes too thick to be fluid. If spread in a thin layer, it will ultimately become dry and brittle—the dissipated essential oil leaving behind a yellowish resin that has little smell, and no remedial power.

Adulterations: Copaiva from different parts, probably gathered at different seasons and under varying circumstances, may be a deeper yellow than that above described. But the article is subjected to various adulterations. Castor oil is much used for this purpose; and may be detected by boiling a drachm of the suspected article in a pint of water till all the fluid is evaporated, when the residue will be the firm resin of Copaiva if the article is pure, but will be soft if any castor oil is present. Turpentine may be detected by its smell on heating the specimen. An article known as *Gurjun Balsam*, or *Wood Oil*, and obtained from the *Dipterocarpus turbinatus* of Burmah, has been put upon the market as copaiva, to which it bears a strong resemblance, both in physical and remedial properties. Mr. Lowe, in the Parisian Journal of Pharmacy, says it may readily be distinguished from copaiva by being put into a sealed glass tube, and then heated to about 230° Fahrenheit. Copaiva remains fluid, or increases its fluidity at this temperature; but wood oil will become slightly turbid, and then coagulate so as to adhere tenaciously to the tube. Benzole forms a turbid mixture with equal quantities of wood oil, but a transparent solution with copaiva.

Properties and Uses: This balsam is a peculiar stimulant, with a portion of relaxing properties, acting gently but rather persistently. Its principal action is upon the mucous membranes and the kidneys. It slowly excites all the mucous passages, from the stomach through the entire bowels, and in the bladder, vagina, uterus, and lungs. It creates a sensation of warmth and nausea in the stomach; usually increases the discharges from the bowels, and may induce rather active purgation; and in large doses will accelerate the pulse, excite vomiting and griping stools, so stimulate the water passages as to lead to painful urination, and ultimately cause an itching eruption upon the surface. Sensitive stomachs, and especially persons of a nervous temperament, are much and persistently nauseated by small quantities. It is absorbed, and may be detected in the urine and breath. It is principally used for chronic congestion and weakness of mucous passages, as gonorrhoea, gleet, leucorrhoea, bronchitis, etc. Its use in gonorrhoea is the most popular one; and it is prescribed in all stages of the malady, during acute inflammation and lingering congestion, under the mistaken idea of its being a specific (§158) against the gonorrhoeal virus. It is not a specific to this malady, and is by no means indispensable to its cure; yet it is a good agent for the later stages, especially if associated with liberal quantities of demulcents; but is entirely misapplied when used in the earlier stages and while inflammation and scalding are present. I have used a diluted emulsion of it, (two parts of copaiva, four of gum, and twenty of water,) to advantage as an injection to the penis or vagina in gleet and the later stages of gonorrhoea, and in low cases of fluor albus. Its nauseating character is an objection to its inward use in leucorrhoea; yet it is sometimes of advantage in chronic cases of this malady. It should never be given during feverishness, thirst, or tenderness of the stomach. Though a good agent in a limited field, more value has been attached to it than it fairly deserves. Dose, ten to thirty drops, three times a day. It is often directed to be used in larger and more frequent doses; but my experience convinces me that larger quantities are not well borne by the stomach, and that the influence of a dose lasts fully four hours. It is not given alone, but always in some form to disguise its taste. Nitric ether (sweet spirits of niter) is much used for this purpose, but this is too poisonous in its nature to be a proper remedy. Essences and aromatic waters are most suitable adjuvants; or the yolk of an egg with mint or cinnamon water may be used to form it into an emulsion. Velpeau preferred to give it as an enema to the bowel, forming a drachm of it into four ounces of emulsion with the yolk of egg and water.

Pharmaceutical Preparations: I. *Compound Emulsion.* Copaiva balsam, white sugar, and gum arabic, each, half an ounce. Form these carefully into an emulsion in the usual way, with three and a half ounces of water; and then add six drachms fluid extract uva ursi, and two drachms compound spirits of lavender. I have used this preparation for ten years in the treatment of gonorrhoea, and much prefer it to the emulsion of the Pharmacopoeia—which contains an ounce of the balsam in four ounces of the mixture, and no uva ursi. Dose, a large teaspoonful three times a day. In very degenerate cases of gleet, I have found good effects from incorporating half a drachm of balsam fir, or of liquid styrax, with the copaiva in forming this emulsion. II. *Pills.* Balsam copaiva, two ounces; freshly prepared and calcined magnesia, a drachm; oil of peppermint, well rubbed with the magnesia, five drops. Mix the ingredients thoroughly, and allow them to stand till the copaiva solidifies. In old and tenacious samples of the balsam, this will take place in about eight hours; but in fresh and very fluid specimens, a much longer time will be needed, or another scruple of the magnesia may be added to absorb the surplus essential oil, and thus hasten solidification. Before it becomes too firm, the mass may be formed into two hundred pills, of which each one will contain about five grains of balsam. This is the formula of

the U. S. Pharmacopoeia, except that I have found an advantage (in taste) by adding the oil of mint. Two or four of these pills may be taken twice a day, and are a convenient form for exhibiting this agent. III. *Capsules*. Gelatin capsules are prepared in the usual way, each containing from five to ten drops of the balsam.

COPTIS TRIFOLIA

GOLD THREAD

Description: Natural Order, Ranunculaceae. Genus COPTIS: Calyx wanting; petals five, sometimes six, caducous; capsules five to eight, diverging from a center as a star. C. TRIFOLIA: A pretty little creeping evergreen, very slender; with a golden-yellow, creeping root about the size of a coarse thread. Leaves on long and slender footstalks, of three sessile leaflets, lobed and minutely crenate at the edges. Flower stems long, slender, with a single white flower subtended by a minute bract; petals oblong; nectaries hollow, and yellow at the top; capsules on minute pedicels, beaked, with many small black seeds. It is found in dark woods throughout Northern America and Asia, and other cool and shaded localities. The roots, intermixed with the leaves, come to the market in compact masses. Diluted alcohol extracts its virtues most fully; but water acts well on the plant. It is a very pure and agreeable bitter.

Properties and Uses: This plant is one of rather fine and prompt bitter tonics. It is a mistake to class it with quassia and gentian, for it is neither so intense nor permanent as these; but rather is of the grade of boneset and leonurus, though giving out its properties more speedily than these. There is a common impression that it is a distinct astringent, and this has probably kept many from using it; but it is not astringent at all. It is one of the most grateful of all appetizers in convalescence from febrile attacks, and in all feeble conditions with weakness of the stomach. It is a popular New England remedy for aphthous sores in the mouth. An infusion is made of half an ounce of the plant to a pint of hot water, of which from two to four drachms may be given three or four times a day. An ounce to a pint of thirty per cent. alcohol makes a good tincture, of which a fluid drachm is a dose.

CORIANDRUM SATIVUM

CORIANDER SEEDS

Description: Natural Order, Umbelliferae. This plant is a native of Southern Europe, but now grows wild in most parts of that country; and is extensively and easily cultivated in many sections of America. It is an erect, smooth-stemmed annual, about two feet high, openly branching. Leaves compound; upper ones ternate, with linear leaflets; lower ones pinnate, with the pinnae irregularly cut into deep serratures. Flowers numerous, in compound terminal umbels, white or pinkish. Fruit a grayish, round, finely aromatic silicle, one-sixteenth of an inch or more in diameter, easily splitting in two. They contain a small portion of volatile oil, which is mildly penetrating. Alcohol and diluted alcohol act on them freely; but water extracts only a portion of their virtues.

Properties and Uses: These *seeds* are a mild, but very pleasant aromatic, of the more relaxing class. The ancients, and the present Germans, have used them largely in cookery. They are moderately carminative, and somewhat useful in preventing the griping of cathartics; but are chiefly employed to cover the taste of bitter articles, for which they are really excellent, and are less heating than some agents used for this purpose. They enter into compounds with angelica, senna, gentian, jalap, quassia, lavender, etc.

CORNUS CIRCINATA

ROUND-LEAVED CORNELL OR DOGWOOD

Description: Natural Order, Cornaceae. Genus CORNUS: Shrubs or trees, with mostly opposite leaves, small flowers, and sometimes a very large involucre. Calyx minutely four-toothed; petals four, oblong, spreading; stamens four, with slender filaments; fruit a small drupe, with a two-celled and two-seeded stone. *C. CIRCINATA*: Shrubs six to seven feet high, erect, grayish; branches opposite, slender, greenish, with numerous warty dots. Leaves large, nearly round, abruptly pointed, four to five inches broad, downy beneath. Flowers in open, flat, and spreading cymes, small, white, without any involucre. Fruit small, spherical, soft, light blue, with the style clinging to the summit. June.

This shrub is common on the shaded hill-sides and water courses of the Northern States and Canada. The dried bark is very slightly aromatic, and quite bitter; and imparts its virtues to water and alcohol.

Properties and Uses: The *bark* is a tonic of the rather astringent class; with mild stimulating and somewhat alterant properties. It is less astringent than the *cornus florida*, but is used in the same general classes of cases. A moderate portion of it may be used to some advantage with relaxant alterants in the treatment of feeble scrofulous ulcers and abscesses, and to make a good application to weak and scrofulous ulcers, and has been spoken of as a wash for scalled-head.

CORNUS FLORIDA

DOGWOOD, FLOWERING CORNEL, BOXWOOD

Description: Natural Order and Generic characters the same as in the foregoing species. C. FLORIDA: A tree from fifteen to twenty-five feet high, of a spreading habit, with a rough and dull-brown bark; branches spreading, smooth, reddish. Leaves opposite, ovate, acuminate, entire, pale beneath, an inch-and-a-half long, scarcely expanded at the time of flowering, turning brilliant red on the approach of frost. Flowers quite small, greenish, in a close cluster, inconspicuous; the cluster surrounded by a very large, creamy-white involucre of four pieces, which is very showy, and is usually called the flower. This involucre is nearly two inches across; and its pieces are spreading, nearly an inch long, obovate, veined, turning up the end, and terminating with a callous point. It blooms in early May; and its rich mass of creamy involucres present a very attractive appearance. Its fruit is an oval drupe, of a glossy scarlet color, and giving the tree a bright appearance as they hang upon its branches in clusters of from two to five through the fall and winter.

The bark of the stems and roots usually comes to market deprived of its rough epidermis; is in short pieces, quite brittle, and makes a pale-reddish powder. It has very little odor, but is bitter and astringent to the taste. It contains a portion of resinous material, and a larger quantity of bitter extractive. Water acts on it more effectually than it does on cinchona; and alcohol at all strengths dissolves its virtues.

Properties and Uses: The *bark* is an astringent tonic, the astringent properties being well marked, and the stimulant but moderately so. Its action is rather slow, and yet positive. Its influence is expended largely upon the mucous structures; but it also influences the general circulation, and has an antiperiodic action on the nervous system that resembles cinchona. It may be used to advantage in such intermittent difficulties as are accompanied by general laxity of the fibers, or even as a moderate substitute for cinchona; equal to some inferior qualities of that drug; but it is disposed to confine the bowels, and should not be used without the strictest attention being paid to the hepatic and alvine functions. As a simple tonic, it may be employed in conditions of laxity of the stomach and bowels, where there is no tendency to constipation; and in leucorrhœa and scrofulous difficulties presenting a similar condition of the tissues; but it is not a suitable agent for tonic purposes in typhoid or erysipelalous difficulties, in recovery from scarlatina or other maladies where a virus may be retained in the system, nor in any increased sensibility of the stomach or bowels. It is often spoken of in dysentery or diarrhea, but should not be used at all in the acute or sub-acute form of either of these maladies; and in chronic diarrhea it is admissible only when there are watery and nearly passive stools, but not when the discharges are frothy and connected with tenesmus. (§148.) In such cases, excellent results may be obtained by using a compound of six parts of cornus florida, two parts each of juglans and leptandra, and one part each of hydrastis and ginger—prepared in a sirup or other desirable form, and given in suitable quantities twice a day to exert a gentle impression upon the liver. As a local application, this bark is tonic and somewhat antiseptic, and is of much efficacy as a wash for sore mouth; an injection in leucorrhœa; and as a wash and powder on weak ulcers and foul sores that are discharging too freely, in which latter cases it may be combined with any necessary stimulant

and sprinkled upon a poultice. Bark recently gathered, or less than six months old, often is quite griping to the stomach and bowels.

The *flowers* (properly the involucre) are a mild and agreeable tonic, without any astringent properties. They promote the appetite and sustain the nervous system; and may be used in the same general cases for which the cold preparations of camomile are suited—though they are stronger than the camomile, and seem rather to retard than to promote the menses. The *berries* are also a mild tonic, with a somewhat pleasant aroma added to their bitterness. These flowers and berries are truly valuable in the list of mild tonics and appetizers, and may be used under almost any circumstance where a bitter of that class is required. They are most commonly tinctured upon wine or diluted whisky, but the flowers may be used in infusion.

Dose of the powdered bark, twenty to thirty grains, three or four times a day. It is seldom used in this form, on account of its bulk. In combinations, it is best associated with such agents as euonymus, menispermum, eupatorium, etc.

Pharmaceutical Preparations: I. *Infusion*. Cornus, one ounce; boiling water, one pint. Strain, and add two ounces of Sherry wine. Dose, a fluid ounce three times a day for tonic purposes; or two to three fluid ounces every three hours for antiperiodic uses. II. *Extract*. An extract prepared with water in the ordinary way, is an excellent preparation to use in the pill form; and may be employed as a vehicle for quinia (or salacin) and capsicum in intermittents. Dose five to ten grains every three or four hours. III. *Cornine*. This is an extractive material, prepared from an alcoholic tincture of the bark in the same manner as cypripedin, and representing this portion of the plant pretty well. It is mostly used for intermittents, and is greatly extolled by some physicians, who pronounce it equal to quinine. No preparation of cornus is at all equal to the preparations of cinchona; yet the cornine is a good agent, and meets many mild cases (especially cases in which cerebral excitement makes quinia objectionable) to great advantage. Dose two to ten grains every four or three hours. IV. *Fluid Extract*. This is prepared after the usual manner for eupatorium perfoliatum; and used in doses of from a half to a whole fluid drachm in intermit tents.

CORNUS SERICEA

**SWAMP DOGWOOD, RED OSIER, SILKY CORXEL, ROSE WILLOW,
KINNIKINNIK**

Description: Natural Order and Generic characters the same as in *cornus circinata*. C. SERICEA: A shrub eight feet high, with opposite and dusky-purple branches, and dark-red shoots; young twigs woolly. Leaves opposite, ovate; two to four inches long by half as wide, nearly smooth above, soft-pubescent beneath, on petioles an inch long. Flowers small, yellowish-white, in depressed and woolly cymes; no involucre. Fruit a bright-blue, spherical berry. Common in wet places. June.

Properties and Uses: The *bark* is similar to that of *cornus florida*, but partakes more of the characters of a pure astringent, and less of those of a tonic. It is also more stimulating than the other dogwoods. It exerts a considerable influence upon the uterus, and is of service in atonic conditions of that organ. Combined with *caulophyllum*, it promotes parturition in cases where the system is lax and the pains inefficient; with *convallaria* and *mitchella*, is good for prolapsus, degenerate leucorrhœa, and chronic menorrhagia; and with an excess of *dioscorea*, will often benefit the sympathetic vomiting of pregnancy. It has been commended in dropsy and as an antiseptic, but its powers would be limited under such circumstances.

CRETA PREPARATA
PREPARED CHALK

Chalk is a peculiar form of carbonate of lime, occurring abundantly in some mineral deposits, and forming a large portion of the shells and bones of the different classes of animals. Waters containing carbonic acid not unfrequently hold a small portion of it in solution; and this renders some waters in limestone districts purgative to those unused to them. Large beds of it exist along the southern coast of England; and it is also found in quantities in the north of France, and in small beds in some parts of the United States. It is not used medically in its coarse state, except as it or other fine qualities of carbonate of lime may be employed in the preparation of lime.

Prepared chalk is simply a good quality of chalk reduced to a very fine powder. The article is first pulverized, and then rubbed into a thin paste with a little water in a wedgewood mortar. Then fill the mortar with water, and stir the whole well, in a circle. In a few seconds the coarser particles will separate, and then the turbid liquid may be decanted into another vessel, where the minute particles of the chalk will slowly subside. The water being poured off from this, the soft mass is dried upon a muslin stretcher at a heat of not over 200° F.

Uses: This is a mild antacid—its oxide of lime uniting readily with any acid, and throwing off its carbonic gas. It is prescribed in diarrhea with acidity of the stomach and bowels; and sometimes in acid forms of dyspepsia and gout. The salts it forms are nearly inert, or at least not purgative; and when mixed in a simple sirup with cinnamon, pimento, and other spices, is a pleasant preparation for children with laxity of the bowels. Sugar, or sugar and gum arabic, are needed for its suspension with water. A child may use from ten to fifteen grains three times a day. Sometimes it is sprinkled upon burns and ichorous sores as an absorbent, antacid, and stimulant.

CROCUS SATIVUS

SAFFRON

Description: Natural Order, Iridaceae. Saffron is native to Greece and all the countries about the Levant, where it has been cultivated from the earliest ages for the purposes of a dye. It is now cultivated largely in Southern Europe for medicinal purposes; and is a garden flower of much brilliance in some sections of this country. The flower-stalk rises from a bulb, and is a long, white, slender tube; the flower itself being large, and of a beautiful lilac color. Leaves radical, linear, dark-green above, pale-green below, inclosed in a membranous sheath, sometimes remaining fresh nearly the whole winter. Corolla in two segments, between which the long styles hang out. Stigmas three, large, nearly an inch long, rolled at the edges, bright orange. The stigmas of saffron are the parts that have been used in medicine. They have a pleasantly bitter and somewhat warming taste. They contain a large portion of extractive matter, and a portion of volatile oil. Age and exposure impair them.

Properties and Uses: Saffron *stigmas*, usually called the flowers, have long been a professional and a popular remedy for promoting the eruptions of measles and other exanthems; also for promoting gentle perspiration, soothing restlessness, and promoting sleep. It used formerly to be considered a stimulating emmenagogue, but is nearly inert for such purposes. My own experience would class this agent among those possessed of very little power; and there are many reasons for suspecting that it is somewhat narcotic. Used freely, its sleep will be followed by headache, which is not an encouraging symptom; and Shroeder asserts that it will prove fatal, first inducing delirium and then stupor. For myself, I have abandoned its use, and think Physio-Medicalists should be very wary of employing it.

CROTON ELEUTERIA

CASCARILLA, SWEET WOOD

Description: Natural Order, Euphorbiaceae. “A small, compact shrub, three to five feet in height, occasionally a small tree. Stem erect, Unbranched below; bark marked irregularly with grayish stains, and various (mostly crustaceous) lichens. Leaves scanty, alternate, two or three inches in length, petiolate, slightly cordate, pale or grayish-green, with a few peltate scales above, and a dense clothing of shining silvery scales beneath. Flowers monoecious, white, numerous, small, closely set, in terminal or axillary spikes, very fragrant. Fruit a small capsule, about the size of a pea; three-celled, each cell one-seeded.”(*Pereira.*)

This pretty tree abounds in the Bahama islands. The bark is used in medicine; and comes to market in quills half an inch broad, one to four inches long, thin, of a dull-brown color, and often with some of the gray lichens attached. It is compact, brittle, of an agreeable and peculiar odor, and a warming, spicy taste. It contains a small quantity of volatile oil; an extractive matter; and a somewhat bitter resin, which may be extracted by alcohol in the usual manner. It yields its properties best to diluted alcohol.

Properties and Uses: This is a mild tonic, with pleasant aromatic properties, usually very grateful to the stomach, diminishing excessive mucous secretions, yet not acting as an astringent. Its chief influence is expended upon the stomach; but it at the same time gently sustains the nervous structures, and influences the respiratory organs. It is mostly used in convalescence from acute maladies, in dyspepsia accompanied with flatulence, and in chronic diarrhea attended with indigestion and a cold surface. It is often added to cinchona, when the latter article is not well received by the stomach; and is a suitable adjuvant to tonic preparations used in the treatment of leucorrhoea and prolapsus, and will sometimes allay sympathetic vomiting. I have used it in connection with uva ursi in the treatment of gleet; and it is a good addendum to such articles as eupatorium, liriodendron, and lycopus, in the treatment of old coughs, too much bronchial secretion, and bleeding from the lungs. Its own action is always mild, but its impressions are grateful and rather diffusive, though very large quantities are said to be quite disagreeable to the stomach. Dose of the powder, ten to twenty grains three or four times a day. When used alone, it is generally employed as an infusion. It is sometimes added to other ingredients and burned in a room, to fumigate it, and for phthisical patients.

Pharmaceutical Preparations: I. *Infusion.* Cascarilla, in coarse powder, one ounce; boiling water, ten fluid ounces. Infuse in a covered vessel for an hour. It speedily ferments; and may be strained, and preserved by the addition of two ounces of the tincture. Dose, a fluid ounce or more. II. *Tincture.* Cascarilla, two and a half ounces; diluted alcohol, one pint. Macerate for forty-eight hours, and transfer to a percolator; when percolation has ceased, express strongly, and add enough proof spirit to make a pint. Usually exhibited as an adjunct to the bitter tonics. Dose, one to two fluid drachms.

CUCURBITA PEPO

PUMPKIN

Description: Natural Order, Cucurbitaceae. This genus of the cucurbit family includes the pumpkin, and the many varieties of the squash. They are all characterized by their wide-spreading and juicy vines, with their great palmate-lobed leaves standing up from six to eight inches from the ground on furrowed and hollow petioles nearly an inch in diameter. The fruit of the pumpkin is of enormous size—in fact the largest fruit found upon any plant, great or small. The flesh is yellow, abounding in sugar, and very edible. The seeds are numerous, and are attached in rows upon the inside of the hollow flesh. When deprived of their husky covering, these seeds will yield a considerable amount of fixed oil by cold pressure.

Properties and Uses: The seeds, deprived of their husk, may be beaten in a mortar with a small quantity of water; by which treatment they form a milky emulsion which is mucilaginous, oily, and sweet. This emulsion will act transiently but effectually on the kidneys, bladder, and urethra. It may be used in scalding urine and gonorrhoea. It has also been pronounced an effective remedy against the tape-worm, killing this parasite outright. For this purpose, an ounce of the seeds are made into an emulsion with sugar, gum arabic, and water, in suitable quantities; and given upon an empty stomach several mornings in succession. If they do not act upon the bowels, they are followed by a brisk cathartic on the second and subsequent days. I have employed them several times without success; but in the hands of many physicians they are reported as having proven very reliable. The expressed oil, in doses of from twenty to sixty drops, is said to be even effectual than the emulsion. It has been combined with the oil of male fern, and is said to be effectual in this connection.

CUMINUM CYMINUM

CUMMIN SEEDS

Description: Natural Order, Umbelliferae. Cummin is a native of Egypt, but now cultivated largely throughout Western Asia and Southern Europe. It is quite a small annual, from six to twelve inches high, with slender branches, and numerous leaves cut into narrow segments. Flowers very small and white, hidden in the bracts. Fruit a small, tapering silicle, rough, flat, furrowed, light-brownish, ridged. These seeds contain quite a large percentage of essential oil, which is of a yellow tint, and a peculiar heavy and not always agreeable smell. The seeds have the same strong aroma, and a bitterish-warm taste.

Properties and Uses: The *seeds* have been used from the earliest ages, as medicine and perfume. They are strongly stimulant and biting, and quite permanent for an aromatic. They are employed for the same general purposes as the dill seeds; but are not at all so pleasant as the dill, and at this time are rarely used. It is asserted of old, that cummin added to wine to form a cordial, caused livid paleness; and Horace and Juvenal both allude to this as a fact current among bacchanalians. Probably it is well that the article has been superseded by pleasanter and less suspicious aromatics.

CUNILA MARIANA

DITTANY, MOUNTAIN DITTANY, STONEMINT

Description: Natural Order, Labiatae, or mint family. Genus CUNILA: Perennial plants, with small flowers in corymbed clusters. Calyx ovate-tubular, five-toothed, ten-ribbed, very hairy in the throat. Corolla with the upper lip erect, flat, notched; lower lip spreading and three-cleft. Stamens two, erect, distant, exserted. C. MARIANA :-Stems in tufts, four-angled, mostly purple, one to two feet high, corymbosely branched above. Leaves ovate, serrate, slightly roundish-cordate fit base, nearly an inch long, subsessile, nearly smooth, tapering to a point, thin, punctate with pellucid dots. Cymes axillary and terminal. Calyx punctate; corolla pale red, pubescent, nearly twice as long as the calyx. The entire plant is very fragrant, and was classed by the Romans among their pennyroyals. It prefers dry and rocky hill-sides from New York to Georgia, and westward. The leaves contain a pretty large per cent. of a very fragrant and penetrating volatile oil, which may be obtained by distillation. The taste of the plant is warming and pungent, but quite pleasant.

Properties and Uses: The whole plant, and especially the leaves, are diffusively stimulating and relaxing—being among the more pungent and pleasant of the aromatics. They secure a prompt action on the surface, arousing the capillaries and inducing moderate perspiration. For this influence they are valuable in recent colds, in tardy measles and other exanthems, and in the incipient stages of bilious and typhoid fever. They are rarely used alone; but are added to such articles as asclepias, eupatorium, and other relaxants of the diaphoretic class. By sustaining the capillaries, and probably the nervous peripheries also, they relieve some hysterical forms of nervous irritability; advance the menstrual flow, when it has recently been checked by exposure; and often are followed by increased micturation. (§190.) They relieve flatulence; and make a useful adjuvant to such antispasmodics as cypripedium and scutellaria, and to such carminatives as dioscorea. They are so very diffusive as to be most valued in connection with more permanent agents; but their promptness and very agreeable stimulation entitle them to much wider use than is generally given them. Best used in warm infusion—half an ounce to a pint of water, macerated in a covered vessel. Dose, two or more fluid ounces, repeated as desired. The oil is sometimes used in doses of two or three drops; but its best place is as an ingredient in carminative essences.

CURCUMA LONGA

TURMERIC

Description: Natural Order, Zingiberaceae. This species of the ginger family is a native of the East Indies, through both the main land and the islands. Root tuberous, perennial, as large as one's finger, forming a subterranean stem, hard, rather brittle, deep yellow within. The leaves all rise from the root, are large, lanceolate, and sheathing at the base. Flower stalks short, thick, arising from the midst of a cluster of leaves, with a spike of numerous and crowded bract- scales, between which the flowers are borne. The root is the medical part, and has a warm, slightly aromatic, and rather unpleasant bitter taste. It tinges all fluids a deep yellow color, and is used for dyeing; but its color is variously changed by acids and alkalies, and can not be depended on.

Properties and Uses: This *root* is a stimulant, allied to ginger in its impression, but more bitter and tonic. Formerly it enjoyed much repute as a cordial and stomachic, and was commended in jaundice; but its action is too transient to be of much consequence. It may be used as an adjuvant to cathartic and tonic remedies; but at present is rarely employed, except to color tinctures, liniments, and ointments. From ten to twenty grains of the powder may be given; or an infusion made with an ounce to ten ounces of water.

CYDONIUM VULGARIS

QUINCE SEEDS

Description: Natural Order, Pomaceae. This is the common quince shrub of our gardens, so much cultivated for its richly flavored fruit. Its characters are too well known to need any detailed **description**.

Properties and Uses: The seeds of quince contain a large quantity of a peculiar and very pleasant mucilage, which most abounds in their leathery covering. They yield this property to boiling water, and a drachm of the seeds is sufficient to make a pint of water quite mucilaginous. It forms an excellent drink in inflammations and irritations of the bowels, kidneys, and bladder; and is deserving of larger employment than is commonly given to it. The seeds have a slightly bitter taste; which renders the infusion less insipid, and more grateful to the stomach, than most demulcents. It forms a good local application in acute ophthalmia; and I have used it both as a drink and an injection during the inflammatory stages of gonorrhoea, and with happy results.

CYPRIPEDIUM PUBESCENS

LADY'S SLIPPER, NERVE ROOT, UMBEL, AMERICAN VALERIAN, MOCCASIN FLOWER

Description: Natural Order, Orchidaceae. Genus CYPRIPEDIUM : Perennial herbs, growing in moist woods and meadows in the Northern States and Canada. Flowers large and very showy; the lower lip greatly inflated, so as to bear a rude resemblance to an ancient buskin— whence the generic name, which is from the Greek, signifying *Venus' Slipper*. Sepals three, spreading; petals three, the lower one forming a large, inflated, saccate lip. Column of consolidated stamens short, three-lobed, with a two-celled anther under each lateral lobe, and the central lobe consisting of a barren stamen developed into a thickish and in curved petaloid form. Stigma terminal, obscurely three-lobed. Root of many tufted fibers. C. PUBESCENS: Stem a foot or more high, usually several from the same root-stalk. Leaves broad-oval, acute, many-veined, clasping at base, three to six inches long by two to three inches broad. Flowers mostly solitary, rarely two to three on a plant; sepals long-lanceolate, two, the lower composed of two united either their entire length or at their tips; petals long, linear, twisted-wavy, spreading, and greenish like the sepals, marked with peculiar purple spots; lip gamboge-yellow, shorter than the greenish petals, one and a half to two inches long, with a narrow aperture, spotted inside, scentless. Whole plant covered with a soft pubescence. May and June.

This brilliant species of cypridium is quite common in shady marshes and bogs north of Pennsylvania. Its four long and purple-dotted segments of the perianth, with the large saccate lip hanging horizontally with its opening upward, at once attract attention. There is a smaller species, with a smaller and less brilliant lip—the *C. parviflorum*—which is said to possess the same medicinal properties. The species *candidum* and *spectabile* with white saccate lips, and the *acaule* with no leaves along the stem and a pale purplish lip, are said also to be the same as the *pubescens* medically; but this I think is an error.

The roots are about a line in diameter, tufted, brownish yellow, forming a gray powder. They have a peculiar and somewhat unpleasant relaxing odor; and a slightly bitter and rather nauseous taste. Age and heat greatly impair their qualities, which are distinctly volatile. They contain an oleo-resinous substance, and a very small quantity of oil is obtainable by treatment with ether; but neither of these fairly represents the plant. Water acts on them imperfectly; alcohol, and diluted alcohol, extract their virtues fully.

Properties and Uses: The *roots* of these plants are the medicinal part, and were introduced to practice by Dr. S. Thomson—with whom they formed a leading remedy. They are nearly pure relaxants, with not enough stimulation to be available. Their influence is manifested slowly, and is expended wholly upon the nervous system; and it is only through the nervous tissues that they impress other parts. Thus they belong to the pure nervines or parodynes, (§235;) and are antispasmodic, and mildly tonic to these structures.

They are used in all the multiplied forms of nervous irritability and excitement, except when arising from advancing putrescence. They soothe and calm the entire system, easing all forms of pain growing out of local or general irritation, (§237;) and inducing quiet and usually securing sleep. They have been accused of possessing narcotic properties, but I could never detect any

such impression from them; as the sleep is not accompanied by stupor, is no more profound than would naturally follow the most sanative relief from protracted pain or nervous agitation, is associated with a warm and gentle perspiration, and is not followed by any suppression of the secretions or feelings of languor. Such facts are not indicative of narcotism, (§90;) or else all forms of relief from suffering and excitement must be of narcotism. Further, the cypripedium can not be given in quantities to stupefy acute suffering in the presence of offending substances, as opium will do; but the relief obtained from it must always be connected with such a relaxation and opening of the emunctories as will make a way of escape for injurious materials; and it is always peculiar of it that ease will not be obtained by its use, unless at the same or a previous time the system has been depurated of morbid accumulations. Hence it is a nervine only when the frame has been, or is being, rid of such offending elements as would provoke the restlessness; and that fact alone shows how wide is the difference between this agent and any narcotic. The cypripedium itself aids somewhat in this depurative work, as is made known by a mild increase of perspiration, diuresis, and even alvine action, in connection with its use; but its influence on the secretions is too indirect and feeble to accomplish much elimination, and hence this remedy is then combined, or used coetaneous with such agents as influence those secreting organs that need assistance in each particular case.

From this nature of the article, its use can at once be seen to be very wide and peculiar. In hysteria through all its varied forms, it is second to no remedy; in headache, sleeplessness, and restlessness, when proceeding from feebleness and irritability of either the nerve centers or peripheries, it is an admirable agent; and in chorea, neuralgia, neuralgic rheumatism, and the restlessness of the later stages of typhus, typhoid, bilious, and intermittent fever, (after the secretions have been well influenced,) it is a valuable adjunct to other treatment. It is not relied upon alone in these cases, but is used as the nervine associate of such remedies as may be indicated. Thus, in hysteria of a sub-acute and chronic character, it is combined with *liriodendron*, *aralia racemosa*, etc.; in hysterical convulsions or other acute forms of this malady, with *asafoetida*, *zingiber*, or *lobelia*; in rheumatism, with *xanthoxylum* or *phytolacca* berries; in painful menstruation, with *anthemis*, *caulophyllum*, and *zingiber*; in febrile cases, with *asclepias*, *zingiber*, and other diaphoretics; in colic and painful flatulence, with *dioscorea* and *anise*; in *delirium tremens* and *subsultus tendinum*, with *capsicum* and *ginger*; and in like manner a moderate portion of it may be used in company with a large variety of remedies—the cypripedium being employed for the nervous irritability. It is an excellent antispasmodic, but nearly always needs to be combined with some stimulant, (§245;) and when combined with the leaves of *rubus* and a very small quantity of *capsicum*, forms one of the most reliable compounds in parturition where the nervous system becomes weary and the uterine efforts lag. Directed to the uterus by such an agent as *trillium*, (§265,) it affords great relief in after pains.

The article fully merits all the praise here given it. It is not so powerful as the foreign valerian, nor so active upon the brain centers in procuring sleep; but it is less unpleasant in taste, (though still quite slowly nauseous to some stomachs,) and more tonic in action. Yet cypripedium will disappoint the practitioner who relies upon it alone as a tonic for chronic cases of nervousness; for it is too relaxing to serve such a case. So also it is not to be relied on alone in the restlessness of putrescence, of low typhus, of congestive chills, and similar states of great depression, unless associated with an excess of the positive and permanent stimulants—as *capsicum* with *hydrastis*, and *quinia* when the case needs this with *capsicum*. Physicians too many times overlook the slow

and nearly pure relaxing qualities of cypridium, and so fail to apply it properly, (§55, 261, 262.) The cases where it alone is needed are really few; but its combination in moderate quantities with tonics and stimulants of such grades as the case in hand requires, enables it to fill a very great number of important requirements. Its nauseating-relaxing action is well covered, and its diffusion aided, by the addition of such articles as orange peel, fennel seed, or ginger.

Dose of the powder, ten to thirty grains every four hours. It is sometimes given in much larger quantities at longer intervals, and in smaller quantities at shorter intervals; but when given as a powder, it retains its influence about four hours, and the above range will be found to include the most serviceable dose. It may be administered in mucilage by injection, along with lobelia, ginger, or capsicum, as needed, to very great advantage.

Pharmaceutical Preparations: I. *Infusion*. Cypridium in powder, half an ounce; warm water, a pint. Infuse in a covered vessel at a moderate heat for half an hour. Dose from half a fluid ounce to two fluid ounces every two hours in ordinary cases; or a fluid ounce every hour or half hour when urgency requires its full action. Water does not take up all the properties of this root. II. *Cypridin*. For a number of years this preparation was looked upon as a resinoid, and was made after the manner of such resinoids as leptandrin and podophyllin. But it is not a substance of this class; and when thus made, is nearly an inert article. As now manufactured, it is virtually an alcoholic extract, purified and powdered. Dr. T. L. A. Greve, druggist, Cincinnati, has kindly furnished me with the following process: Macerate the crushed roots with absolute alcohol; transfer to a percolator, and treat with absolute alcohol till exhausted; distill off four-fifths of the alcohol at a low temperature, and evaporate the remainder on a low water bath till of the consistence of thick molasses; wash this product in 70 percent alcohol, and filter through muslin; by which step the extractive matter is washed away, and the cypridin retained upon the filter. Now evaporate carefully; and when thoroughly dry, reduce to a powder in a mortar moderately warm. If the first product be not washed so as to remove the extractive matter, the cypridin will be a brownish powder that will slowly settle into a gummy mass. The washed product is a dull-yellowish powder, and represents the plant quite well. As the roots of cypridium vary greatly in strength, according to season, soil, and method of drying, so this alcoholic extract cypridin is not always of the same strength, though nearly so. Dose, one to three grains, at such intervals as necessity requires. III. *Extract*. This is a hydro-alcoholic preparation, made after the general method for others of the same class. If manufactured with due care, it is a good preparation; but the temptations to save alcohol by using more water, and to save time by applying a high heat in evaporation, are so strong, that very little of the extract in the market is ever of much value. IV. *Fluid Extract*. Macerate a pound of crushed roots in 70 percent alcohol; transfer to a percolator, and treat with alcohol of the same strength till eight fluid ounces have passed. Set this aside, continue the process with water till exhausted, evaporate the last product on a water bath to eight fluid ounces, and mix the two liquors. This is a good preparation, of which the dose may range from five to twenty drops. V. *Tincture*. Three ounces of the crushed roots macerated in diluted alcohol, and then treated by percolation and pressure till a pint is obtained, form the usual tincture. Dose, half a fluid drachm to two fluid drachms, in water. It is seldom used.

Cypripedium enters into officinal compounds under: the heads of myrrh and lobelia. It is often associated with valerian, cimicifuga, scutellaria, and other nervines; and with such tonics as fraxinea, anthemis, and leonurus. J. Overholt, M. D., of Columbus City, Iowa, furnishes the following formula as one that he has long used to much advantage in neuralgia, wakefulness, the restlessness of children, hysteria, etc.: *Neuralgic Mixture*. Two ounces fluid extract of cypripedium; one ounce each fluid extract scutellaria, xanthoxylum, and asclepias tuberosa; one ounce each of lobelia tincture and essence of anise. Dose, from one-fourth to a whole teaspoonful, in sweetened water or catnip tea. He says it will do for children all that is claimed for any “soothing sirup,” but with no fear of any shade of narcotism.

CYTISUS SCOPARIUS

BROOM TOPS

Description: Natural Order, Leguminosae. “A large bushy shrub, with numerous long, angular, dark-green branches. Leaves deciduous, scattered, stalked, ternate below, simple above; leaflets uniform, obovate, entire; silky when young. Flowers axillary, solitary, or in pairs, on simple stalks, longer than the leaves, large, brilliant yellow or bright lemon color. Pod brown, flat, an inch or more in length, nearly smooth at the sides but fringed with harsh hairs at each margin. Seeds fifteen or sixteen.” (*Lindley*.) When this plant is spoken of, many imagine it to be the top of the common broom-corn—*Sorghum saccharatum*. A moment’s attention to the botanical **description**, will show the wide difference between the two plants. The genus *Cytisus* is a native shrub of Europe, closely allied to the laburnum; and sometimes cultivated in light garden soils for the beauty of its very large purplish or rose-pink and pea-shaped flowers.

Properties and Uses: The *young shoots* of this shrub have been used in medicine, though not in much repute at the present time. They are largely stimulant, and moderately relaxant, acting somewhat slowly but decidedly. Their chief influence is expended upon the kidneys, from which they secure the elimination of a very large amount of watery materials. They have been used in dropsy; but will readily overwork the kidneys. (See *Diuretics*.) Large doses will prove emetic, and sometimes cathartic. Half an ounce of the dried tops boiled in ten ounces of water for a few minutes, and strained, forms the usual decoction; and of this from one to two fluid ounces may be given three times a day. Small quantities may prove a good adjuvant to hepatics and tonics.

DAUCUS CAROTA

CARROT

Description: Natural Order, Umbelliferae. The genus DAUCUS is a native of Europe, but is now extensively naturalized in America. It is a biennial plant, with a long, tapering, fleshy root; from which arise a cluster of numerous pinnatifid leaves the first year; and the second year the erect, rough, and branching stem, with numerous and dense umbels of cream-colored flowers. The cultivated carrot of the gardens, the root of which is so edible, is the same as the wild plant; but is more pleasant, and is the one especially alluded to here.

Properties and Uses: The *seeds* (in proper botanical language, the *fruit*) have been used in medicine since the middle centuries. They are a pleasant and diffusive aromatic stimulant, somewhat relaxant, carminative, and acting chiefly upon the kidneys. They are too transient to effect a permanent impression, but are a good adjuvant to such diuretics as eupatorium purpureum and the leaves of amygdalis. The boiled *roots* also act on the kidneys; and form an excellent emollient and gently stimulating poultice in irritable ulcers of all grades. But the fresh and unboiled roots, finely grated, make a peculiar stimulating application of great value. They are excellent in all low forms of sores; such as carbuncles, degenerate abscesses, and buboes; and all fetid ulcers of the malignant, cachectic, and scrofulous grades. They correct the fetor, relieve the aching, and quickly promote sound granulation. It is said that they will even abate the suffering of phagedaena and of cancer. They certainly deserve far more attention than they have received from the profession; and sores in which it seems impossible to arouse a healing process by ordinary means, will usually improve at once under this application. The raw carrots are not to be continued after full vital action in the part has been established.

DENTARIA DIPHYLLA

PEPPERWORT, TOOTHWORT

Description: Natural Order, Cruciferae. A member of the mustard family, closely allied to the cresses. Genus DICENTRA: Perennial herbs, with long, horizontal and toothed rootstalks, of a pungent taste. Stems low, and bearing two or three leaves about their middle; leaves compound and petioled; a single raceme of flowers terminating the stem. Flowers large, and white or purple; pod lanceolate, flat, nerveless, and opening by valves. D. DIPHYLLA: Rootstalk five to ten inches long, one-fourth to one-half an inch in diameter, yellowish-white, toothed, crisp, tasting like water-cress. Stem with two leaves, close together, each of three rhombic-ovate and coarsely-toothed leaflets. Flowers white. Frequent on hill-sides of rich woods from Maine to Kentucky. May.

Properties and Uses: The *root* of this little plant is a diffusive and somewhat pungent stimulant, when dried; and also possesses a mild tonic power. Its principal influence is expended upon the nervous peripheries, and moderately upon the capillaries. It is of the antispasmodic class of nervines; and is useful in hysterical nervousness and spasms of the more acute form, painful and tardy menstruation, flatulent colic, and similar maladies requiring a diffusive stimulant. It warms the surface, and secures gentle perspiration. It is agreeable in taste, but its influence is rather transient. Dr. Ritta, of Dayton, claims to have used it for many years with unvarying success in epilepsy. I do not think it can be of more than secondary value in such cases; yet it is a humble article that certainly deserves attention. The better method of giving it is a tincture prepared by macerating four ounces of the roots in a quart of diluted alcohol, straining and pressing; of which two to three fluid drachms may be given every four or two hours.

DICENTRA EXIMIA

TURKEY CORN, SQUIRREL CORN, DUTCHMAN'S BREECHES, STAGGERWEED

The Eclectic Dispensatory by Prof. J. King, and Prof. L. E. Jones' *Materia Medica*, have created much confusion by unfortunately fastening the wrong name upon this plant. They both call it *corydalis formosa*, whereas it has not been known by that name, nor been in that genus, since the works of Pursh, of more than half a century ago. All standard botanies class it by the name above given; which will explain to my students in botany why they can not find in their text-books the corydalis described by Dr. King. Neither is this plant the dielytra formosa, though the present genus dicentra was formerly classed as dielytra; but the species formosa is the plant so much cultivated in our gardens for its pretty and compressed flowers, which appear in May, currently known in seedmen's catalogues as dielytra spectabilis. Dr. King is also entirely mistaken in saying that the plant he describes as corydalis formosa blooms in March in this latitude, for it is not in bloom till at least the middle of May; but the dicentra cucullaria blooms about the middle of April, though Dr. King says that it also blooms in March. The dicentra as a genus has the marked character of *two* spurred sepals, while the genus corydalis has but *one*—a prominent feature that would at once be noticed by any real botanist. This botanical blunder of Dr. King is the more inexcusable, from the fact that Prof. J. Kost, in his *Materia Medica*, correctly discriminated the true genus of this plant, and showed that it is not a corydalis. Its introduction to the profession is claimed for the Eclectic faculty, and especially for Prof. L. E. Jones. This also is a mistake. As long ago as 1828, before Eclecticism had an existence, Prof. C. S. Rafinesque pointed it out in his *Medical Flora*, and described its stimulant and alterant properties, under its then best known Linnean name of fumaria cucullaria; and my father-in-law, the late Dr. John Masseur, of New York, used it largely from 1835 to 1844 thus beginning its professional employment seven years before Eclecticism got its first life-breath by appropriating to itself the petition of a million names that the old Thomsonians of New York presented to the State Legislature against the odious Allopathic laws. This exposition of the facts about this article seems necessary; as it fairly illustrates the manner in which Eclectic professors and authors *borrow* (!) for their school the knowledge and honors that belong entirely to others. The root (small tubers) varies from a yellowish-white to a dusky color externally, and a lighter yellow internally. It has a faint smell; and a bitterish, pungent, and rather persistent taste. Water extracts its virtues very well; but it contains a resinous substance that is best acted on by alcohol.

Properties and Uses: The *roots* are stimulating and moderately relaxing, acting slowly but persistently, and influencing the secretory organs especially the kidneys and skin. It slowly elevates the circulation, and gives vigorous action to the entire system; and it is probably by this action upon the capillaries that it proves alterant. It does not increase perspiration so as to make it sensible, though evidently aiding in the elimination of both saline and sebaceous excreta; but the amount of urine is perceptibly increased after its use, and the solid elements of this excretion augmented. It stimulates the salivary glands, fauces, and stomach; and gives a feeling of warmth and excitement to the stomach and whole system. Yet these impressions are made rather slowly; and are not so positive as (though much more of the discernent character than) those made by guaiacum. It is suitable for languid and insensitive conditions; and is among the most valuable agents of its class for secondary syphilis, where it is most generally prized; and is an excellent

combining agent to give intensity to relaxants (§261) in the treatment of scrofula and scrofulous ulcers, white swellings, herpetic eruptions, and chronic rheumatism. Thus used, it is even more valuable in the latter forms of disease than it is in syphilis. It leaves behind a good tonic influence, mainly through its influence upon the capillary circulation: but it is quite an error to pronounce it equally tonic with gentiana and fraseria. From its decidedly stimulating character, it should not be used in sensitive and irritable conditions of the system; and is, at any time, best when combined with relaxing alteratives in excess. It is seldom used in any other form than infusion or other pharmaceutical preparation. Half an ounce of the crushed bulb infused for an hour in a pint of hot water, forms a preparation of which one to two fluid ounces may be given three times a day.

Pharmaceutical Preparations: I. *Compound Sirup of Dicentra and Alnus.* Take four ounces each of dicentra, alnus, menispermum, and the seeds of arctium lappa. Crush well; and macerate for two days, in a covered vessel, with a sufficient quantity of diluted alcohol. Transfer to a displacement apparatus, and add warm water till a pint of the spirituous tincture passes; which set aside, and continue the percolation till three pints have been obtained. Evaporate the last product to two pints, and add two and a half pounds of sugar. When cold, add the reserved pint of tincture. This is a superior alterative preparation in secondary syphilis and scrofula. I have used it largely for several years in syphilis and mercurio-syphilitic difficulties; and always with the most gratifying results. Dose, half to a whole fluid ounce three times a day. II. *Compound Sirup of Corydalis.* Under this name, Messrs. W. S. Merrill & Co., of this city, prepare the following sirup, as condensed from Dr. J. King's Dispensatory: Bruised root of turkey corn, two pounds; the leaves (!) of twin-leaf and root of blue flag, each, one pound; sheep laurel leaves, half a pound. Macerate in seventy-six percent alcohol; then treat by percolation till two pints and four ounces have passed; reserve this, and treat with water till all the strength is obtained; boil the last product down to thirteen and a half pints, and dissolve in it eighteen pounds of sugar; when cold, add the first tincture. This is a pretty strong alterative preparation; though the leaves of sheep laurel, when continued for such a length of time under the influence of heat, would run great risk of undergoing changes and thereby be converted into prussic acid. The boiling heat would probably drive this off, or otherwise this sirup could scarcely be made without being dangerous. Dose, a fluid drachm three times a day, in water. III. *Extract.* A hydro-alcoholic extract of this article is sometimes used in doses of from one to three grains three times a day; but the intensely local action of this form of preparation, usually is objectionable to the stomach. IV. *Fluid Extract.* This is prepared after the manner of fluid extract of eupatorium. It is a strong and concentrated preparation, not often used because of its unpleasant stimulating influence on the stomach. It may, however, be added to sirups of the relaxant alterants, as of celastrus and arctium, so that from ten to twenty-five drops shall be given three times a day. V. *Corydalia.* Under this incorrect name an alkaloid preparation is put upon the market. It is obtained by treating the bruised roots with water and a small quantity of muriatic acid, after which the acid is exactly neutralized with spirits of ammonia, and the precipitate that slowly forms is washed with successive portions of water. It is said to represent the properties of the root effectually, though I am inclined to doubt this decidedly; but as my own experience with the article has been limited, my present judgment may be incorrect. Dose, half to a whole grain thrice a day. VI. *Corydalin, (Dicentrin.)* This is commonly supposed to be a resinoid principle; but is in reality only a fine alcoholic extract, well washed with water, and then so dried that it can be reduced to powder. The several steps in its preparation are the same as those given for cypripedin, to which

class this belongs. It represents the plant indifferently, and is seldom used. Dose, three to eight grains three times a day. Dicentra enters into the Compound Sirup of Stillingia. By combining it with xanthoxylum and juice of phytolacca, it may be used in the form of a sirup for chronic rheumatism with atony and stiffness. Dr. H. Sweet, of New York city, gave me a formula of dicentra, larix, ceanothus, and rumex, as a potent sirup for secondary syphilis and scaly eruptions.

DIERVILLA TRIFIDA

BUSH HONEYSUCKLE, GRAVELWEED

Description: Natural Order, Caprifoliaceae. Allied to the common elder and cranberry. Formerly placed in Ionicera. Low shrubs, two feet high. Leaves opposite, finely serrate, ovate or oblong, taper-pointed, on short petioles, two to four inches long. Flowers axillary and terminal, two or three together, greenish yellow; corolla funnel-shaped, five-cleft; stamens five. In hedges and thickets from Canada to Carolina.

Properties and Uses: The *bark* from the roots and branches is, when dried, a relaxant and moderately stimulating agent, of rather an unpleasant taste, and likely to cause nausea if united with other relaxants. (§262.) It acts pretty largely upon the kidneys; and has been found useful in gleet, sub-acute gonorrhoea, and scanty and sedimentous urine. From such an action, it is evidently a gentle tonic to the mucous membranes. The people of some sections have great faith in its curing gravel, but this opinion can not be verified by experience. It is a general alterative of the mildly relaxing grade; and may be employed in scrofulous and cutaneous difficulties. Locally, it soothes phlegmonous sores, and is good in irritable and scrofulous ulcers. It is not astringent, as commonly described; and is an article of only moderate power. Prof. C. S. Rafinesque first called the attention of the profession to it. The *leaves* are said to make a more soothing application than the bark, and to be an equally good diuretic, but not alterative. An ounce of the bark digested in a pint of hot water, may be given in doses of two fluid ounces every four hours.

DIOSCOREA VILLOSA

WILD YAM, COLIC ROOT, CHINA ROOT

Description: Natural Order, Dioscoreaceae. Delicate, twining vines, with large perennial and tuberous roots, ribbed leaves, dioecious and regular flowers with six stamens, and fruit as a membranous and three-angled (often winged) pod. . Genus DIOSCOREA: Flowers very small, in axillary panicles or racemes. Stamens at the base of the six-parted perianth. Pod three-celled, three-winged, dehiscence loculicidal by the winged angles; seeds one or two in each cell. D. VILLOSA: Herbaceous and reddish stem, rather smooth than villous, springing from matted root-stalks, and twining over bushes to the length of ten or twenty feet. Leaves mostly alternate, sometimes nearly opposite or in fours, ovate, two to four inches long, cordate and acuminate, nine to eleven-ribbed. Flowers pale greenish-yellow, the sterile in drooping panicles, and the fertile in drooping simple racemes. July.

This plant is found through the Middle States, but is abundant southward, and scarce northward. The root is about a fourth of an inch in diameter, long, light-brown without, nearly white within, almost devoid of smell, and of a sweetish bitter taste. Water and alcohol extract its qualities.

Properties and Uses: The *roots* were an aboriginal remedy, and were introduced to the notice of the profession by Dr. Horton Howard though claimed by the Eclectics as dicentra and others are. It is largely relaxant and moderately stimulant, acting as an antispasmodic, and relieving nervous excitement. Its principal use has been in the various forms of wind and bilious colic, to which it is admirably adapted. It both relaxes the muscular fibers and soothes the nerves, aiding the expulsion of flatus and promoting gentle diaphoresis. It is indeed an excellent agent in all painful and flatulent troubles of the bowels, whether simple colic, or connected with cold or diarrhea. For these purposes, it is generally advisable to combine it with some agent more stimulating than itself, such as zingiber, angelica, or other aromatic. It is an ingredient of the Carminative Drops described under angelica; and it is said that cornus sericea, in small quantities, forms a good accompaniment for these cases. In painful menstruation, neuralgia of the womb, vomiting during gestation, and the painful knottings of the uterus incident to the latter stages of pregnancy, it is an excellent remedy; and may be used freely with such other and more permanent remedies as are usually given in such cases. Its action being so largely upon the nervous structures, it can be used advantageously in other and more severe spasmodic affections; and will be found of much value in false labor pains, after pains, and (combined with moderate quantities of lobelia) in spasmodic croup.

The better manner of using it is by warm infusion an ounce of the root to twenty ounces of hot water, infused for twenty minutes; dose one, to two fluid ounces every half hour in colic. Combined with ginger and asclepias, the action is admirable as a diaphoretic, as well as antispasmodic and carminative.

Pharmaceutical Preparations: I. *Tincture.* Crushed dioscorea, four ounces; anise seed, one ounce; alcohol of 60 percent, twenty ounces. Macerate in a covered vessel for twenty-four hours, then treat by percolation, press strongly, and add enough alcohol of the same strength to make twenty ounces. A very effective and pleasant preparation for flatulent colic. Dose, half a

fluid drachm to three times that quantity, in warm water, as often as may be necessary. II. *Dioscorin*. This is an extract, prepared from a saturated tincture of the root, after the manner for the preparation of cypripedin. It is a light yellowish-brown powder, which slowly absorbs moisture and becomes darker and assumes a tenacious extractive form. It represents more of the stimulating than the relaxing properties of the plant. If rubbed with one-fourth its own bulk of the powdered root, its pulverulent form may be maintained; but when it assumes the extractive form, it can not again be powdered, is scarcely soluble in alcohol, and can be administered in pills. Dose, one to three grains, at intervals of two to four hours. I have found its action rather too slow for cases of colic, though others speak in the highest terms of it in this connection. In persistent pains through the bowels, bladder, and uterus, it is an admirable remedy. III. *Fluid Extract*. This is prepared by treating a pound of crushed dioscorea with diluted alcohol, and then proceeding as in the fluid extract of boneset. It represents the plant well, and is a valuable pharmaceutical preparation. Added in proportions of one part to three parts of the Cordial, it is of superior efficacy in wind colic and painful diarrhea.

DIOSPYROS VIRGINIANA

PERSIMMON

Description: Natural Order, Ebenaceae. The persimmon is a tree indigenous to the Middle and Southern States, and westward about the parallel of 42° North. Height twenty feet, but much larger Southward; with a spreading and roundish head, straight stem, and a blackish bark—which is much furrowed in the old trees. Leaves alternate, ovate-oblong, acuminate, on downy petioles. Flowers dioecious, lateral, axillary, quite small, pale greenish-yellow. Fruit an inch or more in diameter, dark-yellow and pulpy when perfectly ripe, with numerous small seeds imbedded in the pulp after the manner of the berry. This fruit is intensely acid, when young; but it ripens late in the fall, after being touched with frost, and then becomes soft, sweet, and edible.

Properties and Uses: The *bark* of persimmon is a very bitter astringent, intense, and lasting in its action. It has been employed to advantage as a family remedy in intermittents, and it is my opinion that it will be found a better antiperiodic than the *cornus florida*. It may be used as a wash in aphthous sores and ulcerated sore throat, and outwardly upon all ulcers of a low grade, to which it is antiseptic and strengthening. Prof. C. S. Rafinesque, who first called the attention of the profession to this article, says that an infusion of the seeds is good in dropsy. The tree certainly deserves more attention than it has received, both as a remedy and for its fruit.

DOREMA AMMONIACUM

GUM AMMONIACUM

Description: Natural Order, Umbelliferae. A native of Persia, India, and other Oriental countries. It is a biennial, attaining the height of six or seven feet, and abounding in a somewhat milky juice. This juice is gathered in the spring time, from incisions made in the roots, after the manner of asafoetida. It is a gum resin, and comes to market in the form of tears consolidated into rough masses; yellowish without, whitish within, compact and brittle. At a moderate heat, it softens without melting; and will burn with a white flame and much smoke. It is partly soluble in water, with which it forms a milky emulsion; and acts as other resins with alcohol.

Properties and Uses: Stimulant, with moderate relaxing powers, rather diffusive in its action, chiefly influencing the mucous membranes. It should not be used in any case where inflammation is present, but is suited to relaxed and atonic conditions. It is employed in old coughs with pulmonic debility and excessive mucous secretion; and sometimes in leucorrhoea, and amenorrhoea under similar circumstances. It has been found of use in asthmatic and catarrhal affections under the same conditions. It gently promotes the flow of urine; and a warm preparation will act moderately upon the skin. It is not an agent to be relied upon largely; but makes an excellent adjunct to stronger and less diffusive articles. From ten to twenty grains may be given at a dose, three times a day; and though it may be used as a pill, the form of emulsion is better. The emulsion is formed by triturating two drachms of the gum with half a pint of water; and one to two tablespoonfuls of this may be given as a dose.

DORSTEMIA CONTRAYERVA
CONTRAYERVA

Description: Natural Order, Urticaceae. One of the nettle family, found in Mexico, West Indies, Brazil, and contiguous countries. "This plant has a perennial, fusiform, branching, rough, compact root or rhizoma, which sends up several leaves of an irregular shape, about four inches in length, lobed and pointed, and placed upon long radical foot-stalks, which are winged toward the leaves. The flower-stems are also radical, rise several inches in height, and support irregular quadrangular receptacles, which contain male and female flowers the former having two stamens, the latter a single style. The capsules, when ripe, possess an elastic power, by which the seeds are thrown out with considerable force." (*U. S. Disp.*)

The root comes to market in pieces an inch or two in length, It is dull reddish-brown on the outside, and paler within, hard; rough, and solid, with many slender and yellowish fibers all attached. The medical properties reside chiefly in the thick portion, which is slightly aromatic, with a pungent and bitterish taste. Alcohol, diluted alcohol, and boiling water, extract its virtues.

Properties and Uses: This *root* is diffusibly stimulating, with mild tonic properties; and yields a considerable quantity of mucilage when treated with hot water. It sustains the outward capillary circulation, warms the surface, and gently promotes diaphoresis. The bowels and kidneys also feel its impressions and its diffusive action sustains the nervous peripheries. It is used in measles, small-pox, and other exanthems when tardy also in typhoid and nervous forms of fever; and it is truly an excellent article in all these connections. Its influence in promoting eruptions, and for sustaining the frame against the depression of animal poisons as of scarlatina, erysipelas, typhoid putrescence and snake virus is quite decided, and especially when combined with a more permanent stimulant like capsicum.

EPIGEA REPENS

WINTER PINK, MOUNTAIN PINK, GROUND LAUREL, MAY FLOWER, GRAVEL WEED, TRAILING ARBUTUS

Description: Natural Order, Ericaceae. A trailing plant, of little woody fiber, closely allied to the *uva ursi*. Stem ten to twenty feet long, prostrate, covered with rusty and bristling hairs. Leaves evergreen, rounded heart-shaped, alternate, on slender petioles, two or two and a half inches long, one and a half inches wide. Flowers light rose-colored, in small axillary clusters subtended by scaly bracts and on short peduncles, appearing early in Spring, and with a rich spicy fragrance. Corolla salver-form, limb spreading and five-parted, tube hairy within; calyx of five long, slender, scale-like and nearly distinct sepals; stamens ten; pod globular, flattened, five-celled, many-seeded.

This shrubby and trailing evergreen prefers poor and rocky soils and northern hill-sides, especially through pine woods. It is rather common through all the British American provinces; and is found in abundance in some parts of New England, New York, and Pennsylvania. The leaves are used in medicine, and were introduced to the profession largely through the warm commendations of Prof. Rafinesque; but have been a valued family remedy in Canada from the earliest settlements of that country. Water and alcohol extract their virtues.

Properties and Uses: These *leaves* resemble those of the *uva ursi*, and are used in the same classes of cases, though somewhat more diuretic. They strengthen the kidneys, at the same time that they soothe and promote their function. They are of much value in sluggish renal action with aching of the back, catarrh of the bladder, congestion and aching of the prostate gland, leucorrhoea, and gonorrhoea. In gonorrhoea, formed into a sirup with mitchella and a small portion of hydrastis, it will be found an excellent agent; and in my hands this has nearly superseded the use of copaiva, much to the satisfaction of my patients' stomachs. Combined with celastus, mitchella, and the leaves of hollyhock, it makes an admirable compound for irritation of the bladder, and for some forms of spermatorrhoea. Its mild astringency makes it a serviceable agent in the chronic dysentery and diarrhoea of children; but it is much better, suitably compounded, in the treatment of leucorrhoea. For leucorrhoea and uterine prolapsus, in forms not connected with costiveness nor of much degeneracy, but presenting general laxity of fiber and nervous languor, I would commend to the profession the following preparation, which I have used with much success: Epigea, mitchella, and aralia racemosa, each, four ounces; leonurus and populus tremuloides, each, two ounces; orange peel, half an ounce. Make into two quarts of sirup in the same manner as in compound sirup of mitchella, using alcohol of not over fifty per cent.

This article is not used in powder, but mostly by infusion, fluid extract, or compound sirups. The *fluid extract* is prepared and used as that of *cypridium*.

EPILOBIUM ANGUSTIFOLIUM

WILLOW-HERB, ROSE BAY

Description: Natural Order, Onagraceae. This beautiful perennial plant, with an herbaceous stem, is common to new lands and recent clearings from the latitude of Pennsylvania to the extreme northern regions. Stems sometimes single, or two or more from the same root-stalk; three to six feet high, erect, sometimes branched above. Leaves scattered, sessile, lanceolate, two to five inches long, smooth, with marginal and pellucid veins. Flowers in long, terminal, spicate racemes, numerous, showy, calyx and corolla both colored: calyx-limb deeply four-cleft; corolla of four petals, deep lilac-purple, varied to rose-white. July and August. This genus is in the same order with the beautiful cultivated genus fuchsia.

Properties and Uses: The *root* is a pleasant astringent tonic, resembling the *cornus florida*, but not so strong. The *leaves* are a mild astringent, of a soothing and tonic action, not unlike that of *uva ursi*; and with a fair portion of demulcent property. They may be used to advantage in sub-acute and chronic dysentery and diarrhea, after inflammation has subsided, though the bowels remain tender and relaxed. They also have a good influence in catarrh of the bladder, leucorrhoea, gonorrhoea, and other mucous discharges, when the fibers are lax but not in a too degenerate condition. One of their best uses is in hemorrhages from the lungs, nose, bladder, or uterus, excessive and persistent lochia, and menorrhagia. They will not meet sudden cases with much prostration; but are excellent for their mild and yet effective influence when the loss of blood is not large but continuous. Combined with stimulants, they will meet severe cases. They also form a good wash for catarrhal ophthalmia, and for ordinary cases of aphthous sore-mouth. Used as a poultice, they are soothing and cleansing to scrofulous ulcers; but do not meet the wants of indolent ulcers.

Two ounces of the leaves digested for half an hour in a quart of hot water, make an infusion of which two fluid ounces may be given every six or four hours; or one fluid ounce every hour, in cases requiring its frequent repetition.

ERIGERON CANADENSE

CANADA FLEABANE, COLTS-TAIL, HORSE-WEED, BUTTER-WEED

Description: Natural Order, Compositae. Genus ERIGERON: Involucre oblong, sub-hemispherical, scales of ripe flowers reflected. Ray florets numerous, linear. Receptacle naked. Pappus double, pilose. E. CANADENSE: Stem two to seven feet high, covered with stiff hairs, much branched above. Leaves scattered, alternate, lance-linear, lower ones dentate, edges lined with small hairs. Flower heads numerous, small, arranged in an irregular racemose form along the paniced branches. Florets numerous in each head, and very small; rays minute, forty or more, crowded; pappus simple. This plant is peculiar from the great size it will attain in rich soils; and from its flower-heads looking like a collection of light-green and round seeds, about the size of a very small pea, in an oblong and pyramidal panicle at the top of the plant.

This plant is common throughout the Middle and Northern States, and the Canadas, choosing neglected fields and the edges of woods, blooming in July and August, very tall, and not of an attractive appearance. It has an agreeable odor, and an astringent bitter taste. Its leading properties reside in a volatile oil, which is resident in both the leaves and flowers. This oil is very clear, scarcely tinted straw color, and of a penetrating and persistent odor that is rather agreeably aromatic.

Properties and Uses: The *leaves* and *flowers* are very diffusive, with stimulating and astringing qualities, both well marked. Their impressions are made with great promptness, but are transient; yet leave behind a gentle tonic impression. In warm infusion, they act chiefly toward the surface; but in cold infusion influence the kidneys. They have been used to most advantage in uterine and pectoral hemorrhages, in both of which they are excellent agents; and have also been used in sub-acute diarrhea, diabetes, and dropsical complaints, though of little consequence here. Their action on the kidneys is said to relieve painful micturation. For hemorrhages, they should be combined with more permanent agents, such as a small quantity of myrica, or with the composition powder. An ounce of the dried plant in a pint of warm (not boiling) water, makes an infusion of which a fluid ounce may be given every hour or half hour in hemorrhages, and every three or four hours in other cases. An extract is spoken of; but heat injures the plant too much to make such a preparation of any value. The dry powder is a good local styptic in hemorrhages.

The oil is probably one of the most diffusive stimulants in the *Materia Medica* acting upon the surface almost instantly, arousing the cutaneous capillary circulation, and giving a warm and prickling sensation over the entire skin. From two to four drops may be given on sugar, and repeated at intervals of an hour in which form it will be found one of the most prompt of all arresters of uterine hemorrhage. But it should not be depended upon for this purpose; as more permanent and positive articles should always be brought to bear as soon as they can be prepared, and this oil merely used as an adjuvant for two or three doses. In emergencies, two drops may be repeated ever fifteen minutes for two or three doses, till more positive remedies can be brought to bear, and then the use of the oil should cease.

This erigeron has usually been confounded with the species philadelphicum; but the latter article has longer ray florets and more oval leaves, and is a less valuable plant. They were introduced to the notice of the profession by Prof. Rafinesque in his Medical Flora of 1828, and by him greatly esteemed in chronic diarrhea, dropsy, painful menstruation, gravel, dropsy, suppressed menstruation, dry coughs, hemorrhages, etc.

ERECHTITES HIERACIFOLIUS

FIREWEED

Description: Natural Order, Compositae. The erigeron is sometimes called fire-weed, whence these two plants are often confounded; but the herb now under consideration is a different article. It was formerly classed under the genus *senecio*, to which it bears a strong resemblance. Stem one to four feet high, grooved, thick, often hairy, branched above into paniced racemes bearing numerous heads of whitish flowers. Leaves alternate, lanceolate or oblong, acute, sessile, upper ones often a little clasping, margins coarsely-toothed. Flowers all tubular, and without any distinguishing rays all fertile, whitish; involucre a single row of linear and acute scales, with a few bractlets at the base. Achenia oblong; pappus copious, white, very fine and soft. These plants are of a rather coarse look, not unlike that of the sow-thistle; of a somewhat rank smell; and commonly appear in clearings that have been burned over recently. Blooms from July to September.

Properties and Uses: The *leaves* and *flowers* are somewhat pungent and disagreeably bitter in taste, leaving behind a mild astringency. They act chiefly upon mucous membranes, to which they are astringent and stimulant tonics. Their principal use is in relaxed and insensitve conditions of those tissues, with too free mucous discharges, as in some cases of chronic diarrhea, leucorrhoea, and catarrhal coughs. In the "relax" (not acute dysentery) of children, they are truly excellent. Some practitioners have used them in gleet, and others in atonic dyspepsia; though they serve only inferior purposes in such cases. They are of service in hemorrhages from the lungs, bowels, kidneys, and uterus; and though much less diffusive than erigeron, are more permanent and tonic in their action. In alvine ulceration, with puro-sanguineous discharges and without inflammation, they serve a fair purpose. Outwardly, they form a good appliance to scrofulous, cachectic and other ulcerations of the half indolent grade; and an ointment of the fresh leaves in lard, is a good article to relieve the suffering of recent burns, and to promote granulation in weak sores. They contain a moderate quantity of a lightish-yellow volatile oil, which can be obtained by distillation and is easily dissipated by heat. The plant is mostly used by infusion, in the proportion of an ounce to a quart of warm. water; of which from one to two fluid ounces may be given at intervals of two hours or less. An ointment may be made by digesting the plant in lard at a moderate heat; and this forms an excellent application in burns, whence the common name of the article.

ERYNGIUM YUCCAEOFOLIUM

BUTTON SNAKE-ROOT, RATTLESNAKE'S MASTER, CORN SNAKE-ROOT

Description: Natural Order, Umbelliferae. This is a perennial plant, with a tuberous root and herbaceous stem; growing in moist grounds, (but not in water, as the old name, *Eryngium aquaticum*, suggested;) reaching a height of from two to four feet; branching by forks of two or three, looking much like an endagen. Leaves grass-like, one to two feet long, rigid, nerved, fringed with soft bristles. Flowers very small, whitish, in pedunculate and globose heads half an inch in diameter; bracts spinose; calyx five-parted. July.

This plant is found in nearly all sections of the United States. The rhizoma is knotty, wrinkled, dark-brown without and yellowish-white within, of a sweetish-aromatic taste, leaving behind a slight bitterness.

Properties and Uses: This is another of the plants introduced to the notice of medical men by Prof. Rafinesque. It combines stimulating and relaxing properties, the stimulant rather predominant; its action is moderately diffusive; and all the secernent organs feel its influence more or less. Thus it promotes the flow of saliva, expectoration, perspiration, and urine; and large doses of it will prove emetic to some persons, and muco-cathartic to others. These rather general and somewhat transient influences make this a suitable agent to use in combinations for dropsy, chronic torpor of kidneys, chronic congestion of the bladder, gleet, and chronic coughs associated with debility. It is also useful in compounds for scrofula; and especially so in secondary syphilis, where the depression of the system is not excessive. The case for which it is to be used, will determine the articles of its association—the eryngium itself being stimulating enough to give promptness and pungency to more relaxing articles, and at the same time to leave behind a slightly toned condition. By such usage, it will be found a good remedy. Used both externally and internally, Rafinesque says it is unsurpassed for the bites of poisonous serpents, and no doubt it would be excellent to aid in the elimination of viri; and I have found a warm infusion of it quite valuable to promote the tardy eruption in scarlatina, small-pox, and other exanthems, though not such a distinct diaphoretic as Rafinesque supposed it to be. It is best used in decoction, prepared by macerating two ounces of the root in a quart of hot water for half an hour. Dose of the decoction, two fluid ounces four times a day. When combined with other agents, it is made into sirup or tincture in the usual way. Dr. T. A. Wells, of Cincinnati, tells me its combination with agrimony forms a superior tonic diuretic; and he commends it highly for all nephritic maladies.

ERYTHRONIUM AMERICANUM

ADDER'S TONGUE, DOG-TOOTH VIOLET, YELLOW SNOWDROP, RATTLESNAKE VIOLET

Description: Natural Order, Liliaceae. This little plant is noticed early in the Spring, sending up a single stem from a tuberous root that lies several inches in the ground; the stem clasped by two sheathing and dull-green leaves, lanceolate, large, quite unequal in size, and peculiarly marked with irregular brownish-purple spots; the stem being really a scape, rising from four to six inches, and bearing on its top a single large nodding flower, of an open and recurved bell-shape, of which the three outer segments are yellow marked with purplish-red, and the three inner quite a clear yellow. It is common in all parts of the country.

Properties and Uses: The *root* is reputed antiscorbutic; but I have never found it any thing more than demulcent and eatable when dry, and acrid when fresh. The chief object in introducing it here at all, is to let the botanical **description** serve to distinguish it from another and quite different plant with the same common name—*Goodyera pubescens*.

EUONYMUS ATROPURPUREUS

WAHOO, SPINDLE TREE , INDIAN ARROW-WOOD

Description: Natural Order, Celastraceae. Allied to the shrubby bittersweet. Genus EUONYMUS: Tall shrubs, almost small trees, six to fifteen feet high; bark smooth, dark-grayish; branches dull-green, with the smaller ones quite four-sided and four-angled. Leaves opposite. Flowers in loose cymes on axillary peduncles, perfect; sepals four or five, forming a short and flat calyx; petals four or five, rounded, spreading; “stamens very short, inserted on the upper face of a broad and flat four to five-angled disk, which coheres with the calyx and is stretched over the ovary.” (*Gray.*) Pod of three to five lobes, with one to two seeds in each cell, and the seeds inclosed in a brilliant red aril. E. ATROPURPUREUS: Leaves petioled, oval-oblong, pointed, two to four inches in length. Flowers small, dark-purple, usually in divisions of four. Fruit a four-angled, four-valved, and four-celled capsule, on long and drooping peduncles, remaining on the shrub through the winter, and very showy in consequence of their persistent and brilliant-red arils. Common in damp woods from New York westward and southward, and much cultivated in many sections.

Euonymus Americana (*burning-bush, strawberry-bush,*) is a smaller species; distinguished by its thick and almost sessile leaves, greenish-purple flowers, and the *five* divisions of its flowers and ripe capsules.

The bark of the root of both the above shrubs appears in market indiscriminately, under the common name of wahoo. Water and alcohol extract their virtues, though water alone will not do so perfectly. They are bitter and permanent in taste.

Properties and Uses: This *root bark* is very largely relaxant, and moderately stimulant, quite slow in action, but very positive and reliable in its influence. Its principal power is expended upon the gall-ducts and liver, and from these upon the bowels; but it also exerts a gentle influence upon the stomach and the secretion of the kidneys. It is especially valued for its influence on the hepatic apparatus, for which (in its own kind) it has few equals and no superiors in the whole *Materia Medica*. It secures a persistent and not excessive discharge of bile, and leaves behind a very gentle tonic impression upon these organs. It is thus available in all cases of biliousness, chronic liver complaints, persistent constipation, and eruptions of the skin, where a slow and laxative hepatic is indicated; forms an excellent agent for the intermediate treatment of agues; and is valuable for its action on the biliary apparatus in dropsies, and many other affections where torpor and tension of the liver is a prominent trouble. A free use of a strong decoction will induce slow but rather free catharsis and so effectually will this purge the remotest tubuli of the liver, that it is said to be reliable treatment for ordinary cases of ague, scarcely requiring any antiperiodic after it. In chronic coughs dependent upon hepatic torpor and congestion, it is an excellent article; and so far as indigestion is dependent upon sluggishness of the liver, it is also of service.

The slowness with which it acts, and the predominance of its relaxing powers, are favorable to its free and general use in all the cases above indicated, and in all the consequences directly and indirectly connected with such cases. It is neither so slow, so almost purely relaxant, nor so

cathartic, as leptandra; but is more tonic, and a much better general alterative. It should not be depended on as a prompt evacuant, but as a slow hepatic and cholagogue, best suited for sub-acute and chronic cases. It not unfrequently needs to be combined with more stimulating agents such as hydrastis and gentiana among the tonics, and menispermum among alteratives. Its range of combination with various classes of more stimulating agents, is very wide; and although some physicians fully appreciate its value, the profession at large seems scarcely aware of the true worth of this agent. Disappointment will arise if it is given with the hope of securing prompt and vigorous results; for its gentleness and reliable persistency are what give it such value in many cases where remedial measures are often urged too violently.

This article is too bulky to be used in powdered form, but is given in some one or other of its preparations.

Pharmaceutical Preparations: I. *Decoction.* Crushed bark of euonymus, two ounces; boiling water, a quart. Digest at a fair heat for an hour, strain with pressure, add two ounces of sugar, and enough water to make a quart. This is quite laxative in doses of two fluid ounces every four hours; but is mentioned chiefly on account of its great popularity in some sections for “breaking the ague” a pint drank at intervals several hours before an anticipated chill, being pronounced almost infallible. So far as hepatic action is concerned, it will be found of the first efficacy: but no judicious physician would omit following it with a sound stimulating tonic. II. *Extract.* Treated with water and alcohol, the root yields a pretty abundant extract, and a valuable one. In habitual costiveness, it forms a fine basis for a laxative pill, especially if combined with extract of juglans and the mass stiffened with powdered xanthoxylum. From five to ten grains of the extract may be used night and morning. III. *Fluid Extract.* This is prepared after the manner of the fluid extract of menispermum. It is one of the best preparations of this class, and may advantageously be added to sirups when its action is needed. Dose, half a drachm or more, three times a day.

A pleasant and very serviceable *liver pill* may be made by using extract of euonymus, softened with a little essence of peppermint, and stiffened into a pill mass with equal parts of powdered bitter root and golden seal, and one-tenth part capsicum. They are laxative without being distinctly cathartic. This agent enters into a variety of compounds with aralia hispida, hydrastis, fraxinus, gentiana ochroleuca, artemisia, juglans, etc. I have employed it to excellent advantage for biliousness and the intermediate treatment of agues, by making a sirup of four parts euonymus, two parts balmony, one part hydrastis, and one-fourth part xanthoxylum.

EUPATORIUM AGERATOIDES

WHITE SNAKEROOT, POOL ROOT

Description: Natural Order, Compositae. A member of the boneset family, and a very common plant through open woods and along fences in all sections of the United States and Canada. Stem smooth, two feet or more in height, branching, slender-looking, and quite a pale green, (or greenish-yellow.) Leaves opposite, ovate, acuminate, subcordate at base, coarsely dentate, three-veined, smooth, thin, very pale green, three to five inches long by one and a half to three inches broad, standing well out from the stem and branches on smooth petioles two to three inches long. Flowers snow-white, in numerous heads, which are aggregated by small clusters into terminal and pretty large corymbs, which are quite attractive; florets all tubular, ten to fifteen in each compact head, slightly fragrant, and with the long-exserted styles making a light fringe a-top. The whole plant presents a graceful appearance, as the upper branches gradually extend beyond the lower ones, and form an open and spreading head with the clusters of pure white flowers upon the extremities. In bloom during August and September. Roots numerous, small, grayish-white, in close tufts of fibers on a knotty center root.

Properties and Uses: Dr. H. Howard first called attention to the roots of this plant, which were recommended in gravel, and were used by the Indians as a remedy in ague. In 1852, not then having seen Dr. Howard's work, or known any thing of this article, its beauty attracted my attention; and I investigated its properties, and made reports upon them in different journals which reports were subsequently copied without giving credit. The root is quite pungent, but rather pleasant; stimulating properties predominating, and relaxant moderately well marked; prompt and diffusive in its first action, but manifesting quite a permanent influence on the system. Its influence is quite general; and the benefits to be obtained from it, like those from the boneset, will depend materially upon the form in which it is exhibited. Used in *cold* infusion or decoction, it warms the stomach, excites appetite, promotes the salivary flow, increases expectoration from the lungs, and finally exalts the renal flow. Its stimulating properties forbid its use in irritable or even sensitive conditions; but it acts well in languor of the stomach, dryness of the mouth, and chronic prostration of the lungs. Its action on the kidneys is scarcely valued, unless it be to give intensity to such relaxing diuretics as eupatorium purpureum; and then it will be of use in sluggish cases. Given in *warm* infusion, it manifests a strong action upon the surface and the nervous system— securing an abundant and warm perspiration, sustaining the nerves under circumstances of depression, and securing a full outward flow of blood that greatly relieves the heart and brain from congestive pressure. In the peculiar nervousness, restlessness, and headache that attend intermittents, simple ague, congestive chills, and bilious intermittents, I know of no one article that will so effectually give relief by sustaining both the nerves and blood-vessels. It is under such circumstances that I value the agent most; and it maintains just that outward flow and action which are so valuable in cutting short all forms of intermitting disease. In receding small-pox, or measles, or spotted fever, it will quickly and powerfully promote the eruption; and may be used to advantage in typhoid, typhoid pneumonia, and the incipient collapse peculiar to approaching abscess of the lungs and effusion into the pleurae. It exerts an antispasmodic action of the stimulating grade in hysteria, and painful or suppressed menstruation; and will exert a marked influence upon the uterus in tardy labor with coldness and depression. I am aware that this is high praise; but am also convinced by experience that the

agent deserves it all. Its pungently-stimulating action must not be overlooked; else it might be given in conditions where such firm stimulation was not needed. It is in no sense so permanent as capsicum, nor even so biting as xanthoxylum; but is more stimulating and tonic than ginger, and commonly needs to be combined with such relaxants as asclepias in excess.

The most common mode for its exhibition is by infusion. Half an ounce to a quart of warm water will readily yield their properties; and of this from one to two ounces may be given at intervals of an hour. A tincture, made of an ounce of the roots in eight ounces of thirty percent alcohol, forms a good addendum to sirups of either relaxing tonics or relaxing diuretics. When carefully kept within its proper sphere, this agent will be found valuable.

The eupatorium aromaticum is closely allied to this plant, but is rough with scattered hairs, bears its leaves on shorter petioles, and has aromatic flowers. Probably the roots of the two species are about the same.

EUPATORIUM PERFOLIATUM

BONESET, THOROUGHWORT

Description: Natural Order, Compositae. This common plant is so well known in all sections of America, as scarcely to need any word of **description** here. It grows in damp grounds; sends up one to several erect, rough, and stout stems, which branch in divisions of three near the top—the branches also being erect, and giving the head of the plant a close and corymbose appearance. The leaves are oppositely arranged in alternating pairs, four to eight inches long, tapering evenly to the point, dark green, an inch or more in breadth at the bases, and with the bases of each pair along the stem so perfectly united as to give the appearance of a stem growing directly through the center of one long leaf. The upper leaves, and those on the branches, are sometimes not united. The flowers are grayish-white, numerous, and formed into flat corymbs at the extremities of the erect branches. In bloom from August to October.

Properties and Uses: The *leaves* and *flowers* of this plant are among the truly valuable remedies of our native Materia Medica. They have long been employed in family practice, and deserve to be esteemed as one of the most useful medicines of the people; and though their intense bitterness has caused them to fall largely into disuse, they merit much more attention than is now given them by the profession. The two portions of the plant appear in market together.

Boneset is almost a pure relaxant, with stimulating properties scarcely noticeable. It acts rather slowly and persistently. Its greatest power is expended upon the more inward muscular structures, as those of the stomach, gall-ducts, bowels, and uterus; but it impresses the nervous peripheries, and also influences the skin decidedly. It is one of the agents that is peculiarly applicable to one or other class of purposes, according to the form in which it is exhibited. Given by *cold* infusion, or other cold preparation, it is a soothing and relaxing tonic, suitable to all irritable forms of dyspepsia; is gently relaxant to the hepatic apparatus, promoting both the secretion of bile and its ejection from the gall-ducts; and finally securing a mild laxative action on the bowels. It is serviceable in bilious difficulties, when there are sensitiveness and tension of the tissues; in habitual costiveness, with thirst and dryness of the faeces; in skin diseases of hepatic origin; and in recovery from febrile conditions, especially intermittent and bilious fever. But it is not applicable to cold and sluggish states of the stomach, to torpor of the liver and bowels when accompanied with flaccidity of the tissues, to low intermittents, nor as a tonic in any case where the bowels are inclined to free action. For strengthening purposes, it is most generally combined with tonics of a more stimulating grade, such as gentiana, sabbatia, hydrastis, artemisia, and a small portion of capsicum; and is particularly serviceable in bilious cases when it is necessary to maintain steady laxity of the bowels without actual catharsis. Though the effect of boneset on the hepatic and alvine secretions is slow and mild, it is nevertheless persistent and very reliable. It exerts a decided influence upon the lungs, and may be used in weakness of the chest, dull achings through the lungs, and chronic coughs, especially in slightly irritable conditions; or in languid conditions, if some more stimulating agent be combined with it. Indeed its soothing and toning influence upon the respiratory organs, (and that whether given in cold or warm preparations,) is of the most valuable character, and is generally too much overlooked.

Given as a *warm* infusion, it will secure slow and gentle, yet rather persistent, diaphoresis. For this purpose it is very useful in bilious, bilious remitting, and yellow fevers—its action on the liver and bowels being well-marked in this form, and hence the infusion is doubly advantageous in such cases. Its free use will many times cut short a bilious remitting attack; and it is a popular belief that it is reliable in terminating agues, though there is nothing sufficiently stimulating about the agent to warrant such an expectation, though it is still a valuable article in such cases. In very large quantities, especially if used quite warm and at short intervals, it will induce rather sudden emesis. It is rarely resorted to for this purpose; but a full portion of it may be used to decided advantage in the drinks, when an emetic is to be given in cases of bilious fever and acute inflammation of the liver, and also in what is known as dengue or break-bone fever. It makes a good depurating sudorific for non-malignant cases of scarlatina, and in small-pox, but relaxes the bowels too much to be useful in measles. It affords much relief to the aching of the limbs in recent colds and rheumatisms, whence (probably) its popular name of “boneset.” It also exerts a moderate influence upon the nervous system; and if combined with such a diffusive stimulant as xanthoxylum, a good antispasmodic influence will be obtained. It makes an excellent relaxant injection for moving the lower bowels; and may be used in the same way for its nervine influence, which is then shown to better advantage than when given by the stomach; and when combined with a little zingiber and given as an injection with demulcents, it contributes greatly to a permanent and an equable diffusion of blood toward the surface.

The dose of the powder would be from ten to twenty grains, but it is not given in that form. An ounce of the powder to a quart of boiling water makes a strong infusion, of which from one to three fluid ounces may be given for a dose, and repeated according to the objects sought.

Pharmaceutical Preparations: I. *Extract.* The solid extract is prepared from decoction, in the usual way. It is an excellent basis for a pill mass, when tonics, strong stimulants, or nervine relaxants are to be used. It may be used by itself as a mild relaxing tonic, in doses of from five to ten grains three times a day; but is most generally associated with powders of such articles as gentiana, quassia, and similar intense articles. Combined with quinine and capsicum, it forms a good antiperiodic pill; and is an admirable basis for pills of lobelia, cypripedium, scutellaria, and others of their class. II. *Fluid Extract.* Macerate a pound of coarsely ground boneset in a quart of fifty percent alcohol; transfer to a percolator, and treat till half a pint has passed; set this aside, and add warm water to the percolator till the strength of the drug has all been extracted. Evaporate the latter product to eight ounces, and add to the first tincture. Filter, and dissolve the residuum with a little diluted alcohol. Prepared in this way, this fluid extract is a strong and very useful agent, fully representing the qualities of the plant. It is generally used as an addition to other preparations, as tonic sirups, sirups for old coughs with hepatic torpor, alterative sirups designed for sundry diseases of the skin, etc. Dose, from twenty drops to half a fluid drachm three or more times a day. III. *Eupatorin.* This is prepared from a saturated tincture on absolute alcohol, after the manner of the other resinoids. When, however, the reduced tincture is added to water, not more than two parts of the latter should be used, as otherwise a considerable portion of the eupatorin will remain suspended. It represents the herb moderately well, but has to be used in large doses, as from five to ten grains.

EUPATORIUM PURPUREUM

QUEEN OF THE MEADOW, GRAVEL ROOT, JOE PYE WEED

Description: Natural Order, Compositae. Another member of the Boneset family, though with forms of growth in many respects quite unlike the two preceding articles. The stem is variously from three to six feet high, stout, smooth, erect, with a purple band about an inch wide around the leaf-joint, and sometimes the whole stem purplish on its southern face. Leaves in whorls of threes, fours, and fives, about ten inches apart along the stem, thin, smooth above, slightly downy beneath, coarsely serrate, on short petioles, six to eight inches long by an inch and a half to two inches broad, oval. Flowers in loose terminal corymbs, which are a little nodding, color light- purple varying to almost white; florets tubular, five to ten in each compact involucre. August and September. Common in moist meadowlands.

The root of this stately plant is a thick and short woody caudex, brownish-black without, crowded with long fibers a sixteenth of an inch in diameter. The principal remedial qualities reside in these fibers; which are brownish-gray without, yellowish-white within, of a faint smell and pleasantly-bitterish taste. They yield their virtues pretty freely to hot water, and quite freely to diluted alcohol.

Properties and Uses: The *root* is largely relaxant, with very moderate stimulating properties; acting rather slowly and somewhat persistently. Its chief influence is expended upon the kidneys, bladder, and uterus; and it impresses the nerves of these parts, and probably the whole sympathetic nervous system, distinctly. Its popularity has been gained from its influence over the kidneys; where it promotes the flow of water, soothes irritation, and is especially beneficial in cases of reddish and reddish-brown urine, and where there is a deposit of reddish sand. (§192.) Such cases constitute the basis of lithic acid gravel; and it is from the decided relief given in these that this article has won its sobriquet of gravel-root; and though it will not dissolve a calculus once formed, it will often give relief from the attacks of pain incident to such conditions, and probably its timely use would nearly always prevent the formation of this class of stone. In oxalic and phosphatic gravel, it is of trifling service; and the same may be said of glutinous mucous deposits in the urine. In all febrile cases, when the urine is scanty and red, and the back painful, it is an excellent agent; though in prostrated typhoid cases it will often prove too relaxing to be suitable, unless combined with a full portion of capsicum. In chronic torpor of the kidneys, it is useful as an ingredient with tonics and diffusive stimulants; and may be given to advantage in company with *celastrus*, *uva ursi*, *althea rosea*, *hydrastis*, and similar agents, in irritable forms of spermatorrhea, prostatic disease, bloody urine, painful micturation, and subacute gonorrhoea. Probably it influences the uterine organs directly, as well as affording them relief through sympathetic action upon the kidneys; as it often answers a good purpose in prolapsus, leucorrhoea, and other female weaknesses, especially when the back is weak and painful. By eliminating solids through the kidneys, it is beneficial in some cases of acute rheumatism. It has been used in dropsical affections, and is good so far as the kidneys are concerned; but in such cases it always needs to be combined with tonics and stimulants. By its relaxing property, it relieves irritability, and is not suited to conditions of extreme languor and depression; yet it leaves behind a very gentle tonic impression, and acts well when combined with such diffusives as *zingiber* and *polemonium*. Dose, half a drachm of the powder three times

a day. It is oftenest given by warm infusion, made of half an ounce of the root digested for twenty minutes in a covered vessel with a pint of hot water; of which the dose is usually a fluid ounce once in two hours for acute cases, and two fluid ounces four times a day in more lingering cases.

Dr. Wm. Daily says the *flowers* will relieve colic and arrest bleeding of the lungs.

Pharmaceutical Preparations: I. *Fluid Extract*. Treat one pound of the crushed roots in the usual manner with 60 percent alcohol till six fluid ounces have passed; set this aside, and treat with water till exhausted; evaporate the latter product to ten fluid ounces, and mix the two products. This is a fair representative of the root, yet not perfectly so. It may be used in doses of from ten to thirty drops. II. *Eupurpurin*. This has been supposed to be a resinoid, but is properly an alcoholic extract dried and reduced to powder, as in the case of cypripedin. It is comparatively an inert article, and one that is rarely used. The same remarks apply to the solid *extract* that is sometimes prepared from the roots. Any treatment by continued heat seems greatly to dissipate the good qualities of the agent, whence an infusion made at a low temperature gives the best results.

I have many times prepared the following for irritable bladder and urethra, with a too frequent desire to micturate, and commend it to notice: Eupatorium purpureum and epigea repens, each four ounces; hydrastis and seeds of arctium lappa, each two ounces. Form these into a quart of sirup, using a moderate heat. Dose three to six fluid drachms four times a day.

EUPATORIUM TEUCRIFOLIUM

WILD HOARHOUND

Description: Natural Order, Compositae. Another member of the Boneset family, growing from two to three feet high, with a rough-hairy stem. Leaves sessile, ovate, rough, lower ones doubly serrate, upper ones scarcely serrate. Stem divided into a paniced corymb above, bearing a limited number of small flower-heads. Flowers small, white, five in each head. The entire plant bears something of the appearance of an erect verbena, whence it was at one time called eupatorium verbenaeifolium. It is found in low grounds, blooming in August; and though met in all sections of the country, is most abundant in the Southern States.

Properties and Uses: The *leaves* and *flowers* of this plant have properties in many respects similar to those of boneset; but are more distinctly stimulating than the latter article, and also more diffusive. A warm diffusion is quite prompt in securing perspiration, which is followed by a good action on the bowels. It, as well as the species *hyssopifolium* and *rotundifolium*, have a wide reputation through the South for their power in casting out of the virus of serpents, and for curing bilious remittents and intermittents. They no doubt deserve more attention than has yet been given to them by the profession.

EUPHRASIA OFFICINALIS

EYEBRIGHT

Description: Natural Order, Scrophulariaceae. This is a pretty little plant from four to six inches in height, found through the New England States and Canada, and quite abundant in Europe. Stem somewhat square, downy, branched, slender. Leaves opposite, less than half an inch in length, ovate. Flowers axillary, solitary, light blue or red, as long as the leaves, strongly two-lipped; upper lip concave, and two-lobed, lower lip three-lobed and spreading; lobes deeply emarginate. July. The small size of this plant causes it generally to be overlooked; and it is often confounded with the euphorbia hypericifolia, which also has the common name of *eyebright*. The latter article is acrid and poisonous; and may be distinguished by its purple and prostrate stem one or two feet long and much branched; by its yielding an acrid and milky juice wherever broken; and by its leaves having dark spots near the center.

Properties and Uses: The *leaves* are mildly stimulating and astringing, and exert a somewhat tonic influence. They act principally upon mucous membranes; and may be used to advantage in all excessive mucous discharges, as in leucorrhoea, gonorrhoea, coughs, catarrh of the bladder, and laxity of the bowels. They are best adapted to mild cases, but are reliable in their action; and are a valuable remedy in the peculiar summer complaints of children. Their common name refers to their decided efficacy as wash or poultice in weak eyes and congestion of the conjunctiva; and in catarrhal ophthalmia. They are also reputed useful in the cough and headache that sometimes follow catarrhal affections. An infusion is made of an ounce of the leaves to a pint of hot water, and used in doses of two fluid ounces every four hours.

FAGUS FERRUGINEA

BEECH

Description: Natural Order, Cupuliferae. The beech-tree of our forests is in the general family with the oak and chestnut. They are well known for their tall and straight trunk, smooth and ash-gray bark, dark-green, shining, coarsely toothed, and straight-veined leaves, and for their two sharply three-sided nuts in a foxy-red and prickly involucre.

Properties and Uses: The *leaves* of the beech-tree are possessed of relaxant and demulcent properties, and leave behind a mild tonic impression. They may be used in poultices to painful swellings and irritable and weak ulcers. An infusion, made by digesting two drachms of the dried leaves in a pint of warm water, forms an agreeable and useful drink in scanty and scalding urine, aching of the kidneys and bladder, recent catarrh of the bladder, and sub-acute dysentery. Though not yet introduced to the profession in these connections, I can commend them as a mild yet effective agent, suited to recent cases, and deserving of attention. Rafinesque says they make a good wash for burns, scalds, and frost-bites; but they are evidently too relaxing to be suitable to such injuries when so deep as to give a tendency to mortification. The *bark* is a mild tonic of the gently astringing character; and in some sections is a popular family remedy for laxity of the bowels.

FEL BOVINUM

BEEF'S GALL

Preparation: The gall (bile) of cattle is prepared for medical purposes by simply evaporating it at a moderate heat, in a shallow pan. It may thus be brought to a condition so dry that it may be powdered, yet preserve its original smell and properties. It requires to be preserved in air-tight bottles.

Properties and Uses: This article is very slightly alkaline; and is also stimulant and moderately relaxant. It acts upon the stomach, duodenum, and smaller intestines, proving mildly laxative, and leaving behind a tonic impression. It has been used in powder, as a component in pills, for intermittent, dyspeptic, bilious, and similar difficulties dependent upon an insufficient amount of bile in the duodenum. Probably its best use is in ague—not as an antiperiodic, but as a hepatic; for it seems to arouse the gall-ducts gently. Combined with strong stimulants and tonics, it usually proves quite efficacious in such cases. Dose, from three to ten grains, three times a day.

FOENICULUM VULGARE

FENNEL SEED

Description: Natural Order, Umbelliferae. "Calyx a tumid, obsolete rim; petals roundish, entire, involute, with a squarish blunt lobe. Fruit nearly taper. Half-fruits with five prominent bluntly-keeled ridges. Root biennial or perennial, tapering. Stem annual, erect, striated, smooth, green, three to four feet high, copiously branching. Leaves alternate at the jointed stem, on membranous and striated sheaths, many times pinnate; leaflets long, linear, pointed, smooth, dark-green. Flowers in large, flat, terminal umbels, thirteen to twenty rays, without involucre. Corolla of five golden-yellow petals. Fruit ovate, less than two lines long by one line broad, of a dark color." (*Lindley*.)

This plant grows wild in Europe upon sandy and chalky soils; and is now much cultivated in the eastern portions of the United States. Another variety—*foeniculum officinale*, or *sweet fennel*—has seeds twice as large as the above species, and their color is lighter and the flavor more sweet. The *foeniculum dulce* grows but about a foot high, and furnishes a quite dark seed. The seeds, though thus differing in size and color, are nearly the same in qualities. They contain a fixed and an essential oil. Alcohol and diluted alcohol extract their virtues freely, and warm water acts upon them quite well.

Properties and Uses: The *fruit* (seeds) are quite fragrant, and are among the most relaxing and least pungent of all the aromatics. They are eminently carminative, and quite diffusible; and are usually better received by the stomach than are cummin or dill seeds, being also more relaxing than these, but more stimulating than anise seed. Their principal use is in combination with senna, rhubarb, juglans, rhamnus, and other cathartics. They are a valuable ingredient of the Carminative Drops described under angelica. The *oil* may be made into essence.

From a very early period of medical history, fennel seed has been credited with the power of increasing the secretion of milk, (galactagogue.) Its use for this purpose is most extensive in Germany; but leading physicians of many countries ascribe to it excellent power in this direction. The infusion of the seed may be used without limitation. Huefeland employed it in the following combination: Fennel seeds, one drachm; sweet orange-peel, half a drachm; carbonate of magnesia, three drachms; sugar, two drachms. Mix the powders, and give a teaspoonful three times a day. This preparation is greatly extolled through Germany. Others have given formulas combining the fennel with anise seed, parsley root, licorice root, etc., and using an infusion freely.

FRAGARIA VESCA

STRAWBERRY

Description: Natural Order, Rosaceae. The numerous varieties of the cultivated strawberry are so well known that it would be useless to occupy space in their **description**. The various wild strawberries, though botanically different in species, medicinally possess the same properties. The edible portion, called the berry, is a peculiar succulent expansion of the receptacle, and is not the fruit at all; while the real fruit of the plant consists of the small seeds (achaniae) which are imbedded upon the surface of this receptacle.

Properties and Uses: The *leaves* are mildly astringent, with slight tonic qualities. They make a pleasant and useful remedy, especially for children, in diarrhea, laxity of the bowels, subacute dysentery, and similar recent forms of intestinal debility. They act somewhat upon the kidneys and bladder; and can be used to advantage in catarrh of the bladder, and mucous discharges from the vagina in scrofulous children, and are serviceable in recent cases of leucorrhoea in nervous women. They are not among the distinctly drying astringents; but are soothing and strengthening, and have an aroma which is agreeable to the stomach. The *berries* (receptacles) are among the sharper vegetable acids, fragrant, and grateful to most persons; but dyspeptics, and some who are not dyspeptic, yet have not a sound digestion, usually suffer heart-burn, pain, and even nettle-rash or hives, after using them. They make a pleasant acid drink in bilious and typhoid febrile cases, when an acid is admissible. The seeds are quite indigestible, and will often irritate the bowels in persons who can use the pulp alone to advantage. When crushed, and the juice will strained off from the seeds, a fine sirup may be made by dissolving a pound of sugar in each pint of juice.

FRASERA CAROLINENSIS

AMERICAN COLUMBO

Description: Natural Order, Gentianaceae. This fine member of the Gentian family is indigenous to America; and grows from New York westward and southward, and especially abounds in some of the north-western States. The stem is perennial, from four to seven feet high, erect, perfectly straight, one to two inches in diameter at the base, often with short and erect branches above, dark-purple. Leaves in whorls of from four to six, at intervals of a foot or less along the stem; sessile, smooth, dark-green, oblong-lanceolate, the lower ones often a foot long by three inches broad, gradually getting smaller toward the top of the stem. Flowers in a compound pyramidal panicle at the top of the stem, verticillate in the axils of reduced leaves; panicle one to four feet long; corolla of four oblong, greenish petals, spreading, with blue dots, united below, and a purple gland near the base, deciduous; stamens four, short; style one, with two distinct stigmas. Fruit an oval, yellowish, one-celled capsule, with but a few flat and marginate seeds. June and July. Flowering in the third year of the plant, at which age the stem for the first time appears; and the plant usually dies after once flowering.

The root is the medicinal part. It is fleshy, an inch or more in diameter, one to two feet long, sometimes horizontal, but oftener more directly descending, frequently branched, rough, hard, and with not many fibers. The outer covering is grayish-red; and the inner substance grayish-yellow. It usually comes to market in flat, circular pieces, cut transversely off the root; rather hard, and with coarse rays running from the center to the circumference, but without the concentric rings of the cocculus. It has no especial aroma; and the taste is at first rather sweetish, but afterwards quite bitter. It yields its virtues to alcohol, diluted alcohol, and water.

Properties and Uses: This *root* is among the reliable tonics, with relaxing and gently stimulating properties first manifested, and leaving behind a mild and pleasant astringent impression. It is quite bitter, but by no means so intense as any of the gentians; neither is it so strong as cocculus, sabbatia, or hydrastis, but holds an intermediate position between these strong tonics and the milder populus and liriodendron. It improves appetite and digestion; strengthens the biliary apparatus and smaller intestines, hence improving the alvine function when costiveness is dependent on ordinary debility; and acting to peculiar advantage in prolapsus, leucorrhœa, and other forms of female weakness. It is usually well received by the stomach; but is not suitable to chronic gastritis, costiveness with inward feverishness, or distinct obstructions of the gall-ducts. Neither is it strong enough for conditions of profound atony; but is a most efficient tonic for the large class of intermediate cases requiring such an influence. Indigestion with colicky pains, will usually find much relief from it. Some practitioners discard it altogether, because its action is not intense; But its moderation in power fits it for a great number of cases to which too strong tonics are at present inappropriately applied.

Dose of the powder, ten to twenty grains three times a day. Immense doses, as sixty grains, are often written about; but this is a closet prescription, and not the advice of an actual practitioner. It is rarely given in powder, but usually is exhibited in some prepared form. The fresh root acts as a mild cathartic, and is quite nauseating.

Pharmaceutical Preparations: I. *Decoction*. One ounce of crushed fraseria, digested for half an hour in a quart of boiling water, strained, and then evaporated till a pint remains, forms an excellent decoction. Half a fluid ounce may be given three or four times a day. II. *Extract*. The solid extract, made from the watery decoction, is a good concentrated form in which to exhibit this article. The dose may range from three to eight grains. III. *Fluid Extract*. To make this preparation, a pound of crushed fraseria may be treated in the percolator with diluted alcohol till eight fluid ounces have passed; then treated with water till all the strength of the drug is obtained; the latter product evaporated to eight fluid ounces, and then added to the first product. Dose, half a fluid drachm. IV. *Compound Wine of Columbo*. Fraseria, leonurus, camomile, cypripedium, each two ounces; coriander, cinnamon and orange peel, each half an ounce. Crush the materials, and macerate them for a week in two quarts of Sherry or other good wine. This is a very agreeable and effective tonic compound, with carminative and superior nervine properties. The presence of camomile does not adapt it to cases where the menses or lochia are too free; but under all other circumstances where a mild tonic is required for either gastric or nervous debility, it will be found of superior efficacy. Dose, a fluid ounce or less three times a day. V. *Woman's Friend*. Crushed columbo, six ounces; hydrastis and helonias, each two ounces; myrica and orange peel, each half an ounce; capsicum, ten grains. Macerate for two days, in a covered vessel with one pint of Sherry wine; transfer to a percolator, and add thirty percent alcohol till two pints have passed; then add water till another pint has passed, and in the whole product thus obtained dissolve two pounds of sugar without heat. I commend this as a superior stimulating and astringing tonic for degenerate leucorrhoea, prolapsus and indigestion, and for passive menorrhagia, and other distinctly atonic conditions of the stomach, uterus, and vagina. Dose, from two to six fluid drachms three times a day.

It is not liable to induce costiveness in the above conditions.

FRAXINUS AMERICANA

WHITE ASH, GRAY ASH

Description: Natural Order, Oleaceae. *Fraxinus acuminata* of Lamark. The tree here spoken of is the huge ash-tree common to our country, growing in rich and moist grounds, and often attaining a height of fifty and sixty feet. It is distinguished by the gray and furrowed bark upon the stem, its smooth and greenish-gray branches, and its light-colored and solid wood, which is very tough, and is used largely in a variety of manufactures. Genus FRAXINUS: Flowers dioecious. Calyx small, four-toothed or entire, or even obsolete. Petals four, cohering in pairs at the base, or only two, but entirely wanting in the American species. Stamens two to four; style single, stigma cleft. Fruit a samara, flattened, one or two-celled, winged at the apex. Leaves petioled and pinnate; the flowers in crowded panicles or racemes. All trees, with timber valuable in our species. F. AMERICANA: Branches and petioles smooth. Leaflets seven to nine, ovate or lance-oblong, stalked; pale, smooth, sometimes pubescent beneath, from four to five inches long by an inch or more broad, somewhat toothed. Calyx minute and persistent; corolla none. Fruit round and without any margin at the base; above extended into a thin lanceolate or wedge linear ring.

The bark from the root, and also the inner bark from the trunk, are used in medicine. The trunk bark is thick, tough, yellowish-white, of a faint odor, and slowly imparting a sweetish and then a moderately bitter and pungent taste. It yields its properties readily to boiling water, diluted alcohol, and alcohol.

Fraxinus sambucifolia is the *black* or *water ash*. It grows in wet grounds, is not so large as the previous species, and the wood readily splits into thin layers, which are much used in some kinds of basket and chair work. Its bark is probably possessed of the same properties as the other, though it seems to leave behind a slight impression of astringency.

Properties and Uses: This *bark* is a relaxant and stimulant, with the relaxant properties in moderate excess. Its action is quite positive, but is slow and persistent; and it is not an agent from which sudden impressions are to be expected. It exerts its influence chiefly upon the gall-ducts and the muscular fibers of the bowels; but also increases the flow of urine, and of the biliary and alvine secretions. These actions entitle it to be classed among the strong and mildly stimulating alterants; and it leaves behind a medium tonic impression which enhances its value.

In average doses, it may be relied upon in all sub-acute and chronic cases to secure a steady ejection of bile from the gall-cyst and the tubuli of the liver, with a mild yet effectual action on the bowels. It is thus fitted for jaundice, biliousness, costiveness arising from hepatic torpor, and the skin affections that depend upon insufficient elimination of bile. By this cholagogue and hepatic action, it proves of eminent service in forms of dropsy arising from obstructions in the liver; and from the same action, will be found one of the best of agents to combine with more stimulating tonics for an intermediate treatment of agues. It appears to exert a distinct influence over the spleen, and will be found an excellent agent to relieve chronic "ague-cake." In pretty large quantities, it will secure moderately free catharsis; but is applicable to the bowels mainly for its steady evacuant and tonic influence. It may be used in distinct torpor and chronic

congestion of the liver; and has proven of much service in chronic coughs arising from sympathy with turgescence of that organ. It is several degrees more stimulating than the euonymus, and will be found equal to that admirable agent in the large class of cases requiring a positive yet slow influence upon the organs above named. It deserves much confidence in chronic dropsies; but more for the relief it gives to the venous circulation by its action on the hepatic organs, than for its power over the kidneys. It may be combined to advantage with hydrastis and sabbatia among tonics for intermittent difficulties; with celastrus and rumex as an alterant in skin affections; and with aralia hispida and ambrosia for dropsy and renal torpor.

The *leaves* of the black ash are reputed to be of rare power in destroying all snake poisons. It is asserted that the most venomous reptiles will not touch any portion of this tree, and can easily be put to flight by a branch with the leaves upon it; and that the wound of any serpent may be rendered harmless by a free use of a decoction of the leaves inwardly, and a poultice of the same outwardly. It is probable that these accounts are somewhat exaggerated; but as all popular traditions have a foundation in some truth, this reputation of the ash leaves should be tested.

The bark is not given as a powder, but always in decoction, extract, or some other form. The *decoction* is prepared by digesting two ounces of the crushed bark in a quart of hot water for an hour, straining, evaporating so that half a pint shall remain, and adding to this an ounce of the tincture of orange-peel. Dose, a fluid ounce or more three times a day. The *extract* is prepared with water, in the usual way; and may be given in pills, in doses of five to eight grains, or used as a basis for pill-mass when apocynin, juglandin, jalapa, or podophyllin is used in powder. It is sufficiently relaxing to balance the griping of these stimulating cathartics, especially if a little anise or sassafras oil be added to the pills. Most commonly it is compounded with other agents in the preparation of various tinctures and sirups. Among the most efficient combinations of this kind in which I have employed it, is the following: *Compound Sirup of Fraxinis*. Crushed bark of fraxinus, two pounds; hydrastis and aralia hispida, each, one pound; gentiana ochroleuca, euonymus, and xanthoxylum bark, each, half a pound. Macerate for two days, in a covered vessel, with a sufficient quantity of rectified whisky. Transfer to a percolator, and add whisky till a gallon has passed. Set this aside, and continue the percolation with water till all the strength of the drugs has been obtained. Evaporate to four quarts; add eight pounds of sugar; and when this gets cold, add the first product. Dose, half to a whole fluid ounce three times a day in biliousness, jaundice, habitual costiveness in bilious temperaments; between the paroxysms of ague, and for the languor and indigestion which accompany bilious conditions. I respectfully offer it to the profession as a preparation of unusual power, especially adapted to chronic and rather depressed cases; and also suitable for dropsy.

FRAXINUS ORNUS

FLOWERING ASH, MANNA-TREE

Description: This is a species of the genus *Fraxinus* that is found in Southern Europe along the slopes of mountain ranges. It is sometimes called *Ornus Europaea*; and one variety is the *F. rotundifolia*. The generic characters are the same as in the preceding article, though the flowers are polygamous instead of being distinctly dioecious. The specific characters are as follows: A small tree, fifteen to twenty-five feet high. Leaves opposite, large, unequally pinnate; leaflets seven to nine pairs, large, sub-petiolate, lance-oval, entire at the base, serrate toward the apex. Flowers small, with yellowish-white corollas, growing in large and crowded panicles, which are not so long as the leaf. Fruit a flat, linear-lanceolate samara, with but a single brown seed. The variety *rotundifolia* has smooth and roundish leaflets, often of but four pairs.

This tree yields a rather abundant exudation from its stems; and this dries into concrete masses, often an inch or more in length, yellowish-white in color, and abounding in a peculiar sugar combined with some extractive matter. The masses are of irregular shape—usually flattened, (whence the name *flake manna*,) and have an insipid kind of sweetness, but leave at last a slightly pungent taste. A variety known in commerce as *fatty manna*, is in small and soft masses, of a dirty yellowish-brown color, and a rather nauseating sweetness. It is impure; and so also is the variety known as *sorts*, which is also dark colored. The manna sugar (mannite) constitutes about seventy percent of the flake article; and may be obtained in needle-shaped crystals by boiling in alcohol. It is white, without smell, and quite sweet; soluble in five parts of cold water and three of boiling water; soluble in boiling alcohol, but only sparingly in cold alcohol. In this latter peculiarity it differs from cane and grape sugars. The medical properties seem to reside wholly in the extractive matter, and not in the sugar; but both are soluble in water.

Properties and Uses: The exudation *manna* is a very mild laxative, acting slowly without stimulation, and commendable on account of its unusual sweetness. It seems more like a condiment than a medicine, on which account it is quite acceptable to young children. It is not, however, easy of solution in the stomach; hence large quantities may be followed by some flatulence, and even by griping. This is readily obviated by combining it with a little anise or fennel. The commoner qualities are often quite griping. It is mostly used for children and delicate women. An adult may use an ounce or more, and a child one or two drachms, daily. It may be eaten, or dissolved in milk or water. It is usually prescribed in infusion with such cathartics as senna and magnesia. It enters into the Sirup of Senna.

GALBANUM OFFICINALE

GALBANUM

Description: The article galbanum is a foetid gum-resin of the same general class with asafoetida and gum ammoniacum. It has been an article of commerce for many centuries, coming from the Levant and Persia, and apparently procured also from Arabia; but the plant from which it is obtained is still unknown, though seeds and portions of seed-vessels found in the gum-resin, show it to be of the order umbelliferae. As found in market, it occurs either in pale brownish-yellow tears about the size of a pea, or in irregular lumps of a darker brown color. It is quite resinous, becomes brittle and pulverulent at low temperatures, and softens at a moderate elevation of heat; and has a disagreeable, foetid odor, and an acrid, pungent, and unpleasant taste. It contains resin in excess, along with gum and a volatile oil. It is most soluble in alcohol of about fifty percent; stronger grades of alcohol dissolve the resin and leave the gum; and water or vinegar will, by trituration, dissolve the gum and hold a portion of the resin and oil in a milky solution.

Properties and Uses: This *gum-resin* resembles asafoetida in its action, but is less stimulant. It is used for the same purposes as the asafoetida; though it is more unpleasant both to the taste and smell. It is seldom used internally; but by combining it with ammoniac and beeswax, a stimulating plaster may be formed, which has been much commended for indolent swellings, chronic pulmonary complaints, and weakness of the back. The officinal plaster has lead added to it, and hence is objectionable; while the compound plaster of galbanum contains turpentine, Burgundy pitch, and a large excess of lead plaster, on which accounts it is an irritating and reprehensible article. I fear the agent itself is disposed to produce blisters.

GALIPEA CUSPARIA
ANGUSTURA

Description: This is a South American representative of the Natural Order Rutaceae, of which xanthoxylum and ptelea are among the North American genera. Its best known synonyms are Galipea officinalis, and Bonplanida trifoliata. It is a fine tree of the tropics, growing at moderate elevations above the sea, and reaching a height of from fifty to eighty feet. Leaves two feet long, triparted, of an unpleasant fragrance, bright-green? on petioles a foot long; leaflets ovate-lanceolate, sessile, acute, with white dots. Flowers in long, axillary racemes, numerous, white, with tufts of hair on the outside.

The bark of this tree is used in medicine. It usually comes to market in cut pieces six to ten inches long, a line in thickness, and rolled in at the sides. The outside is mottled, yellowish-gray or grayish-white, spongy, easily scraped off with the ail; the inside brownish or yellowish-brown, somewhat smooth, readily separable into layers, and fibrous or splintery. It breaks with a crisp fracture, has a strong and peculiar odor, and an aromatic, bitter, and somewhat pungent taste. It contains a volatile oil, resin, and a peculiar neutral active-principle which has been named *angusturin* and *cusparin*.

At first appearance, this bark resembles the poisonous bark of the nux vomica tree; and therefore it was not uncommon formerly to find portions of the latter mixed with it. This was a most dangerous adulteration, and brought the *true* angustura into disfavor, (the nux vomica being called *false* angustura.) This fraud, or error, no longer occurs; yet it is well to know the characters by which the two articles may most readily be distinguished. These are given by Pereira, in substance, as follows: Outer crust or epidermis of true angustura is whitish or whitish-yellow, insipid, unchanged or rendered slightly orange-red by nitric acid; while that of nux vomica is either spongy rust colored, or whitish with prominent spots, and is made intensely dark-green or blackish by nitric acid. Inner surface of true angustura is easily separable into layers, and its yellowish-brown color is somewhat deepened by nitric acid; while that of nux vomica is not separable into layers, and is turned blood-red by nitric acid.

Properties and Uses: The *bark* of angustura, as above distinguished from that of nux vomica is an excellent tonic, aromatically stimulating and somewhat relaxing, and gently diffusive in its action. It is not irritating to the stomach, but usually is well received. Like cinchona, its principal influence is expended upon the nervous tissues; but rather upon the nerve trunks and peripheries than upon the centers. It is also void of astringency; and neither excites the brain, hurries the circulation, nor diminishes the secretions, as cinchona and its preparations will do. Its relaxing power is sufficient to promote outward circulation, and relieve labored action of the circulatory centers; while it also promotes the secretions in general—in large doses proving decidedly evacuant and somewhat nauseating, in warm infusion increasing perspiration and urination, and in ordinary doses favoring a regular movement of the bowels. These qualities, (strongly resembling boneset,) combined with its stimulating and tonic action, render this article valuable.

It is an excellent remedy for bilious intermittents, and probably for all ordinary intermittents. Its value does not lie in a purely antiperiodic (nerve-stimulating) action; but in the impression it makes upon the nerves, combined with its action on the stomach, liver, circulation, and general secretions. It will be found of much service for such cases, when combined with hydrastis, sabbatia, and similar tonics, for the intermediate treatment. It is a very suitable tonic for weakness of the stomach causing loss of appetite and indigestion; in atony of the bowels, feebleness during convalescence from typhoid and other low forms of fever, and in general feebleness and laxity of the tissues. By its strengthening influence upon mucous membranes, it usually diminishes excessive mucous discharges dependent upon passive conditions—as in chronic dysentery, bronchitis, catarrh of the bladder, and leucorrhœa. Though not so concentrated as gentiana, it is more positive than fraseria and cocculus.

Dose of the powder, ten to twenty grains, three to five times a day. It is most generally given by infusion, which is readily prepared by digesting half an ounce of the coarse powder in twelve fluid ounces of hot (not boiling) water. Dose, a fluid ounce or more. Tincture of cinnamon is an agreeable flavoring adjunct. It may be combined in bitters or other formula with such articles as gentiana, euonymus, menispermum, and hydrastis.

GALIUM APARINE

CLEAVERS, GOOSE GRASS, BED-STRAW

Description: Natural Order, Eubiaceae. Botanically allied to the Madder family, including mitchella and epigea.. Genus GALIUM: Slender, weak, and almost procumbent herbs, with square stems, whorled leaves, and minute four-parted corolla. G. APARINE: Stem weak and reclining, hairy at the joints, bristly-prickly backwards along the angles, twelve to twenty inches high. Leaves about one inch long, lanceolate, tapering at the base, rough at the margins and midrib, about eight in a whorl. Flowers white, axillary, one to two on a peduncle. Fruit bristly, with hooked prickles. Common in tufts through moist woods on rich soil. Other species, as asprellum, concineum, and triflorum, (or sweet-scented straw,) are used indiscriminately with the aparine. The roots of most species yield a red coloring material.

Properties and Uses: This *herb* is a peculiarly soothing relaxant, acting upon the kidneys and bladder. It secures a goodly increase of the watery portion of the urine, thus rendering this secretion less irritating than it sometimes gets to be. Its action is light and diffusive, and it is suited only to acute cases; but is among the truly valuable agents in all forms of scalding urine, as in oxalic acid gravel, irritation at the neck of the bladder, and the first stages of gonorrhea. It is apparently somewhat soothing to the nervous system. It has been lauded for skin diseases, but probably without good grounds. Hot water and age impair its virtues. An infusion is prepared by digesting two ounces of the herb in a quart of tepid water for half an hour. Strain this off with pressure; and give from one to three fluid ounces every two or three hours. I have reaped much benefit by bruising the fresh herb thoroughly in a mortar, and then expressing the juice by very strong pressure. From half to a whole fluid ounce of this may be given every four or six hours in acute gonorrhea, and is a truly valuable agent. It may be preserved by the addition of a suitable quantity of diluted alcohol.

GAULTHERIA PROCUMBENS

WINTERGREEN, DEER-BERRY, CHECKER-BERRY, PARTRIDGE-BERRY, MOUNTAIN TEA, BOX-BERRY

Description: Natural Order, Ericaceae. This is a little evergreen found in moist woods throughout the United States and Canada; with two reddish stems from four to six inches high, bearing at the top a few broadly-ovate, smooth, leathery, dark-green, and shining leaves. Rows few, white or blushed, one to three in the axils, nodding. Fruit a bright-red berry. Blooming in July, and bearing the round berries through the winter.

The common names of this plant often lead to its being confounded with *mitchella repens*. Its limited number of stems, with leaves only at the top, (really but leaf-stalks from a subterranean stem,) thick and shining leaves, and the peculiar aroma of sweet birch with which both the leaves and berries are strongly impregnated, at once serve to distinguish it from the *mitchella*. Its aroma depends upon a volatile oil, in which the plant abounds. This oil is the heaviest of the essential oils; at first colorless, but afterwards a little reddish; soluble in alcohol; of a penetrating and rather pleasant odor.

Properties and Uses: The *leaves*, and the *oil* from the leaves, are relaxing and gently stimulating, very diffusive and transient, acting somewhat upon the kidneys when used cold, but most valued as carminatives to relieve flatulence and wind colic. At present, their use is confined mainly to an employment of the essence as a flavor to alterative sirups—especially the sirup of sarsaparilla. The taste and smell are agreeable to most persons, but unpleasant to some; and a very small quantity will serve.

GENTIANA LUTEA

EUROPEAN GENTIAN

Description: Natural Order, Gentianaceae. Botanically allied to the *frasera* and *sabbatia*. Genus GENTIANA: Annual herbs, smooth, with opposite leaves and a bitter juice. Flowers solitary or cymose. Calyx four to five-cleft; corolla large, tubular, four to five-cleft, convolute to the right in the bud, with plaited folds at the sinuses. Stamens as many as the lobes of the corolla, inserted on the tube; style short or none; stigmas two, persistent. Fruit an oblong pod, two-valved, innumerable small seeds. G. LUTEA: Stem erect, round, three or four feet high. Leaves opposite, sessile, oval, acute, two to four inches long, rather smooth, bright-green, five-nerved, lower ones narrowed almost to a petiole. Flowers pedunculated, in whorls in the axils of the upper leaves; corolla brilliant yellow, nearly rotate, an inch and a half long, deeply divided into six lanceolate segments; calyx tubular, short, yellowish, almost like a transparent membrane, splitting on one side as the flower expands. It is the largest and most brilliant of all the gentians, and is found in abundance along the mountain ranges of central Europe.

The root of this gentian is perennial, large, an inch or more in thickness, pale-brown and wrinkled on the outside, yellow or faintly reddish yellow within, and rather spongy. It comes to market in either longitudinal or transverse slices. Its taste is intensely bitter; and its virtues are extracted by water and alcohol. Numerous analyses of it have been made, showing its bitter principle to be soluble in water and diluted alcohol, but not in alcohol; and also yielding sugar, a fixed oil, and other substances. With tannic acid, it forms a nearly insoluble precipitate.

Properties and Uses: Gentian *root* is one of the purest bitter tonics, intense and permanent in taste and action, with a distinct share of relaxant properties, but the stimulant quality predominating. It is not usually nauseating, 'ut is generally well received by the stomach, notwithstanding its extreme bitterness. It actively promotes appetite and digestion, braces the circulation slowly but effectually, and gives firmness to the stomach, alvine canal, gall-ducts and uterus. It is best fitted for languid conditions, and states of general debility: under which circumstances it is one of the most serviceable of all our tonics—not only for passive forms of indigestion, but in chronic biliousness, amenorrhea, constipation, worms, and other maladies incident to general feebleness of the tissues. It slowly promotes the action of the bowels, and has proven of much service for the period of remission in agues. Large doses, such as are too frequently advised, over-excite the stomach and give a feeling of oppression; at the same time increasing the force of the circulation, and even irritating the bowels. It has unjustly been accused of narcotism. Sensitive persons are sometimes nauseated by it; and it is not suited to irritable conditions of either the stomach, bowels, or uterus, and is most appropriate for lymphatic temperaments. Applied externally, it often acts well on degenerate, scrofulous; and phagaedenic ulcers. Its intensity makes it advisable to combine it with aromatic adjuvants, and with milder tonics; but it should not be combined with astringents. The various species of gentian indigenous to America, as will presently be described, are fully equal to this long-known and highly-valued European species. Dose of the powder, from five to fifteen grains, three times a day. It is seldom given in this form.

Pharmaceutical Preparations: I. *Compound Infusion*. Bruised gentian, half an ounce; orange peel and coriander seeds, each one drachm. Pour on four fluid ounces of diluted alcohol; and after three hours add twelve fluid ounces of cold water. Strain in twelve hours. This is the Edinburgh and United States formula, of which a fluid ounce may be given as a dose. It keeps moderately well. It is customary to combine it with half its own volume of the compound infusion of senna and some cardamon, for evacuant and tonic purposes in constipation and dyspepsia. I have found much advantage in combining two ounces of this infusion with half an ounce of the sirup of juglans, of which the dose may be half a fluid ounce or more three times a day. II. *Compound Tincture*. Gentian, two ounces; orange peel, one ounce; cardamon seeds, half an ounce. Macerate for fourteen days in two pints of diluted alcohol. Or the crushed materials may be macerated, and then treated in a percolator. This also is a preparation of the U. S. Pharmacopoeia, of which the usual dose is a fluid drachm. It is too intense for continued use; and a much more acceptable compound tincture can be made by treating one ounce each of crushed gentian and liriodendron, and half an ounce each of orange peel and coriander, with two pints of thirty percent alcohol; the dose of which would be from one to two fluid drachms. A *Wine Tincture* is also made by treating half an ounce of gentian, one ounce of yellow cinchona, two drachms of bitter orange peel, and one drachm of canella, with four fluid ounces of diluted alcohol and two pints of Sherry wine. Dose from half to a whole fluid ounce. It is suited only to very languid conditions. It is also tintured with rhubarb, though to poor advantage. The *Extract* is a strong preparation, seldom used. The article can be combined most suitably with such relaxant tonics as eupatorium, anthemis, or liriodendron; or with such relaxing alterants as arctium, celastrus, or euonymus. III. *Fluid Extract*. A pound of crushed gentian is macerated with seventy per cent. alcohol, and percolated till twelve fluid ounces have passed, which are set aside; percolation continued with diluted alcohol till two more pints have passed, which are evaporated on the water-bath to four fluid ounces, mixed with the first product and filtered. Dose, ten drops to half a fluid drachm. This article enters into various combinations with cinchona, quassia, euonymus, and other tonics and alterants.

GENTIANA OCHROLEUCA

AMERICAN GENTIAN, YELLOW GENTIAN, MARSH GENTIAN, SAMPSON SNAKEROOT

Description: Natural Order, Gentianaceae. The generic characters are the same as in the last species. *G. OCHROLEUCA*: Stem simple, round, smooth, hollow, twelve to fifteen inches high. Flowers clustered at the summit, two inches long; corolla open, greenish-white varying to a clear straw-color, with green veins and purplish spots. Leaves oval-lanceolate, getting more lanceolate above, narrowed to a sessile base, rather acute, nearly two inches long. September to October. Common on dry lands through Virginia, Southern Ohio, and thence southward. Its roots are long and branched, one-fourth to one-half an inch in diameter, grayish-brown without and of a muddy-yellow hue within.

Gentiana puberula (the *G. catesbaei* of older botanists) is a very leafy and rather rough species; with bright-blue flowers an inch and a half long, and long-lobed; and leaves half clasping, and very rough along their edges. The root is smaller and more contorted than in the above species; grayish-white on the outside, and dull yellow within.

Gentiana Andrewsii, or *Closed Blue Gentian*, is usually eighteen inches high, erect, and smooth. Flowers crowded and sessile in whorled heads, an inch and a half long, deep blue, ten-cleft on the margin, inflated in the tube, and with the segment-lobes nearly closed at the top as if not yet fully blown.

Gentiana crinata, or *Fringed Blue Gentian*, is erect, smooth, with tapering leaves one to two inches long, bright purple-blue corollas peculiarly long-fringed at their margins.

The roots of these several species, and those of others in this same genus, seem all to be possessed of the same properties, and all to be equally valuable. Hence, while the species *ochroleuca* is more particularly spoken of in this place, being the one that is found in the market, the others deserve the same attention from the profession. Dr. J. Blair, of Alabama, has especially commended the species *alba*, with pale yellowish-white flowers and fibrous roots; which he has for forty years employed with eminent success under the name of *Sampson Snake-root*. (*P. M Recorder*, p. 26, 1866.) Under the same common name, Dr. J. Overholt, of Iowa, has for many years employed the root of the species *angustifolia*; which he considers equal to the most valued articles of its class in the *Materia Medica*.

Properties and Uses: This *root* is a tonic of about equally relaxing and stimulating properties; slow in its action, but intense and permanent. Most writers (especially Dr. J. King, of the Eclectic Dispensatory) class it as an astringent; but it possesses no astringent property whatever, and is, on the contrary, a mild laxative. Its chief influence is expended on the stomach and gall-ducts; but it also exerts a distinct share of power upon the liver, bowels, and the glandular system in general. It is not quite so stimulating as the foreign gentian, nor so likely to oppress the stomach and force the circulation; yet it is suited for languid and impassive conditions. It arouses appetite and promotes digestion in all forms of gastric debility; secures a moderate ejection of bile in jaundiced and bilious persons; and promotes the action of the bowels in constipation dependent upon feebleness, but is not a distinct cathartic. By relieving

accumulations in the liver and gall-cyst, and afterward improving the tone of these structures, it proves of superior excellence in all chronic bilious complaints with indigestion, costiveness and sallowness; sustains the structures well in diarrhea; and is of much efficacy (especially with stimulating astringents) for the intermediate treatment of agues. This action also makes it valuable in preparations for most cases of dropsy; and few tonics can be used to so good advantage in compounds of relaxing alterants for skin affections and other difficulties associated with hepatic sluggishness. It seems to exert a distinct impression upon the mesenteries; and Prof. S. E. Carey tells me he has known a sirup of it alone to cure very degenerate cases of scrofula. I have often used it with happy results in compounds during the treatment of scrofula, and scrofulous and cachectic ulcers.

This article was especially commended by Prof. Rafinesque, and is too little known among the profession. It is fully equal to the foreign gentian as a tonic, is better received by nearly all stomachs, is superior to the lutea on account of its action on the secernents, and possesses some advantages from its greater relaxing powers. This may seem warm praise for an article as yet but little used; but many years of experience convince me this agent deserves all that is here said of it. Its intensity and extreme bitterness make it advisable to associate it with aromatics; or to combine it, in moderate proportions, with agents of a milder and more relaxing character. Dose, ten to fifteen grains. It is often given in too large doses.

Pharmaceutical Preparations: These may be of the same classes as those of the foreign gentian; like which it should not be combined with astringents. Various combinations are made with fraxinus, senna, euonymus, celastrus, arctium lappa, and similar articles. In a gallon of any sirup or tincture containing such relaxant agents as those just named, it is rarely necessary to associate more than four ounces of this gentian. I have used the following *pill* to much advantage in purely atonic dyspepsia, and as an antiperiodic: Extract of American gentian, a sufficient quantity. Stiffen into a pill mass with equal parts of piperine and hydrastin, so that a five-grain pill shall contain one grain of each of these powders—using powdered licorice if an additional absorbent is necessary. From two to three may be given as an antiperiodic; and one after each meal, when used to assist digestion.

GERANIUM MACULATUM

CRANESBILL, CROWFOOT, SPOTTED GERANIUM, ALUM ROOT

Description: Natural Order, Geraniaceae. This plant is common throughout the United States, thriving on woody hillsides and in open thickets, blooming from the last of April through May. Stem one to two feet high, erect, round, forking, retrorsely-pubescent. Leaves two at each fork of the stem, spreading, palmate-veined, usually divided into three or five deep and wedge-shaped lobes, cut and serrate at the ends; lower leaves long-petiolate, middle ones opposite, short-petiolate and reflexed, upper ones nearly sessile. Flowers usually in pairs; calyx of five ciliated sepals; petals five, spreading, half an inch long, light blue-purple, delicate and attractive, bearded at the claw. Stamens ten, each alternate one shortened, the five longer ones alternate with the petals and glandular at the base; styles five, cohering to a central and prolonged axis, from which they separate and curl backward at maturity. Fruit five small capsular pods, cohering to shallow excavations at the base of the prolonged axis.

The root of this plant is medicinal. It is perennial, horizontal, knobbed, umber-brown externally, dull gray within. Water and alcohol extract its virtues; and it contains tannic acid among its elements, as also a resinous substance.

Properties and Uses: This *root* is a superior astringent with tonic properties; rather positive, yet not powerful; operating slowly and persistently, somewhat soothing in its impression, and usually quite acceptable to the stomach. It is not so intense as oak or catechu, but much stronger than *rubus* or *hamamelis*; and is among the most useful agents of its class, not so suddenly drying the mucous membranes as some agents do. It is employed for its astringing and tonic influence on mucous membranes in sore-mouth, leucorrhœa, gleet, catarrhal ophthalmia, and the latter stages of dysentery and diarrhea, both as a drink and by injection. It is a good local styptic to small blood-vessels; and is used inwardly in spitting of blood, bleeding from the nose, flooding, and menorrhagia, when the tissues are in a flaccid condition; and is then of much value, if combined with such stimulants as *xanthoxylum* and a small portion of *capsicum*. In such combination, it is good for elongated palate and ulcerated sore throat; and is a useful application to weak ulcers and bleeding granules. It has been commended in diabetes, especially in company with *helonias*; but probably without good ground. From five to fifteen grains of the powder may be given at a dose. It is generally made into an infusion of an ounce to a quart, and given to suit the case in hand.

Pharmaceutical Preparations: I. *Geraniin*. This preparation was introduced by W. S. Merrill & Co., of Cincinnati. It is prepared from a saturated alcoholic tincture, of which three-fourths are evaporated, and the remainder treated as for *podophyllin*. It yields a dark reddish-brown, brittle, shining, resinous powder, strongly impregnated with tannin, and of slight acidulous reactions. It is a strong astringing tonic, not so intensely drying as tannin, and an agent of much usefulness in its own limited sphere. Like other active astringents, it is liable to be over-used. Dose, one to three grains.

GERANIUM ROBERTIANUM, or *herb robert*, is a European species, occasionally found in the United States. It has succulent red stems, and small purplish-white flowers. The whole plant

has a strong and unpleasant smell. It is a stimulating astringent; and has long been/a popular remedy in England for hemorrhages, jaundice, and nephritic complaints. It is seldom used in this country.

GEUM VIRGINIANUM

AVENS, CHOCOLATE ROOT, THROAT ROOT

Description: Natural Order, Rosaceae. The genus GEUM is made up of perennial herbs, with either pinnate or lyrate leaves, flowers of five spreading sepals and petals, as in the wild rose; stamens many; styles long-persistent, often jointed, and forming a mass of curious-looking tails on the many achenia which are heaped together on the conical receptacle. In the species VIRGINIANUM, the stout stem and whole plant are bristly-hairy, one to two feet high, of a purplish color, and somewhat paniculate-branched above. Lower leaves deeply pinnate, on hairy petioles, four or five inches long, rounded or lobed; upper ones few, smaller, and usually three-parted; stipules small. Flowers small, white or yellowish-white, with the petals inserted upon the half bell-shaped calyx. June to August.

This plant is common in low grounds and the edges of woods in the Northern States and Canada. The root is small, contorted, brown, hard, and with a clove-like aroma when fresh. Hot water and diluted alcohol readily act upon it. The *Geum rivale*, called *water avens* and *purple avens*, grows in bogs, has purplish-orange petals, and much larger flowers than the above species. The roots of both are used indiscriminately in medicine.

Properties and Uses: This *root* is a mild astringent, of a pleasant taste, and soothing and tonic in action. It is not so drying as it is strengthening to the mucous membranes; and this fact, together with its mildness and pleasantness, makes it an article of peculiar worth. It is employed to better advantage than most astringents in the second stage of dysentery and diarrhea; and in leucorrhoea, catarrh of the bladder, spitting of blood, passive menorrhagia, aphthous ulcerations, and gleet. It has been commended for phthisis, and intermittents, but probably without good cause; though it is certainly excellent in debilitated cough with local weakness, excessive expectoration, and a tendency to pulmonary hemorrhage. In those forms of indigestion which arise from debility of the duodenum, pancreas and mesenteries—connected with pains and laxity of the bowels, curdy stools, and slow loss of flesh—it is a peculiarly valuable article; and may be used freely, especially when boiled in milk and used as a sort of chocolate. From this action, it has been set down as useful in dyspepsia, whereas it is insignificant in that malady of the stomach. Its action on the duodenum and mesenteries fits it for a class of cases to which few articles are applicable; and I am decidedly of the opinion that it will be found useful in tabes mesenterica, and in those forms of scrofulous looseness of the bowels which are dependent upon defective assimilation, and which often pass roughly as chronic diarrhea. This distinction between tonics to the digestive and to the assimilative apparatus, is one that has not heretofore been made; but it is one of importance, and those which act on the assimilative organs are so few as to deserve especial notice.

This article is generally used in decoction, which is made by boiling an ounce of the crushed root in a pint of water down to half a pint. Dose, one to two fluid ounces every four or three hours. Sometimes it is boiled in milk, or milk may be added to this decoction.

GILLENIA STIPULACEA

INDIAN PHYSIC, MEADOW SWEET, BOWMAN'S ROOT

Description: Natural Order, Rosaceae. Genus GILLENIA: Herbs with perennial roots; and trifoliate, doubly-serrate, and stipuled leaves. Calyx tubular-campanulate, five cleft; corolla of five long, lance-linear and unequal petals; stamens ten to fifteen, very short. G. STIPULACEA: Stems one to several from the same root, two feet high, erect, slender, smooth, a little branched above. Leaves at once noticed from their two large, half-clasping, foliaceous and jagged stipules; radical ones pinnatifid; cauline ternate, lanceolate, deeply incised, thin, light yellowish-green. Flowers axillary and terminal, few, rose-colored, on long peduncles; petals lance-linear; stamens within the corolla. June.

This plant ranges from the Alleghenies westward and southward, selecting dry situations and alluvial soil. The species *trifoliata* is confined to the range of the Alleghenies, and is distinguished by its bristly sepals, and its long-ovate leaves. The roots of both species are used in medicine; they are composed of numerous fibers, arising from a rough and dark-colored center. The fibers are long, about two lines in thickness, reddish-brown and wrinkled. They are acted on by water and alcohol.

Properties and Uses: This *root* is relaxing and stimulating, acting rather promptly, and chiefly influencing the skin and mucous membranes. In doses of thirty grains or more, repeated every fifteen minutes, it is a prompt emetic, operating mildly, and not tasting so unpleasant nor causing so much nauseous relaxation as lobelia. Vomiting induced by it is followed by free and warm perspiration, distinct softening of the pulse, and often by mild catharsis; and it may be used in this way to advantage in recent colds, catarrhal fever, and at the commencement of bilious fever and pneumonia. It is rarely used as an emetic, the lobelia superseding all other agents of this class. It acts favorably upon the skin in securing diaphoresis, when small quantities are given in warm infusion with asclepias and zingiber; and its relaxing qualities make such an employment of it good in securing relief from congestion and arterial excitement in most forms of fever, especially bilious remittents. It acts somewhat promptly on the bowels, securing thin discharges in doses of twenty or twenty-five grains. In doses of two or five grains it is somewhat promotive of digestion; the whole action of the article resembling the eupatorium perfoliatum. It has been compared to foreign ipecacuanha; but contains none of the dangerous emetia, and does not act like that deceitful article. Rafinesque speaks of it in warm terms; the late Dr. J. Masseker, of New York, valued it highly as a diaphoretic and laxative; and though my own experience with it has been limited, I think it an agent that deserves attention. Dr. W. Daily, of Louisville, commends it as a diaphoretic in acute rheumatism, dropsy, and recently obstructed menstruation. It is generally administered in warm infusion, but powder or cold infusion is the better form for securing its tonic influence.

GLYCERIN

Glycerin is a colorless and odorless fluid obtained from lard, tallow, and other oils, in various quantities. It has a peculiar sweetish taste, whence it has been called the sweet principle of oils. Its specific gravity is 1.260; it remains fluid indefinitely; is miscible with water and alcohol in all proportions; and has a sirupy consistence, and somewhat oily touch.

Glycerin was first obtained during the preparation of lead plaster. In this process, where litharge and olive oil are boiled together in water, the acids of the oil unite with the oxide of lead as a base, when the glycerin is set free and unites with the water. The liquid being decanted, any lead it may contain is separated by sulphuretted hydrogen and nitration, and the water is then evaporated from the glycerin. The same changes are effected when the soap-maker uses potassa and soda (instead of lead) as bases to combine with the margaric and stearic acid of fats—the glycerin being thus again set free in the presence of water, with which it at once mixes. Glycerin thus obtained, however, has a peculiar odor, from which it is scarcely possible to free it; and is not usable except to form certain classes of toilet-soaps. When fats are subjected to a high steam pressure in the presence of a moderate quantity of milk of lime, a lime soap is formed, and the glycerin is set free in a pure form. This is the present method of obtaining all good glycerin. Dr. C. Morfit, as quoted by the U. S. Dispensatory, thus describes the process in *Silliman's Journal*, (2d series, Vol. XV:) "Melt one hundred pounds of tallow or lard in an iron-bound barrel, by a current of steam; and add to it fifteen pounds of lime made into a milk with two and a half gallons of water. Continue the steam for several hours, till complete saponification takes place. The acids of the oil unite with the lime to form an insoluble soap; and the glycerin remains in the water along with the excess of lime. After the liquid has cooled and settled, it is strained through a crash-cloth; the fluid concentrated carefully by steam heat, and treated with a current of carbonic acid to remove the lime as a carbonate; boiled again, and again allowed to settle. The clear liquid is finally strained off, and concentrated by driving off the water." This process gives a fine quality of glycerin at a low cost; and the lime soap may be treated with very dilute sulphuric acid to release the fats, which are then used for star candles.

Impurities and Tests: Chlorine is sometimes used in bleaching a poor quality of glycerin; and may be detected by making the liquid slightly blue with sulphate of indigo, and adding a little sulphuric acid, when the blue color will disappear if chlorine (more properly chloride of lime) be present. Oxalate of ammonia will detect the least trace of lime by forming an insoluble precipitate; hydrosulphuret of ammonia will make a black precipitate if any lead be present; and a solution of any baryta salt will yield a white cloud with the smallest trace of sulphuric acid.

Properties and Uses: Glycerin is not used internally to any extent as yet; though it has been spoken of as a substitute for cod-liver oil in phthisis. Its chief medicinal value is in external appliances, and as a solvent in various pharmaceutical preparations. It is softening to the skin; and may be used for irritable diseases of the surface, such as eczema, prurigo, lichen, herpes, etc. It has also been used for incrustations, as in lupus and syphilis. It is a popular application for chapped hands and lips. Many times it causes unpleasant stinging when applied to any abraded surface, which may be obviated by dilution with equal parts of water. The purest article is often quite unpleasant to mucous surfaces, as to the vagina; yet dilution will generally obviate this, and it may thus be used in ophthalmia, vaginitis, etc.—either alone, or with suitable medicaments

added to it. It also supplies (apparently) the nutriment needed by the hair follicles; and may be used in dandruff and other forms of scurfy disease of the scalp; or medicated with lobelia and a little oak bark for falling off of the hair, for which such a preparation is of great value. Added in moderate quantities to poultices, it keeps them moist and prevents adherence to the surface; and for a similar action, it is used freely on wounds and sores which are to be dressed with lint. It softens dried cerumen in the ear; and has been used in deafness and various affections of the ear connected with dryness of the parts. A very little incorporated in a pill mass, or added to solid extracts, will keep them moist and prevent them from molding.

Glycerin possesses a peculiar and powerful solvent property, and is also an excellent preservative. For both these qualities, it is second only to alcohol, and deserves to come into considerable use. Relaxants macerated in it have too mawkish a taste to be always acceptable; but strong stimulants and bitter tonics—as capsicum, quassia, gentiana, aloes, etc.—have their unpleasantness somewhat covered by it. It acts sufficiently on all such substances, when diluted with its own bulk of water, or even more diluted, and still is thoroughly preservative; and as such dilution reduces the mawkish taste, it is probable that the profession can find much advantage in treating numerous agents with it, instead of using so much alcohol as is now customary. Such a use would be appropriate in treating cinchona, quinia, salicin, santonin, and some other vegetable alkaloids; and it would be an object of interest to inquire experimentally how far it will solve myrrh and other gum resins. Many of the essential oils will dissolve in it readily. It is also highly antiseptic, and preservative of animal tissues; but structures preserved in it become slowly softened.

Pharmaceutical Preparations: In *ointments*, it may be used to advantage in various combinations. Stiffened to any desirable degree by being heated with finely-powdered starch, (thirty or sixty grains to a fluid ounce,) it may be mixed with sulphur in making sulphur ointment; or triturated with the solid extracts, as of celastrus, lycopus, or hydrastis, when these are to be used in salves. Mr. Ricky proposes the following *Glycerin Ointment*: Spermaceti, half an ounce; oil of almonds, two fluid ounces; glycerin, one fluid ounce; white wax, a drachm. Melt all but the glycerin, pour into a Wedgewood mortar, add the glycerin, and stir thoroughly till cold. It is useful for chaps and excoriations. (U. S. D.) The *Journal of Pharmacy* commends a mixture, by weight, of five parts glycerin and four parts yolk of eggs, rubbed in a mortar. It is soft and unctuous, and forms an air-tight and soothing application to abraded surfaces, sore nipples, tetter, and irritated affections of the skin, including erysipelas. It will keep indefinitely, and has the advantage of being easily removed with water. Crusts of vaccine virus may be dissolved in glycerin, and kept indefinitely; though it is not fully settled that the virtues of the vaccine are unaffected. Dr. J. P. Easter, of Highland county, Ohio, called my attention to the use of it in ophthalmia; and I have been highly pleased in a limited use of a strong infusion of hydrastis added to an equal quantity of glycerin, with myrrh or capsicum in quantities to suit the indications.

GLYCYRRHIZA GLABRA

LICORICE

Description: Natural Order, Leguminosae. The licorice plant is herbaceous, from three to five feet high, smooth, dull gray, and with but few branches. The leaves are alternate, pinnate, of nine to thirteen pairs, the leaflets ovate, of a greenish-yellow color, and clammy beneath. Flowers small, papilionaceous, in axillary and erect spikes, on long peduncles; calyx tubular, bilabiate, persistent; corolla bluish-purple; stamens diadelphous. Fruit a smooth, compressed, one-celled legume, with from one to four kidney-shaped seeds.

This species of licorice is native to the northern and southern shores of the Mediterranean, and to Russia; and is now cultivated in Germany, France, and England. The greater portion of that received in the American market comes from Spain and Sicily. The root is perennial, round, long and straight, tough and fibrous, grayish without and yellowish within, of a sweet taste, and somewhat mucilaginous. Its sweet principle is scarcely soluble in cold water, very soluble in boiling water, and wholly unlike sugar in its characters. Its most desirable virtues lie inside of the corticle.

Properties and Uses: This *root* is demulcent and gently relaxant, soothing to mucous irritations, and valued chiefly for its sweet taste in covering the sharpness of other remedies. It is employed principally for bronchial irritations, and recent tickling and dry coughs. Is seldom used alone, but oftener combined with such articles as boneset, senega, and other expectorants; or used in warm infusion with flaxseed. It can be used to advantage in compounds for irritation of the bowels, bladder, and uterus. It may be associated with capsicum, piper, guaiacum, and other sharp stimulants, both to cover their taste and render them more acceptable to the stomach. The powder is used largely in the preparation of pills, to absorb moisture, give adherence to the mass, and disguise the taste with a pleasant outside coating. The root may be chewed; or prepared in infusions by removing the outer bark and boiling for several minutes.

Extract of Licorice is mostly made in the north of Spain, and comes to market in rolls about six inches long and nearly an inch in diameter, known as *black licorice* and *licorice ball*. A finer and more carefully-prepared article comes from Sicily and Italy. It is made by thoroughly washing and half drying the green roots, cutting them into small pieces, boiling them for several hours, letting the decoction stand till the coarser and more insoluble materials settle, and then evaporate to the proper consistence. It is very black, dry, brittle, breaking with a shining fracture, and almost wholly soluble in boiling water. A poor article is not brittle, and has not a shining fracture, and is but partly soluble in boiling water. It may be further purified by dissolving it in warm water, decanting it from the impurities that settle, and drying it with the addition of about fifteen percent of gum arabic to obviate the tendency which a refined article exhibits to attract moisture and become softish. It is used in coughs, and for the same general purposes as the root, which it largely supersedes. If mixed with starch in the decoction, it may be dried and pulverized; and this powder is peculiarly serviceable in pill masses.

GNAPHALIUM POLYCEPHALUM

WHITE BALSAM, CUDWEED, LIFE EVERLASTING, INDIAN POSEY

Description: Natural Order, Compositae. This belongs to a genus of woolly herbs, which are peculiar for their downy and tomentose appearance. Their flowers are borne in many compact heads, closely arranged in a large terminal corymb, and all tubular. The species here spoken of is an annual, one to two feet high, the whole plant (stem, leaves, and peduncles) gray with a short and silky wool. Stem erect, branched above. Leaves alternate, three inches long by one-fourth of an inch broad, tapering at the base, sessile, margins a little wavy, smoothish above. Flowers tubular, white, in obovate heads; heads in a terminal and close paniced corymb, of a pretty appearance. Whole plant slightly fragrant. July and August.

This plant is common in old fields and pastures throughout the United States and Canada. The leaves and yellow flower-heads are used medicinally, though the whole plant is gathered. Its aroma is rather pleasant, its taste slightly bitter and aromatic, and its properties are extracted by water and alcohol. Several other species of the same genus are used indiscriminately with this one, among which may be named *G. decurrens*, with yellowish-white flowers and decurrent leaves; *G. uliginosum*, about five inches high, and with the clusters of flower-heads sitting down below the upper leaves; and *G. purpureum*, branching from the base, with the leaves green above, and the flowers in a wand-like terminal spike.

Properties and Uses: This plant combines relaxing and stimulating properties with a moderate portion of demulcent quality. In cold preparations, its action is mainly expended upon mucous membranes; and as it soothes and strengthens these tissues, it has been pronounced astringent, though it is faintly tonic and not drying. It has been used in sore-mouth, sub-acute coughs, feebleness of the lungs, leucorrhoea, catarrh of the bladder, and the latter stages of dysentery. It is really an excellent article in such cases; and though it is too mild to be of use in degenerate conditions, it is useful for its gentle influence. In warm infusion, it promotes mild diaphoresis, and is a popular remedy in recent colds and light fever; and a strong preparation is said to relieve mumps, quinsy, the tenesmus of dysentery, and excessive menstruation. In some respects it acts on the assimilative organs much as avens root does—toning them and abating a tendency to curdy diarrhoea. From being at one time over-rated, it has fallen into undeserved neglect. An ounce may be digested in a pint and a half of water till a pint remains, and two fluid ounces of this used once every two hours or oftener. It is sometimes combined with other agents in pulmonary sirups.

GOSSYPIUM HERBACEUM

COTTON

Description: Natural Order, Malvaceae. Botanically allied to the mallows and okra. This plant thrives only in warm latitudes; and though a native of Asia, is much cultivated in the United States south of Virginia. It is either biennial or triennial, according to locality and cultivation; stem three to six feet high, with palmate leaves of lanceolate lobes. Flowers rather large, light-yellow. “The capsule opens when ripe, and displays a loose white tuft of slender filaments, which surround the seeds and adhere firmly to the outer coating.” (*U. S. D.*) It is this mass of filaments for which the plant is cultivated, as it constitutes the cotton of commerce.

Properties and Uses: The *root*, and particularly the outer portion of it, has been much lauded as an emmenagogue; and is said to procure abortion without injury to the general health! The idea that any article can force premature delivery, and yet be harmless, is absurd; and that one statement should attach suspicion to the powers attributed to this article. From personal observation, I can not look upon it as in any sense abortive; nor have I found it to exert any particularly powerful influence on the uterus, though its action is rather good. I would set it down as a relaxant with mild tonic properties, rather antispasmodic, acting mildly and slowly, and useful when the nervous system is irritable and labor pains irregular. Its action then is good; but it is of little consequence in flagging labor with a cold surface or fatigued nerves. It slowly and steadily promotes menstruation in nervous persons, and in suppression after exposure; but is not good for atonic or depressed conditions. While it is thus useful in its own place, the practitioner would be utterly disappointed in expecting any such powerful action as is generally attributed to it. If I am wrong in this estimate of the agent, then I have been unfortunate in getting a strong article in all the experiments I have made with it during the last ten years. It is usually given in decoction, made by boiling four ounces of the root in a quart of water to a pint, and administering two fluid ounces every twenty or thirty minutes—each dose representing half an ounce of the roots! That would be using about eight times the ordinary quantity of caulophyllum required, without obtaining so good an effect—facts that should long ago have shown to men who make up books in their closets instead of from bedside experience, that cotton root is a feeble medicine. A preparation called *gossypin*, is put upon the market. It is a reddish-brown powder; and may (if my experience is correct) be given in doses of half a teaspoonful every hour, without producing much effect. The *fluid extract*, prepared in the usual way, is a good article.

The *seeds* contain much fixed oil, which may be obtained by pressure, and may be used for painting and soap-making. A pint of them boiled in a quart of water to a pint (!) and four ounces of this decoction given to a patient in bed, is said not to fail in breaking a chill. The manner of its action has not been stated; and probably the story lacks confirmation. The *filaments* are used as a local dressing in burns, ulcers, erysipelas, etc. Their only action is to absorb the discharges, for which they are inferior to lint. They may be used as a diaphragm in the bottom of a percolator.

GUAIAACUM OFFICINALE

GUAIAACUM, LIGNUM VITAE

Description: Natural Order, Zygophyllaceae. A large tree, native to the West Indian islands and Central America, reaching a height of thirty or forty feet; with a somewhat crooked stem, and a dark, furrowed bark. Leaves in two pairs; leaflets broad-oval, obtuse, evergreen, two to three inches long. Flowers on long peduncles, six to ten in the axils of the upper leaves; calyx five-parted; petals five, pale blue, oblong; stamens ten; style single, short. Fruit a capsule, slightly stalked, five-angled, five-celled, by abortion sometimes but two or three-celled, a single pendulous seed in each cell. Wood very hard and heavy, fibers crossing each other diagonally, strongly resinous; outer wood pale yellow, center wood greenish brown; used in the arts for a few purposes.

This wood is imported chiefly from Jamaica and St. Domingo, either in logs, or in turnings called chips. The dark center wood is most largely resinous, though the lighter portions are also well charged with resin. The chips or shavings of both are usually found mixed in the chips, and age will gradually give a greenish tint to the yellow portions. It is valued in medicine for its resin, which may be obtained directly from the tree by making incisions into the outer wood; or by boiling the chips in water whose boiling point is raised by the addition of salt, when the resin comes to the surface and may be skimmed off. It is said the natives obtain the best qualities by cutting off sections of the stem three feet long, boring an auger hole lengthwise through the center, and catching the resin that falls through this hole as the wood burns.

Guaiacum resin, usually called *gum guaiacum*, comes to market in masses, is of a dark-brown or greenish-brown color, has a shining fracture, and is nearly translucent at the edges. Thin laminae are light green and almost transparent. It smells moderately balsamic; and though of little taste, it leaves a burning sensation in the throat. It softens under a moderate heat, and is then quite fragrant.

Properties and Uses: This *resin* is an active stimulant, quite local in action, exciting to the stomach and slowly so to the remote circulation, and elevating all the secretory organs by increasing their sensibility and capillary flow. Such qualities at once interdict its use in any case of irritated stomach or bowels, acute forms of dyspepsia, and febrile or inflammatory conditions. Nor is it an agent that should be resorted to for sensitive or plethoric persons, nor for those inclined to pulmonary or uterine hemorrhage. It is best fitted for phlegmatic and leuco-phlegmatic patients, and for maladies where the stomach is depressed and the general activity of the system much reduced. It is most applicable for arousing the secretions in secondary syphilis, mercurial cachexy, and venereal rheumatism; for which purposes it may be added in suitable portions to relaxing alterants. When added to warm diluents, the patient being at the same time surrounded with warmth, it acts toward the surface and arouses capillary circulation and diaphoresis; and sometimes is used in this way for chronic rheumatism and some cutaneous affections, when the skin is cold and flabby, and in very indolent (especially tertiary venereal) ulcers. Diluted and given cold, it acts on the kidneys and uterus; and has been used in chronic menstrual obstructions with atony. The *chips* possess the same properties as the resin; but act more mildly, and can be employed to better advantage in warm or cold infusion, and in

the preparation of sirups. Large doses of either produce dryness and heat in the throat and stomach, loss of appetite, nausea, and pain in the bowels.

Dose of the resin, powdered, from three to eight grains three times a day. It is seldom used thus, but rather as a tincture, or in emulsion. A half ounce of the chips boiled in a quart of water till a pint remains, may be given in doses of one to two fluid ounces every six or four hours. The resin can not be used in sirups; and its tincture will leave the resin floating as a gummy mass, if added to water or sirup. The chips may be treated, in moderate quantities, with other ingredients, without this result. They are usually compounded with sarsaparilla, rumex, aralia nudicaulis, and similar alterants—from four to six ounces of the chips usually being sufficient in a gallon of sirup.

Pharmaceutical Preparations: I. *Emulsion.* Guaiac resin, in powder, half an ounce; sugar, half an ounce; gum arable powder, two drachms. Form into an emulsion by first triturating these articles thoroughly, and then gradually adding a pint of cinnamon water. Dose, half to a whole fluid ounce. II. *Tincture.* Six ounces of coarse guaiac resin may be mixed with an equal bulk of dry sand, and then tintured with two pints of absolute alcohol in the usual way; or the resin and sand may be laid loosely into a percolator, and then treated with the alcohol till two pints pass. This is the officinal tincture, of which the dose is a fluid drachm thrice daily, in milk or water. It is scarcely used. A tincture is made with spirits of ammonia, but is not an advisable preparation.

HAEMATOTOXYLON CAMPECHIANUM

LOGWOOD

Description: Natural Order, Leguminosae. Logwood is obtained from Honduras, Campeachy, and other portions of Central America. It is a tree usually from twenty to twenty-five feet high; with a slender and rather crooked trunk, and numerous slender and crooked branches beset with spines. Leaves alternate, of three or four pairs of sessile pinnae. Flowers numerous, large, fragrant, in axillary spicate racemes, lemon-colored petals.

The sap-wood of this tree is yellowish; the center wood deep-red, compact, and of a pleasant odor. This center wood is brought to market in logs, and then cut into small chips. Its principal use is in dyeing. Imparting its color readily to water, its deep-red solution strikes corresponding precipitates with alum, muriatic, nitric, acetic, and sulphuric acids, sulphate of copper, and acetate of lead; and a deep bluish-black precipitate with sulphate of iron. With the prussiate of potash, it forms a nearly black precipitate.

Properties and Uses: This *wood* is a mild and slightly aromatic astringent. It is seldom employed in medicine at the present time; but may be used in the laxity of the bowels following the summer complaints of children. A serviceable ink may be made from it, by observing the following exact proportions: Dissolve four ounces of logwood extract in a gallon of rain water, in a porcelain vessel; bring it to the boil, and skim well. Then add fifteen grains of the prussiate of potassa, and ninety grains of the bi-chromate of potassa, previously dissolved in half a pint of hot water; stir for a few minutes, and then strain. Limestone water will not answer in forming this ink, and vinegar or other acid will fade it.

HAMAMELIS VIRGINIANA

WITCH HAZEL, WINTER-BLOOM, SPOTTED ALDER

Description: Natural Order, Hamamelaceae. The witch hazel is a large shrub, consisting of several crooked and branching stems arising from the same root, and forming a bushy clump from eight to ten feet high. Leaves alternate, three to five inches long, and two-thirds as broad, acuminate, obliquely cordate at the base, on petioles half an inch long, stipules deciduous. Flowers sessile, three, four or more in an involucre, axillary cluster, yellow; calyx cohering to the lower part of the ovary, four-parted; petals four, inserted on the calyx, long, narrow. Stamens eight, short, four of them imperfect. Pistils of two short styles, united below, forming a two-celled and woody pod or nutlet, which opens at the top by elastic valves into two cells, each cell with a single black seed.

This shrub is found in nearly all sections of the United States and Canada, in damp woods and low meadows. It blooms late in the autumn, as its leaves are falling; and its seeds ripen the following summer.

Properties and Uses: The *leaves* of this shrub are a mild but reliable astringent, with gentle tonic qualities. It is quite soothing in its influence; and is one in a small list of plants which combine diffusive relaxant properties with astringency. (§257.) This fact gives it a peculiar action, and renders it one of the most available of all the astringents in the second stages of dysentery and diarrhea, in hemorrhage from the bowels and bladder, catarrh of the bladder, nursing sore mouth, gonorrhea, and similar difficulties. It soothes the bowels rather than excites them, as many astringents do; and is an admirable wash in leucorrhea, prolapsus uteri and ani, and purulent ophthalmia, especially when combined with hydrastis. Associated with a small portion of capsicum, it is peculiarly effective in arresting uterine hemorrhage and passive menorrhagia; and combined with cypripedium or caulophyllum, will materially expedite parturition in nervous patients, and relieve after pains. It often acts mildly upon the kidneys. It does not dry the mucous membranes so positively as the leaves of sumac or the bark of hemlock; but rather resembles the uva ursi, though less tonic and more transient in action. It is usually exhibited as infusion, made by digesting two drachms in half a pint of warm water. The dose of this may range from half a fluid ounce to two ounces, every four or two hours, as circumstances require. When used as a vaginal injection, it requires to be made much stronger. The *bark* is said to possess the same properties, but is rarely used. A *fluid extract* may be made by treating the herb with 50 percent alcohol, as for boneset. None but glass or porcelain implements should be used.

HEDEOMA PULEGIOIDES [MENTHA PULEGIUM]

PENNYROYAL, SQUAW-MINT

Description: Natural Order, Labiatae. This little plant, growing from six to twelve inches high, is found in great quantities in most sections of our country; preferring open woods, where it is sometimes so abundant that it can be mown as grass. Stem slender, erect, slightly pubescent, with numerous slender and erect branches. Leaves small, oblong-ovate, short petiolate. Flowers small, bluish-purple, in loose axillary clusters along the branches; calyx tubular, two-lipped, upper lip three-toothed, lower lip two-cleft; corolla two-lipped, upper lip erect and notched, lower lip three-cleft. Stamens two fertile and two sterile. July to September.

This plant is quite fragrant, of a warming taste, and filling the air for some distance with its odor. Its principal virtues reside in a volatile oil in which it abounds. This oil is easily obtained by distillation, is pungent and pleasant, of a pale lemon color, and a specific gravity of .9-1:8.

Properties and Uses: This *plant* is relaxant and stimulant, diffusive in its action, gratefully warming to the stomach, and more effective than most of the mints. A warm infusion is a popular remedy in securing perspiration and breaking up recent colds—especially in the case of females who have suffered a sudden obstruction of menstruation. It is quite effective for these purposes; and also in many cases of painful menstruation, diminished lochia, and retarded labor with nervous symptoms. Under the latter circumstances, it makes an admirable combination with caulophyllum. It does not secure a profuse perspiration, but maintains good capillary action on the surface; and it is by thus diminishing hyperaemia of the uterus that it is chiefly advantageous in sudden menstrual obstructions. It also favors the early and free appearance of the eruption in measles, smallpox, and scarlatina; and is one of the best of all the mild agents in such cases. It makes a fair antispasmodic impression on the nervous system, and has been used in hysteria; but probably affords relief only in those cases which are suddenly provoked by menstrual obstruction. It is somewhat carminative, though seldom employed alone for that purpose; yet may be used in wind colic of children. It sometimes allays vomiting. The best method of employing it, is by infusing two drachms of the herb in a pint of warm water, in a covered vessel; of which two fluid ounces may be used every hour or two, or drank ad libitum before going to bed—at the same time bathing the feet in quite warm water. It is commonly combined with more permanent agents.

The *oil* is a good nervine and light stimulant in liniments designed for sprains, rheumatism, etc. It is rarely used internally, though the essence is occasionally employed as an adjuvant. A few drops on sugar, usually relieve dysmenorrhea.

HELIANTHEMUM CANADENSE

FROSTWEED, ROCKROSE

Description: Natural Order, Cistaceae. A small herb, found mostly on sandy soils east of the Alleghenies, but also common in some places westward. Leaves simple, nearly an inch long, oblong, nearly sessile, tomentose beneath, opposite below, alternate above. Flowers of two sorts, the earlier ones being an inch wide, with five yellow petals, an indefinite number of stamens, and pods about half an inch long, bearing many seeds; the later ones with very small petals or none at all, three to ten stamens, and pods about as large as a pin's head, and only a few seeds; the yellow petals open but once, and fall off the next day. The whole plant has a downy look.

Properties and Uses: This plant possesses astringent and stimulating properties, of the class commonly termed alterant tonics. It strengthens the mucous membranes and the assimilative apparatus. Its principal employment is in those forms of scrofula where there is a tendency to diarrhea, with impurities dependent upon the absorption of ill-vitalized nutriment; in which cases it is an excellent agent, though a mild one. In chronic diarrhea, epithelial ulceration of the bowels, and aphthous sores of a light grade, it is a serviceable agent; and may also be used as a wash and poultice on scrofulous ulcers, and in chronic purulent ophthalmia. It requires three pounds of this herb to prepare a gallon of sirup of ordinary strength. A fluid extract may be prepared in the same general manner as for boneset. It is usually combined in sirups with such stronger alterants as stillingia, menispermum, and dicentra.

HELIANTHUS ANNUUS SUNFLOWER

Description: This is the stately sunflower of our yards; a native of South America, but much cultivated for the bold look of its enormous flower-heads. Its stem, on rich soils, will reach a height of twelve and even fifteen feet; and its flowers, with their brilliant yellow ray florets, tubular disk florets, and numerous angled achenia surrounded by scaly chaff, are exaggerated types of the Natural Order Compositae.

Properties and Uses: The *seeds* of the sunflower contain a considerable quantity of fixed oil, which may be obtained by cold pressure. It is bland, does not oxidize (dry) as does linseed oil, is quite nutrient, and probably could be put to good use in some arts. They also contain some mucilage; and the seed-vessels contain mucilage and a mild bitter principle. A decoction of the bruised acheniae, (seeds and husks,) made by boiling an ounce in a quart of water to a pint, acts quite efficiently upon the kidneys—promoting the flow of urine, and soothing inflamed and irritable conditions both of the kidneys and bladder. They are suited for acute cases, and deserve more attention than they have received. It also acts well on irritable coughs. Used warm, this decoction gently promotes the action of the oil-glands upon the surface, perhaps more efficiently than is done by the seeds of the burdock; and this fact renders it useful in scarlet fever. A strong sirup may be used to advantage (in company with hepatic alterants) in such chaffy affections of the skin as tetter and lepra. It is asserted that when a house is surrounded by many sunflowers, its inmates suffer no intermittents, even in the worst ague districts. Without pretending to know any reason for this, I name it as an observation that has been made repeatedly by men of science and the most reliable travelers, including Humboldt, Bonpland, Rev. J. Fletcher, and Prof. Maury.

Helianthus occidentalis, called *Western sunflower* and *Indian fever-root*, is a species confined wholly to the Western States. Stem slender, without branches, almost leafless above, two to four feet high, almost imperceptibly downy, sometimes several from the same root. Leaves opposite or scattered, oval, rough, three to five inches long, upper ones reduced to little more than an inch long, base narrowed into a long, hairy, and half-clasping petiole. Flower-heads few, an inch to two inches in diameter, with from twelve to fifteen large and light-yellow ray florets, disk-florets also pale yellow. The root is perennial, dark colored, with numerous dark-colored fibers; of a strong and rather aromatic taste and smell.

The *roots* of this plant are relaxant and moderately stimulant, rather prompt, inducing slow but decided perspiration, a full flow of blood to the surface, and at last a gentle action on the kidneys and bowels. It is most valuable for its action on the skin in bilious and bilious remitting fevers; but its influence on the biliary apparatus, bowels, and kidneys, is important. Dr. H. Howard first called attention to it in these words: “A strong decoction of the root of this plant, drank freely, will operate as an emetic, and by continuing its use more moderately, relaxes the bowels, promotes perspiration, and effectually cures fevers. This article is one of the sweating plants used by the Indians; and it promises to become a valuable article of medicine.” From a limited personal experience with it, I would urge it strongly upon the favorable notice of the profession.

HELONIAS DIOICA [CHAMALIRIUM LUTEUM]

UNICORN, FALSE UNICORN, DEVIL'S BIT, BLAZING STAR, DROOPING STARWORT

Description: Natural Order, Melanthaceae. This is called Chamaelirium by Willdenow and Gray, though the above generic and specific name of Pursh is still retained by most botanists. It was classed as *veratrum lutea* by Linnaeus; and belongs to the same family as *veratrum viride*, (American hellebore,) *colchicum*, and *uvularia*, (sometimes called a solomon's-seal.) Genus

HELONIAS: A smooth herb, with a slender stem (scape) rising erect and unbranched from eighteen inches to two feet high, terminated with a wand-like spicate raceme from six to eight inches long, of small flowers. Flowers dioecious, (staminate flowers on one plant and pistillate on another,) without bracts; perianth of six white, spatulate-linear, spreading sepals, which wither early and then remain upon the stem; most numerous on the male plants, and sometimes causing the slender raceme to nod; fewer on the female plants, in which the raceme is quite erect; fertile flowers with short rudiments of stamens. Leaves various—those nearest the roots from four to eight inches long, half an inch to an inch in width, spreading in a somewhat star-shape at the bottom of the flower-stem, obtuse, and rounded-spathulate, tapering into a short petiole; the cauline leaves quite small, scattered, and without petioles. Fruit a small oblong-ovoid pod, very thin, without lobes, but opening into three valves at the top, and containing numerous small, linear seeds. The present genus *chamaelirium* has but a single species, (the *luteum*,) which is covered by the above **description**; but the genus *helonias* has the above *dioica*, and also the *bullata*, which is most distinguished by its perianth being purplish, its flower-stalk hollow, and its pod three-lobed. Both plants grow in damp places, especially moist woodlands, throughout the United States.

This plant has usually been confounded with the *aletris farinosa*, which also has received the common names of unicorn root and blazing star. This error has chiefly been made by druggists; for while the plants bear a botanical resemblance, they can easily be discriminated; but the roots have been thrown upon the market indiscriminately, till it has come to be the opinion of many physicians that the two plants are essentially the same. Indeed, some large and reputable establishments, in this city and elsewhere, have so strenuously insisted that the real *helonias* root was *aletris*, and the *aletris* root *helonias*, that I was for some years deceived by the positiveness of their assertions; and in my Surgery commended *aletris* when I should have said *helonias*. Now the *aletris* is a positive and dangerous poison, and it is important that the practitioner should distinguish the two plants, both in botany and in commerce. The following features will clearly separate the two articles:

HELONIAS.

Flowers dioecious, without bracts.

Perianth smooth, free from the ovary, spreading.

Stamens protruding beyond the perianth.

Leaves round at the apex.

Roots fleshy, with fibers arising from them.

ALETRIS

Flowers perfect, with awl-shaped bracts.

Perianth thickly set with points, mealy looking, cohering with base of ovary, tubular, cleft only above.

Stamens included within the perianth.

Leaves acute at the apex.

Roots all small, thread-like fibers.

The *mealy* appearance of the flowers in aletris, at once strikes the eye, and separates it from the smooth-flowered helonias. In commerce, the thread-like roots of aletris are several inches in length, and spring directly from the collum; but the root of helonias is as large and as long as a man's little finger, often abrupt but sometimes tapering, always of a compact yet fleshy character, and giving only a few small and *short* fibers. When the fibers are broken off from the fleshy rhizoma of the helonias, they leave the surface dotted with small cup-shaped depressions.

Properties and Uses: The *root* of helonias is a strong bitter, and one of the most distinctly stimulating of all tonics. It acts very generally upon the system, including in its range the salivary glands, respiratory organs, stomach, gall-ducts, uterus, and ovaries. It stimulates the salivary flow, excites the fauces and respiratory passages, and promotes expectoration, for which purposes it is useful in greatly depressed and atonic conditions of the lungs, but should never be used in sensitive conditions. These latter remarks will also apply to this agent when employed for its influence on other organs. In atonic dyspepsia, it promotes appetite and stimulates the gastric secretions; and at the same time arouses the biliary ejections, and stimulates the bowels to cast out foul mucous and other accumulations. It thus facilitates catharsis in cases of alvine languor, and sometimes expels worms; but it is not to be classed as a distinct cathartic. But its most prominent and valuable action is upon the uterine organs; where it scarcely has an equal in atonic forms of prolapsus, leucorrhœa, passive hemorrhage and menorrhagia, and similar enfeebled conditions. While its use in sensitive patients and irritable uterine conditions is to be avoided, it can be employed to the greatest advantage in flaccid and prostrated states for the maladies above named. Though in no sense an astringent, its tonic influence is peculiarly efficacious in arresting too excessive menstruation and lochia, when associated with laxity and depression; and it rarely fails to arrest a threatened abortion arising from the same conditions. In these connections, it is one of the most reliable tonics in the *Materia Medica*. D. Tyrrell, M. D., of Illinois, tells me that he has known a full dose of it to arrest natural menstruation for forty-eight hours, if taken when the discharge first showed itself; and this apparently without the least disadvantage to the woman. That these influences over the uterine function are due to the

pure tonic action of the agent, is at once seen in the fact that it is a valuable article to restore the menstrual flow when this is absent from sheer inability of the generative organs.

D. H. Stafford, M. D., of Newcastle, Ind., tells me that he has used this agent to much advantage in atony of the kidneys, Bright's disease, and diabetes; and that it distinctly diminishes the amount of saccharine flow in the latter malady.

Helonias is seldom administered alone; but is most frequently employed in combination, to give intensity to more relaxing and less positive agents. Thus as an expectorant, it is usually associated with aralia and eupatorium perfoliatum; and as a tonic with fraseria, populus, hydrastis, and other agents. It is a valuable ingredient in the compounds called Woman's Friend, Female Restorative, and some other standard preparations. The dose of the powder is usually stated at from ten to twenty grains three times a day; but it is too powerful an article to use in such quantities, except for a dose or two on very urgent occasions. Five grains are a fair average dose.

Pharmaceutical Preparations: I. *Fluid Extract.* A pound of the crushed root is macerated for two days with sixty percent alcohol, then transferred to a percolator, and treated as in the process for fluid extract of eupatorium perfoliatum. It is a very strong preparation, of which from three to five drops, in simple sirup, is an average dose. II. *Helonin.* Under this name, two different preparations are put upon the market. The first is made from a saturated tincture, evaporated, and treated with a limited amount of water, as for eupatorin. A deposit settles, which is somewhat resinoid, and is claimed to be a representative of the plant; but I can not concede to it this position. The second preparation is a refined alcoholic extract, dried and reduced to powder, after the process directed for cypripedin. This is a good and reliable preparation, and may be used in doses of from half a grain to two grains.

HEPATICA TRILOBA

LIVERWORT

Description: Natural Order, Ranunculaceae. This is a small plant common to mountain and hill sides in all parts of America. Leaves all radicle, on peduncles three to five inches long, three-lobed, heart-shaped at the base, rather thick and tough, faintly purple beneath, mottled white above, persistent through the winter. Flower stems several in number from the roots, as high as the leaf-stalks, each bearing a single pale bluish-purple flower, closely subtended by a three-leaved involucre. March and early April.

Properties and Uses: This little plant has enjoyed an almost fabulous reputation, in some sections, for the treatment of coughs, phthisis, spitting of blood, liver complaints, etc. It is a mild article, slightly tonic and astringent, with a fair portion of demulcent property, and is of some use in the maladies named; but I am satisfied that its action is extremely mild, and that it has been quite over-praised. A decoction of two ounces in a quart of water, reduced to a pint, may be drank freely. It is usually combined with other pectoral tonics in the form of sirup.

HERACLEUM LANATUM

COW PARSNIP, MASTERWORT

Description: Natural Order, Umbelliferae. A large and strong-scented plant, four to eight feet high, perennial. Leaves once or twice ternately-compound; leaflets somewhat heart-shaped ; petioles broad and sheathing. Flowers white, small, in large flat umbels. Fruit obovate or orbicular, one-fourth to three-eighths of an inch long. Growing in damp and rich grounds.

Properties and Uses: The *root* of this plant is rank and acrid when fresh, but less acrid when dry. It is pronounced a strong antispasmodic, stimulant, and carminative, and has been reputed of much efficacy in hysteria, suppressed menstruation, colic, asthma, and even epilepsy. From personal experience, I can say nothing of the article; but the accounts of it lead me to suspect that it is an aero-narcotic poison. It is usually confounded with the angelica, which is the true masterwort; and it seems probable that the repute associated with heracleum, really belongs to the other article.

HEUCHERA AMERICANA

ALUM ROOT, AMERICAN SANICLE

Description: Natural Order, Saxifragaceae. A genus of plants with perennial roots, and herbaceous annual stems. The leaves spring directly from the root, on very long and downy petioles with dilated margins; roundish, five inches by three, usually margined into seven short lobes with short teeth. Flowers small, on scapes two to three feet high, which rise directly from the root, and are glandular and somewhat hairy; in narrow and terminal panicles; calyx small, five-cleft, bell-shaped, cohering at the base with the ovary; corolla very small, of five purplish petals inserted on the margins of the calyx; stamens twice the length of the petals, with yellow filaments and globular red anthers. June. This plant is common in rocky woodland throughout the United States. It has a knotty and very hard root stock.

Properties and Uses: This *root* is intensely astringent, with a modicum of stimulating properties. It is too powerfully drying to be suitable for internal use, except in such passive conditions of the bowels as are connected with hemorrhage and coliquative diarrhea suddenly following typhus; when it may be combined with a stimulant and used by injection. Its powder is employed locally as a styptic in wounds, piles, and other hemorrhages from small vessels. It is a reliable article in such cases; and has also been applied in foul and indolent ulcers, in company with *Xanthoxylum* or other stimulant. Combined with *hydrastis* in excess, it will make a good injection for depressed and offensive leucorrhœal discharges and excoriated cervix uteri of the malignant grade.

The dose of this article is from three to five grains, every second hour. It is usually given by infusion, or boiled in milk with *geum virginianum* and a demulcent. *Geranium* is also called alum root.

HIERACIUM VENOSUM

HAWKWEED, BLOODWORT, RATTLESNAKE WEED, SNAKE PLANTAIN

Description: Natural Order, Compositae. The genus *hieracium* embraces several species, all of which have heads of many yellow flowers; flowers all perfect, and all ligulate, (as in dandelion;) leaves alternate, and the entire herb yielding a little milky juice. The species *venosum* is common in the Northern and Eastern States, and through Canada; selecting dry hill sides with a light soil, and also pine woods. Stem one to two feet high, rising almost naked above, or with but one or two glaucous leaves, smooth, dark-brown, and forking above into a loose and spreading corymb. Root-leaves obovate or oblong, scarcely petioled, nearly entire, thin and pale, smooth and purplish underneath, veins distinctly purple, and the midrib sometimes hairy. Heads small, each with about twenty flowers, with the involucre cylindrical and scarcely imbricated; peduncles very slender. May to July.

This genus is closely allied to the genus *Nabalus*. Some of its species are quite hairy; and one of them (*H. longipilum*) has its leaves thickly covered with straight bristles half an inch in length. The *H. ganovi* is more common southward, and is quite hairy in all its parts. The roots and leaves of *venosum* have been used in medicine. When fresh, the leaves are acrid and excoriating, and will often remove warts; but they lose this property on being dried, and are then (with the roots) simply bitter and astringent.

Properties and Uses: The *roots* and *leaves* are stimulating and astringent, moderately permanent, and quite positive in action. They arouse a full outward circulation; and may be used to advantage when the surface is cold and sluggish, and there is hemorrhage from any internal organ. Hence they are useful in uterine hemorrhage, excessive menstruation, bleeding piles, and spitting of blood. They are not so drying as often to prove constipating, but act much like (though milder than) the bark of *myrica*. Like *myrica*, they may be used in chronic diarrhea, aphthous sores, nasal catarrh, nasal polypus, and as an injection in foul leucorrhoea and rather insensitve forms of prolapsus. It exerts that peculiar influence in stimulating and consolidating the assimilative apparatus, that can be used to good effect in the treatment of those forms of scrofula which are associated with persistent watery looseness of the bowels. Drank freely in warm decoction, and the leaves at the same time applied as a fomentation, the plant is reputed to be of much service in arousing the circulation and nervous system, and casting out the virus of serpents. One ounce of the roots, or an ounce and a half of the leaves, will form a quart of infusion; or they may be added to relaxant alterants in the preparation of sirups. The milky juice of these plants, and their resemblance in other respects to the narcotic genus *lactuca*, have caused them to be suspected of poisonous properties; but I have not seen any just grounds for such a suspicion, and think them deserving of full investigation.

HYDRASTIS CANADENSIS

GOLDEN SEAL, YELLOW PUCCOON, OHIO KERCUMA, GROUND RASPBERRY

Description: Natural Order, Ranunculaceae. The hydrastis is an herb with a perennial root (rhizoma) and annual stem. The stem is simple, erect, eight to fourteen inches high, round, pubescent, becoming dark purple, and bearing at its top two large and unequal leaves, one of which is a little above the other. Leaves somewhat cordate at base, four to eight inches long and nearly as broad, dark-green, strongly palmate-veined, hairy, serrate; the upper one sessile, in three large and shallow oval lobes; lower one short petiolate, and of from five to seven unequal, shallow and oval lobes. Flowers solitary, rising on a short peduncle in the axil of the upper leaf, small; of three petaloid, flesh-colored or nearly white sepals, which are oval, downy, fall off very early, and leave the stamens and pistils bare; corolla none. Stamens many; pistils twelve or more; ovaries as many as the pistils, ripening into a globular head of red, raspberry-looking, and slightly fleshy berries, each ovary one to two-seeded, and crowned by its short and persistent pistil. Blooming in April and early May, and ripening its fruit the last of May and early in June.

Hydrastis is found in most parts of the United States and Canada, preferring shady places, where the soil is rich, soft, and damp. The root is used in medicine. It lies horizontal several inches below the surface; its caudex is from one to three inches long, usually less than one-fourth of an inch in diameter, solid, knotty, tortuous, muddy-yellow without, and clear chrome-yellow within, with numerous fibers along its sides and under surface; the fibers three to five inches long, brittle when dry, and of the same general characters as the caudex. These roots are a pure and rather permanent bitter, neither so intense nor disagreeable as gentian. They contain a moderate portion of resinous material, together with hydrastia and an extractive, and a yellow coloring matter. This coloring material may be made to strike a bright chrome yellow on wool and other goods. Water extracts most of its medicinal qualities; so does absolute alcohol; and diluted alcohol acts rather effectually upon it.

Properties and Uses: This *root* is one of the purest tonics, the stimulating property predominating, but the relaxing well marked. It acts slowly and steadily, holding its influence for several hours. Its influence upon the system is very general; and there seems to be no organ or tissue but can be benefitted by its appropriate use, though it is most prominently advantageous to mucous membranes, the digestive apparatus, and the uterine organs. Though a stimulant, and hence sustaining to the circulation, it never excites or forces the pulse; and is unlike almost all other stimulating tonics in soothing the irritation connected with feeble and congested conditions of mucous membranes. Though claimed by the Eclectics as a remedy “peculiar” to them, it was known to Allopathy long before that system was known in our country; and to Drs. C. F. Rafinesque, S. Thomson, and M. Mattson is due the merit of introducing it to general practice, and fully teaching its true character and value, ere American Eclecticism had an existence. Prof. J. King, in his *Eclectic Dispensatory*, claims to have been the discoverer (!) of its valuable action on mucous membranes about the year 1840 though he made no such claim in his first edition, 1852; but this use was clearly set forth in Rafinesque’s *Medical Flora* as early as 1824, (§128,) and was currently recognized by the old Thomsonian physicians and journals of New England during the years 1828 to 1848, before Dr. King was a “Thomsonian” doctor in Rhode Island.

This is a small matter; but it illustrates the *source* from which Eclecticism obtains its knowledge, and the *manner* of obtaining it. (See *Dicentra*, and *Mitchella*.)

In its action on mucous membranes, hydrastis first secures the separation and discharge of any viscid secretion; then diminishes the secretion without reducing it below the normal quantity, and renders it more healthy in character; and at the same time relieves turgid conditions and achings, and disposes any ulcerated portions to heal. These actions are very decided and peculiar, and render this agent one of rare value in all affections that come under this head. Among these are purulent and granular ophthalmia, with ulceration of the cornea; in which hydrastis with a limited portion of lobelia, capsicum, or myrrh, (according to the conditions,) makes one of the most effective washes. In nasal catarrh, as a snuff; in aphthous sore mouth, as a wash with myrica; in diphtheria and scarlatina, with myrica, capsicum, and myrrh, as a gargle; and in leucorrhœa and catarrh of the bladder, both by the stomach and as an injection, it is second to no agent. In the second stage of dysentery, it may be used in moderate doses to much advantage; and in chronic dysentery and diarrhea, and in either chronic or typhoid ulceration of the bowels, is unsurpassed. The same action is exhibited to equal advantage in catarrh of the bladder, gleet, and the second stages of gonorrhœa; in all of which either the infusion or a solution of the solid extract may be used as an injection by the urethra, while the agent is also taken inwardly. The ease it gives to the achings peculiar to these maladies, as also to cystic congestion and chronic difficulties of the prostate gland, is gratifying; and weak kidneys are also much improved by its inward use. In such cases, however, as exhibit actual sub-acute inflammation of the bladder or bowels, it may prove too exciting. It is of use in some forms of spermatorrhœa, and may be combined successfully with *althea rosea* or *celastrus*. Added to relaxant cough sirups, as that of *aralia*, it sustains the respiratory apparatus.

It improves appetite and digestion; and through the stomach proves one of the most acceptable of all general tonics in indigestion, feeble assimilation, biliousness, leucorrhœa, prolapsus, and all forms of debility. As a tonic in cellular dropsy, it is worthy of the first place. It is well received in all cases, except true gastritis. It mildly facilitates the discharge of bile from the gall-ducts and liver tubuli, and thus slowly overcomes some forms of costiveness, (§172;) yet it is not to be classed as a cathartic, and its toning influence will arrest undue mucous discharges though the agent is in no sense an astringent. It has an excellent sustaining influence on the nervous tissues, and upon the pulse when its caliber is diminished from nervous fatigue and exhaustion; when it is suitable in the later stages of typhus, variola, scarlatina, excessive suppuration, and other exhaustive maladies. This action, combined with its influence upon the stomach and gall-ducts, makes it useful in the treatment of ague, where it is often associated successfully with quinine; and is itself a mild antiperiodic, especially suited to gastric intermittents. Like other tonics that influence the gall-ducts, it sometimes secures the expulsion of worms; and Prof. J. E. Roop tells me that it alone is worthy of the first consideration in all forms of chronic jaundice.

As an external application, it is valuable in weak and degenerate ulcers, scrofulous ulcers of the low grade, and bruises and wounds where there is a tendency to congestion without incipient mortification. It relieves the aching of such sores, and advances the healing process; and by combining with it a moderate quantity of lobelia or of capsicum, it may be used in application either to sub-inflammatory or to indolent and putrescent conditions. It is one of the best remedies, in powder, for dressing irritable chancres and buboes; and may be used in all forms of

local syphilis, by adding to it a modicum of lobelia, sanguinaria, or capsicum, according to the needs of particular cases. It may also be used as a wash, or added to cerate or glycerin and used as an ointment, for purposes of local dressing. I would also particularly commend a decoction of it as a wash to a part or the whole of the surface, in the maturing stage of variola; in which it at once allays the itching, relieves the nervous system, and so tones the new cuticle under the pustules as greatly to lessen the danger of pitting. It may be used several times a day upon the face and hands, each application being followed with a light dressing of sweet oil; and my eighteen years of experience with it in this form, justifies me in speaking of its value in the highest terms.

While hydrastis is thus one of the most serviceable and general of all the tonics, it will be seen that there are some conditions where a more relaxant, and others where a more stimulating article of the same class should be preferred. And for securing its local benefits, it is usually preferable to combine it with an *excess* of other and more specific articles. (§265.) Thus, it may be associated with euonymus, fraxinus, or eupatorium perfoliatum, when its main influence is required upon the hepatic organs; with mitchella, caulophyllum, convallaria, or liriiodendron, when its tonic impression is especially desired on the uterine structures; with quinia or salacine, when it is employed to favor an antiperiodic result; with rheum, when the bowels are particularly to be impressed; and with Composition Powder, when it is advisable to secure a tonic influence upon the nervous peripheries and small blood-vessels throughout the frame. (§248.) It is seldom added to alterants, as it naturally has but slight influence over the glandular structures; but in scrofula, when it is so important to cut off the source of impurity by sustaining digestion and assimilation, it can be used to advantage in company with alterants. This whole article may sound like exaggerated praise of this agent; but, when kept to its true place, I am fully confident that it will be found deserving of every thing here said in its favor. When used in conditions to which either boneset, wahoo, or fraxinus, on the one hand, or sabbatia, helonias, or cinchona on the other hand, would be more applicable, it will of course not accomplish work for which it is not suited.

The dose may range from two to twenty grains every four or six hours, according to the objects sought and the condition of the patient—small doses being best for the bowels and subacute conditions of the uterus and bladder; large doses for depressed and atonic conditions. Half an ounce to a pint, forms the ordinary infusion. It may be used with advantage in subservience to leaves of amygdalus, eupatorium purpureum, althea rosea, and copaiva, for affections of the bladder and urethra; to aralia racemosa, prunus, and polygala, for the lungs; and to leonurus, scutellaria, and liriiodendron, for nervous feebleness and palpitation. It enters into special compounds mentioned under althea rosea, populus, fraxina, fraxinus americanus, liriiodendron, and angustura.

Pharmaceutical Preparations: I. *Extract.* The extract of hydrastis from decoction does not present the full strength of the article, hence the preparation should always be of the hydro-alcoholic class. It is a good basis for pill-mass when concentrated tonics and stimulants are to be used, as quinine and capsicum. Three to five grains dissolved in four ounces of water, form a valuable injection in gleet and the later stages of gonorrhoea. II. *Tincture.* Crushed hydrastis, three ounces. Macerate with diluted alcohol for forty-eight hours; transfer to a percolator, and treat with diluted alcohol till two pints and four ounces have been used; press the dregs strongly,

and filter. It may be employed in doses of from one to three fluid drachms, but is seldom used.

III. *Fluid Extract.* Macerate one pound of crushed hydrastis for two days with twelve fluid ounces of seventy percent alcohol; transfer to a percolator, add four ounces more of the same strength of alcohol, and then add water, setting aside the first six fluid ounces that pass. Continue the percolation with water till the roots are exhausted, and evaporate to ten fluid ounces. Mix the two products; and any settlings that may remain may be dissolved in half an ounce of seventy percent alcohol, and mixed with the other liquid. Some use fifty percent alcohol, setting aside the first eight fluid ounces, which forms a somewhat less efficient preparation than that made on the stronger menstruum, but one not so likely to produce deep turbidity when added to other liquids. It represents the plant quite fully. Dose, from five to fifteen drops, in sirup.

IV. *Hydrastin.* There has been a great deal of disputation as to the nature of this article, whether it is a resinoid or an alkaloid. The confusion has been much increased by W. S. Merrill putting upon the market three separate articles under the names hydrastin, hydrastine, and hydrastia; and claiming them as so many distinct principles, but without very clearly defining his method of manufacture. To Dr. H. H. Hill, of Cincinnati; is unquestionably due the credit of first pointing out the correct method of procuring this article, and of honorably making known his process to the profession. Though his plan has been varied by different pharmacists, and possibly improved on to a limited extent, the course he pursues is the basis upon which all the others rest, and is at once the simplest and most profitable. It is substantially as follows: Any suitable quantity of the crushed root is macerated in absolute alcohol for twenty-four hours; then transferred to a percolator, and treated with absolute alcohol till exhausted. The tincture thus obtained is evaporated to the consistence of a very thin sirup, poured at once into five parts of cold water, allowed to stand for a few hours, (or until perfectly cold,) and then decanted into another vessel so as to free it from the dregs of extractive matter which will have accumulated on the sides of the first vessel. To this liquid is added diluted muriatic acid, till the acid is very slightly in excess, or till the precipitate ceases to fall. This precipitate is the beautiful lemon-yellow crystals of hydrastin, (or muriate of hydrastia.) These may be washed with distilled water upon a close muslin filter, till no acidulous taste remains in the washings; and then dried and pulverized. The powder is a beautiful chrome-yellow, neutral in character, very bitter, and of strong medicinal action. The tonic dose is from one to five grains; and from ten to fifteen grains as an antiperiodic. For antiperiodic purposes, I have found the best results from combining it with half a part of piperine.

The above process of Dr. Hill has been varied by Dr. Greve, of Cincinnati, by using sulphuric instead of muriatic acid; thus forming sulphate of hydrastia, of the same characters as the above muriate. Several Eastern manufacturers use muriate of ammonia instead of muriatic acid; the alkaloid hydrastia seizing the acid and setting the ammonia free—thus accomplishing the same result in an indirect manner. This latter method does not leave the pharmacist with the best means for knowing how much muriatic acid will be required, (the quantity varying with different specimens of the root;) hence he is liable to use an excess of muriate of ammonia, and in any case must get rid of this free ammonia. The hydrastin obtained by this method is nearly white.

The alkaloid principle *hydrastia*, which is thus obtained as a precipitated neutral salt, may be dissolved from the root to a very large extent by boiling water; and precipitated, as above, by

adding muriatic acid to the boiling decoction. If the decoction is allowed to cool below the boiling point before it is strained off, the hydrastia re-precipitates into the roots; and if the acid is not added while the decoction is at a boiling heat, the hydrastin will carry down so much extractive matter as soon to fall into a gummy mass. The amount of hydrastin thus obtained is not so large as the process by alcohol; but the product is perhaps equally good, provided the fluid be quickly decanted from the precipitate, and the precipitate well washed. Dr. Hill patiently worked out the problem of obtaining those crystals uniformly and profitably—first from the boiling decoction, and then from the alcoholic tincture, as above detailed—after reading the process for obtaining crystals of populin without acid, as alluded to in Turner's Chemistry; so that the merit of the procedure is virtually Dr. Hill's own.

HYSSOPUS OFFICINALIS

HYSSOP

Description: Natural Order, Labiatae. This plant is perennial, with the lower part of the stem woody, and the upper part of slender and wand-like branches. Two feet high. Leaves opposite, sessile, lance-linear, punctate. Flowers blue-purple, in small clusters upon crowded spikes; calyx tubular, fifteen nerved, two toothed; corolla two-lipped, upper lip erect and obscurely notched, lower lip three-cleft, with the middle lobe largest and two-cleft. Stamens four, diverging, exserted. Native to Europe, cultivated in gardens, now common along roadsides in some parts of America. Flowering in July. The whole plant has a pleasant odor, and contains a volatile oil.

Properties and Uses: This is a diffusive aromatic, stimulating and relaxing, with mild tonic properties. It sustains capillary circulation gently, and also the nervous peripheries. It promotes expectoration, relieves asthmatic coughs, and may be employed in colds with soreness of the chest. It is often employed in gargles for quinsy and ordinary sore throat.

ILEX OPACA

AMERICAN HOLLY

Description: Natural Order, Aquifoliaceae. This is an evergreen tree of medium height, most common along the coast from Virginia southward. Leaves oval, with wavy margins armed with short teeth, dark green, smooth and shining. Flowers small, greenish-white, in clusters along the young branches. Fruit a round berry with four nutlets, scarlet.

Other species of the holly are low shrubs; and several of them are cultivated for their beautiful and changeful evergreen leaves. They are allied to the famous European holly.

Properties and Uses: The *leaves* of the European holly have had much attention directed to them, and those of the several American species seem to be in all respects similar. They are stimulating and relaxing, and of a peculiar bitter and somewhat balsamic taste. A warm infusion arouses outward capillary action, and gently promotes perspiration; and its abundant use may induce vomiting, and sometimes purging. A cold infusion is somewhat tonic. These leaves have been pronounced of much value in ague, and at one time were asserted to be equal to quinine. They are of some use as diffusives to the circulation; but their action is in no sense similar to cinchona or any of its preparations, and their use as distinct antiperiodics will be followed by disappointment.

IMPATIENS PALLIDA

JEWEL-WEED, BALSAM, TOUCH-ME-NOT, WEATHERCOCKS

Description: Natural Order, Balsaminaceae. In the same family with the balsam so much cultivated in our gardens for its beautiful flowers, and noteworthy for its large, succulent, and almost transparent amber-colored stems. The genus has several species indigenous to the United States, growing in masses in rich soils, along the line of spring rills where there is good shade. Stem two to four feet high, juicy, very tender, amber-colored, with the joints swollen. Leaves alternate, without stipules, petioled, ovate, toothed, thin, soft. Calyx and corolla large, yellow, usually confounded; the posterior sepal (apparently the anterior, as the flower hangs on its stalk) large and forming a dilated sac at the base, tipped with an incurved spear; petals of two united and dotted pairs; stamens five, short. Fruit cylindrical, an inch long, of five valves, which contract spirally when ripe, bursting the capsule and scattering the seeds with a sudden spring. July to September.

Properties and Uses: This plant is a relaxant, with a full share of stimulating properties, an infusion acting somewhat promptly. It influences the kidneys, gall-ducts, and bowels; and has been well spoken of by Rafinesque and Bigelow in jaundice and dropsy, but is probably too feeble to effect much. Its outward application is most valuable; and is suitable to foul ulcers, ring-worm and other forms of tetter, and to piles. It may be used as a wash, or made into a strong ointment. D. II. Stafford, M. D., of Newcastle, Ind., informs me that, when a young man, he was bitten on the leg by a venomous snake; the limb swelled up enormously, became purplish-green through nearly its entire length; and he became delirious, and sank till his life was wholly despaired of. He was effectually cured by large masses of jewel-weed, bruised and applied to the entire limb, and changed as the mass became warm. Relief was obtained almost at once, (§239;) and the recovery was rapid. The facts in this case suggest that this plant may be found valuable in arresting mortification under other circumstances.

INULA HELENIUM

ELECAMPANE

Description: Natural Order, Compositae. This peculiar plant is common along the roadsides in many portions of the United States, the root being perennial and the stem annual. In the spring it sends up a number of leaves from the root; and these are about two feet long by eight inches broad, dull green above, hoary and downy beneath, with a fleshy midrib. The stem subsequently rises in the midst of these, three to five feet high, somewhat downy, with smaller and half-clasping leaves, and large heads of flowers looking somewhat like the sunflower. Ray florets large, spreading, ligulate, yellow; disk florets short, tubular, five-cleft. Seeds four-sided, smooth; pappus rough. July and August.

The root of this plant is thick, whitish, mucilaginous, and of a feeble balsamic odor. It usually comes to market in flat slices, grayish, of a pleasant aroma, and a warming and rather bitter taste. It contains, especially early in the spring, a large quantity of a starchy substance called *inulin*. It yields its properties readily to water and alcohol.

Properties and Uses: The *root* is stimulating and relaxing, leaving behind a tonic and slightly astringing impression. Its influence is expended chiefly upon the mucous structures of the lungs; but it also acts moderately upon the stomach, uterus, skin, and kidneys. To the lungs it is warming and strengthening, promoting the discharge of viscid mucous, but leaving the surfaces slightly dry. It is a popular remedy in coughs, but is often used without sufficient discrimination; for while it answers an excellent purpose in sub-acute and chronic cases where the lung structure is relaxed and expectoration viscid or too profuse, (as in humid asthma,) it is not suitable for cases of any class where the lungs are irritated or dry—as it then increases the dryness, and gives a feeling of constriction. It is an ingredient in the Compound Sirup of Aralia; and may be combined with any of the relaxing and demulcent expectorants, though rarely used in conjunction with stimulants of that class. It may be associated with lobelia, cimicifuga, and licorice in the formation of cough lozenges or troches; and the people use it largely with hoarhound and comfrey.

It has a moderate influence in promoting menstruation; for which purpose it may be combined with anthemis and caulophyllum in uterine languor. Some physicians use it in dyspepsia and hepatic torpor, and in the cutaneous affections arising from biliary accumulations; but it is of small value in such cases. From ten to twenty grains of the powder may be used as a dose, three or more times a day; but it is most customary to prepare it in a compound infusion or sirup, and then to employ such doses as will rarely contain more than from two to five grains of the elecampane in each.

IPOMEA JALAPA

JALAP

Description: Natural Order, Convolvulaceae. Genus IPO MEA: Sepals five; corolla campanulate; stamens included, style one. Fruit a two-celled and two-seeded capsule. I. JALAPA: Stem round, smooth, very long, twining to great heights around neighboring objects. Leaves entire, smooth, acutely pointed, heart-shaped, lower ones somewhat hastate. Flowers large, lilac-purple, two or three from the same long peduncle; calyx five-sepaled, without bracts; corolla funnel-form.

This plant is found abundantly in Mexico, upon the high table-lands. The root is fleshy and tuberous, somewhat pear shaped, with numerous long fibers, dark colored without and grayish-white within, varying in diameter from half an inch to three inches. Sometimes the tubers come to market whole, deprived of their fibers; but generally they are cut into horizontal slices, or else split lengthwise. The tuber, when dry, is hard, heavy, brittle, with a somewhat shining fracture, and dark circles among the grayish-white substance. It is of a sweetish taste, which passes away and leaves an acrid and disagreeable sensation in the mouth. It contains a large portion of resinous material, which may be discerned with a good glass in points upon the fractured surface. This resin consists of two kinds, one of which (*rhodeoretin*) is hard, soluble in alcohol, slightly soluble in water, insoluble in ether, and is the active cathartic principle of the root. The other resin is soft, and is soluble in ether. It contains a larger percent of medicinal extractive than of resin. It imparts a portion of its properties to water, and a portion to alcohol; but alcohol of seventy percent acts most effectually upon it as a menstruum.

By long keeping, jalap becomes spongy, and seems to undergo changes which are largely destructive of its properties. Worms often attack it, but do not destroy the resin; whence a worm-eaten article may be more purgative, in a given weight, than one not thus attacked.

Properties and Uses: The *root* of jalap is an active cathartic, relaxing to a moderate extent, but most largely stimulating. It acts principally upon the mucous surfaces of the bowels, procuring prompt and thin stools, and even proving drastic in large doses. It stimulates the gall-ducts some, and also the muscular fibers of the bowels—whence it frequently proves griping. An average dose commonly operates in from three to four hours. By being sprinkled upon an ulcerous surface, it will be absorbed and procure catharsis. It is best given in depressed conditions of the bowels and atonic congestions of the portal circle; but is not a suitable agent for irritable states of the stomach and alvine canal; and bilious or leuco-phlegmatic temperaments can use it to much better advantage than the nervous. It is oftenest given in powder, of which the average dose is from ten to twenty grains; and it is rare for more than fifteen grains to be required. If treated by alcohol, the tincture is exceedingly griping; which shows the harsher qualities of the agent reside in the resinous portion. An infusion in warm water rarely gripes. If the dregs remaining from an alcoholic tincture be dried, and then treated with water, the infusion will scarcely act upon the bowels at all, but will make a pretty sharp stimulating and relaxing impression upon the kidneys. If moderate portions of the powder be given with such a diuretic as juniperus, the action on the bowels will be limited, but an intense diuretic influence will be

obtained. (§262.) It is customary to combine the powder with aromatics. It is much abused by over-use—both alone and in compounds.

Pharmaceutical Preparations: I. *Compound Powder. Anti-bilious Physic.* Jalap, one pound; senna, two pounds; ginger, two ounces. Mix the powders. This makes an efficient cathartic where a quick action is required. It procures thin discharges, unloads the bowels of all accumulations, and is not harsh or griping. A suitable dose usually operates in less than three hours. Half a drachm may be given as a dose, mixed with two ounces of water and some sugar. Or it may be infused, and the clear liquor poured off and used. Some writers direct a drachm as a dose, but this is too drastic; and it is preferable to administer half a drachm, and then to give a second portion of about fifteen grains, if the first quantity does not procure an action (or premonitions of one) in two hours. Some practitioners use cloves instead of ginger, but this formula is not always acceptable to the stomach. Powdered peppermint was at first employed with cloves in this compound, but this made the dose very bulky. Many practitioners add about ten grains of cream of tartar to each dose—which increases its promptness and efficiency. This powder is so effectual, that it has come to be prescribed almost as a routine by some physicians, without due discrimination as to where it should and should not be used. II. *Extract.* This is prepared by first treating the coarsely-powdered jalap with diluted alcohol, and afterward with cold water, in the percolator; then mixing the two products and evaporating to a solid mass. In the soft state, it is used as a basis for cathartic pills; but may be dried and powdered. It contains both the resinous and extractive matters of the root, and is a good representative of the drug. Dose, from eight to fifteen grains. The hard extract is often mixed with an equal part of scammony and one-eighth part of ginger, for a cathartic powder. III. *Fluid Extract.* Macerate one pound of crushed jalap with diluted alcohol; put in a percolator, and treat with diluted alcohol till half a gallon has passed; evaporate to one quart, and then add half a pound of sugar and half an ounce of carbonate of potassa, (which renders the jalap resin soluble in water;) then evaporate to twelve fluid ounces; and while hot, bottle and add four fluid ounces of alcohol. This formula was proposed by Prof. Proctor, and makes an efficient preparation. Dose, from fifteen to twenty drops. IV. *Resin of Jalap.* This may be obtained in a moderately pure state by macerating any suitable quantity of well-crushed jalap with diluted alcohol, then transferring to a percolator and exhausting with diluted alcohol, afterward distilling off the spirit and evaporating the remainder over a steam-bath. It is dark colored and brittle; and purges actively in doses of from three to five grains. A pure resin, as white as starch, may be obtained by placing a layer of fine animal charcoal upon a diaphragm of flannel in the bottom of the percolator, mixing equal parts of jalap and animal charcoal and laying on this, adding absolute alcohol till enough passes to equal in weight the amount of jalap used, and precipitating the resin by adding to this tincture twice its own volume of water. V. *Tincture.* Six ounces of crushed jalap are macerated for two weeks in a quart of diluted alcohol, expressed and filtered. It is very harsh, and is seldom used, except as an addendum to other cathartic mixtures. Jalap and senna are often tinctured together.

Jalap is sometimes mixed with twice its own weight of tartrate potassa, which obviates the griping and facilitates catharsis; yet it is not a desirable compound. An old-time Allopathic prescription was “calomel and jalap.”

IRIS VERSICOLOR

BLUE FLAG

Description: Natural Order, Iridaceae. This is the pretty blue flag of the American swamps and bogs, blooming in May or June. The genus is peculiar in having three stigmas which look like large bluish-white petals, the three inner divisions of the perianth being of the same appearance as the stigmas, and the three stamens lying below the stigmas and above the inner divisions of the perianth concealed between the two. The flowers are large and showy, borne on the summit of a peduncle a foot or more in length, which rises directly from the root-stock, is flattened, and has two long and sword-shaped leaves. The root is a creeping, tough rhizoma, half an inch or more in diameter, brownish-scaly without and whitish within. Fruit a three-sided and three-celled capsule, two inches long, with numerous flat seeds.

The root of this plant is medicinal. When fresh, it is acrid and stimulating; but when dried at a moderate temperature, it loses this property, and then possesses little taste, though retaining its virtues. Age impairs it, and it requires to be kept in air-tight jars. Water extracts much of its virtues; alcohol, and diluted alcohol, act on it more effectually, extracting an oily and a resinous material.

Properties and Uses: This *root* is relaxing and stimulating, the stimulating property predominating. It acts upon the whole series of secretory organs, exciting the glandular system, and arousing the secretion of saliva, bile, urine, etc. Full doses act upon the liver and bowels quite decidedly and promptly, procuring rather thin discharges, and exhausting the frame if continued too freely. Small doses act with sufficient force to secure the usual glandular effects of a general stimulating alterant. Combined with diuretics, or the aqueous infusion used alone, it manifests a rather distinct impression upon the kidneys. It is rarely used alone as a cathartic, being too active for ordinary purposes; but is commonly added in small proportions to alterative compounds designed for secondary syphilis, mercurial cachexy, low grades of scrofula, leprosy and chronic skin affections, and similar cases of marked depression and secretory inefficiency. It has, for the same reason, been commended in low forms of dropsy and chronic rheumatism; and may also be used in chronic liver complaints and jaundice. It is usually given in very limited quantities with such relaxants as suit the case in hand—the iris itself bearing toward the glandular system much the same stimulating relations that capsicum bears to the arterial system. It is not a suitable agent to administer in sensitive and irritable conditions of the frame, but is suited to languid and unimpressible states. Its field of action is thus quite limited, but in that field it is powerful and reliable. The dose ranges from two to five grains, three times a day, as a glandular stimulant; and ten to twelve grains as a cathartic. Roots (powdered) of different ages, may vary much in strength; and an inferior article would call for the use of larger doses. Dr. Bigelow and Prof. Rafinesque were among the first to direct the attention of the profession to this article. It is usually combined with such articles as sarsaparilla, arctium, scrofularia, and rumex. Prof. Rafinesque says that one part of iris and three parts of *eryngium yuccaefolium*, (about the same as *eryngium aquaticum*,) are very efficient in curing dropsy, when used in doses not sufficient to more than regulate the bowels. It is an ingredient in the Compound Sirup of *Stillingia*. As heat impairs its virtues, it is customary to add the tincture when the sirup has been completed.

Pharmaceutical Preparations: I. *Tincture*. Finely crushed roots of blue flag, three ounces; alcohol of eighty percent, one pint. Macerate for two weeks, express and filter. This is used in doses of from ten to twenty drops three times a day, as an alterant; and forty to sixty drops as a cathartic. It is usually added to alterant sirups—four to eight ounces of the tincture to each gallon. When intended to be added to sirups, it should be prepared on fifty percent alcohol; as the resinoid will separate from a stronger alcoholic tincture, when added to water. II. *Extract*. A hydro-alcoholic extract is made from the coarsely-powdered roots, after the manner of extracts of this class. This is a rather powerful preparation, seldom used; but may be used in pills in obstinate cases. It is pretty sure to excite rather persistent ptyalism; and by its action on the rectum may arouse the uterine function. Alterative dose, half a grain; cathartic dose, two to four grains. III. *Fluid Extract*. Mix one pound of finely-crushed blue flag with twelve fluid ounces of absolute alcohol and four ounces of ether; transfer to a percolator, and add a similar quantity of the menstrua; after it has ceased dripping, add diluted alcohol till a quart has passed. Evaporate this spontaneously to ten fluid ounces, in the mean time adding diluted alcohol till twenty-four fluid ounces have passed. Evaporate this to ten fluid ounces, and mix the two products—using a little absolute alcohol to dissolve any resinous material that may fall. Alterative dose, three to five drops; cathartic dose, twenty to twenty-five drops. IV. *Iridin*. This is virtually an oleo-resinous extract, obtained by treating the root with ether and absolute alcohol till exhausted, and then evaporating. It can not be reduced to a solid form. It is a very concentrated article, and not much used. Cathartic dose, one-fourth of a grain every three, hours till it operates. Some druggists prepare iridin by the precipitation of a concentrated alcoholic tincture, as in podophyllin. On the addition of water, it falls as an oleo-resinous mass; which slowly oxidizes by long exposure to the air, and then may be brought to the powdered form by the admixture of a small part of the powdered root or of magnesia. The dose of this preparation is about one grain.

JEFFERSONIA DIPHYLLO

TWIN LEAF, RHEUMATISM ROOT

Description: Natural Order, Berberidaceae. Allied to the caulophyllum and podophyllum. The root of this plant is a perennial rhizoma, with a dense and matted mass of slender fibers. The leaf rises from the root on a slender petiole eight inches high, smooth, parted above into two half-ovate leaflets, with their bases close together, four inches broad by two inches long, thin, smooth. Flowers on slender stalks, also arising from the root to the same height as the leaf stalks, about an inch in diameter, of four colored and fugacious sepals, and eight white petals. It blooms in April and May, and is found in woods and near streams on limestone soils through the Northern and Western States.

Properties and Uses: The *root* of this plant is a pungent and bitter stimulant, with a fair portion of relaxing properties. It acts with moderate promptness upon the mucous membranes; and afterwards influences the stomach, kidneys, circulation, and glandular system more slowly and permanently. To sensitive persons, its action upon the fauces and respiratory passages is sharp, and almost acrid, and it excites the stomach somewhat unpleasantly; hence it is not appropriate to sensitive patients or irritable conditions, but is suited only to sluggish conditions, and states of laxity and enfeebled action. It promotes expectoration in chronic coughs and hepatization; a warm infusion will elevate capillary circulation, increase the secretion of the skin, and promote the menstrual function. It is much used in depressed forms of chronic rheumatism, in sirups designed for secondary syphilis and mercurial rheumatism or cachexy, dropsy, and atonic forms of amenorrhea. It is an antispasmodic of the stimulating class; and a moderate portion of it can be used to advantage in low hysteria and uterine pains, combined with such agents as liriodendron and mitchella. An infusion makes a good gargle in mild ulcerations of the throat, and a wash for aphthous sores and semi-indolent ulcers. It is a strong agent, and deserves much consideration in prostrated conditions of the nerves and pulse, as well as in the above maladies. It is usually given by infusion; or added to other agents in the sirup form, such as dicentra, alnus, phytolacca, fraxinus, etc. When thus used, about six ounces are commonly employed in each gallon of sirup.

Pharmaceutical Preparations: I. *Infusion*. Crushed or powdered roots of jeffersonia, half an ounce; boiling water, ten fluid ounces. Dose, a fluid ounce every hour or two hours, according to the object sought. II. *Fluid Extract*. This is prepared on 75 percent alcohol, after the usual manner of other extracts. It is a good representative of the root.

JUGLANS CINEREA

BUTTERNUT, WHITE WALNUT

Description: Natural Order, Juglandaceae. This is the native butternut tree of America, growing in nearly all sections, forming a large and spreading head, with a stout trunk and nearly horizontal branches. It is so well known throughout our country that detailed **description** seems unnecessary.

Properties and Uses: The *inner bark* of the root (and also of the trunk) is medicinal, yielding its virtues to hot water and diluted alcohol. It is among the moderately slow but very reliable cathartics, relaxing and stimulating, influencing the gall-ducts and gall-cyst, and the muscular fibers and mucous membranes of the bowels. It secures the ejection of bile, and the dislodgment of all hepatic and alvine accumulations; but does not excite watery stools, and always leaves behind a desirable tonic (but not astringent) impression on the alvine canal. In sensitive persons, and those of the nervous temperament, it often causes sharp griping—an effect more common to the recent than the long-dried root. Bilious and bilious lymphatic temperaments rarely feel any griping; yet it is not a suitable agent for any form of intestinal sensitiveness or irritation, though alkaloids modify its griping. It often colors the faeces nearly black.

In all forms of jaundice, biliousness, and chronic costiveness, resulting from a deficient discharge of bile, it is a cathartic of the most reliable and strengthening character. In chronic and sub-acute diarrhea, it is of much service for its action on the hepatic function; and S. Black, M. D., of Elkton, Ky., tells me he cured many cases of camp diarrhea with it alone—first using a pretty large cathartic dose, and then a small tonic-hepatic (but not distinctly cathartic) dose twice a day. This form of diarrhea must not be confounded with dysentery—a malady to which juglans is not at all adapted. In bilious and sluggish patients, I have not only overcome obstinate costiveness of many years' standing, but have also effectually relieved dense (not irritable) hemorrhoids by the daily use of nothing but juglans extract. Although it apparently does not facilitate the secretion of bile, yet it so effectually purges the hepatic tubes of all viscid accumulations, that it is of much service in tonic preparations for the intermediate treatment of quotidian and chronic agues. J. Weeks, M. D., of Mechanicsburg, Ind., says he has at times completely broken up agues by maintaining free hepatic action with only a strong preparation of juglans. It is not given in powder, but always in some one of its concentrated preparations; or added to tonics when these require some hepatic association. It is usually advisable to combine some aromatic with it.

By pressure between moderately heated iron plates, the kernels of the butternut yield a large percentage of a fixed oil. G. N. Davidson, M. D., of Huntsville, Ind., uses this in sub-acute and chronic ophthalmia, with great success; and others have confirmed his report of its value. It may also be employed on tetter, ringworm, and similar cutaneous difficulties. It slowly becomes rancid, and then is unfit to use; but possibly it may be preserved by admixture with its own bulk of glycerin. Prof. Rafinesque says the oil of black walnut, (*juglans nigra*,) is often effectual in expelling worms, and has even been known to cause the ejection of the tape-worm.

Pharmaceutical Preparations: I. *Decoction.* Digest two ounces of well-crushed bark of juglans in a quart of hot water for two hours; strain with strong pressure, and evaporate to half a pint, to which add half an ounce of tincture of ginger. A fluid ounce of this may be taken twice or three times a day, for gentle hepatic purposes; or two fluid ounces used for a cathartic dose.

II. *Extract.* This is prepared by evaporating the decoction to a solid consistence. It is obtained in considerable quantities from the bark, and represents the virtues of the drug quite fully. In doses of from eight to twelve grains, it acts as a reliable cathartic, not exhausting, but always toning to the bowels. If not combined with other cathartics, it may be stiffened with ginger powder and made into pills. It is an admirable basis for pills which are to contain more active ingredients, as apocynin, scammony, or podophyllin. When used thus as a basis for pill-mass, it is usually advisable to soften it with diluted alcohol till it can easily be moved with the spatula. Equal parts of hard extracts of juglans and euonymus, with half a part extract of xanthoxylum, stiffened with a little sanguinaria, form a *liver pill* of much value—of which from two to four may be given night and morning, the effect being steadily hepatic but not distinctly cathartic.

III. *Fluid Extract.* Cut a pound of butternut bark into very small pieces, and crush well; macerate it for twenty-four hours in 50 percent alcohol; transfer to a percolator, and add alcohol of the same strength till eight fluid ounces have passed, which set aside. Continue the percolation with hot water till two quarts have passed, which evaporate to eight fluid ounces. Mix the two products. The strength of the drug is not yet fully exhausted, though probably as much so as will prove profitable, yet the second process of percolation may be continued with hot water to exhaustion, and then evaporated to eight fluid ounces and mixed with the first product, and filtered. If much material remains on the filter, an ounce of 50 percent alcohol may be used to dissolve it. Dose, from thirty drops to half a fluid drachm or more. It is usually administered in some aromatic sirup, as of ginger. I have found much satisfaction in combining one part of this fluid extract with three parts of Neutralizing Cordial, in bilious and chronic diarrhea; and giving a moderate dose every six or four hours.

IV. *Concentrated Sirup.* Macerate one pound of well-crushed bark of juglans for twelve hours in a sufficient quantity of diluted alcohol to moisten it thoroughly. Transfer to a percolator, and treat with boiling water till the drug is exhausted. Add a pound and four ounces of sugar, and evaporate to two pints; strain while hot. Dissolve, as well as possible, the dregs upon the filter in an ounce of diluted alcohol and two drachms of strongest tincture of ginger; add to this, by trituration on sugar, ten drops of oil of anise; and mix the whole with the first preparation. This is a very pleasant and reliable cathartic sirup, and one that seldom gripes unless the bowels are already over-sensitive. Dose, half to a whole fluid drachm. A milder cathartic but more distinctly hepatic preparation may be made by using half a pound each of the juglans and euonymus—forming them into a sirup as above. This I have used to much advantage as a cathartic during the treatment of quotidian agues. Dose, half to a whole fluid drachm every six hours till it operates. It might properly be called *Compound Sirup of Juglans*. Either of these sirups used with a moderate quantity of fluid extracts of chelone glabra and apocynum, will usually prove efficient as a cathartic and tonic in worms.

V. *Sirup of Juglans and Potassa.* Crushed juglans, eight ounces; hydrastis, one ounce. Treat in the percolator with tepid water till exhausted; add two pounds of sugar, and evaporate to two

pints and a half. Rub into a suitable quantity of sugar five drops each of oils of fennel and peppermint, and triturate with the above sirup; to which half an ounce of bicarbonate of potassa, and eight fluid ounces of brandy are then to be added. This preparation is similar to the Neutralizing Cordial prepared from rhubarb; and nearly equals that elegant sirup, at less than half its cost. In doses of one to two fluid drachms every four hours, it is excellent in all forms of diarrhea, sourness of the stomach, wind colic, etc. In doses of a fluid ounce, it is gently cathartic. I commend it to the profession as a compound of much service in the cases in which the Neutralizing Cordial is used, especially when associated with biliousness.

Juglans enters into compounds mentioned under senna and fraxinus. It is also variously associated with gentian, balmony, and boneset for laxative-tonic purposes; and with cornus florida in chronic watery diarrhea and hepatic obstructions. Various preparations for biliousness also contain it.

JUNIPERUS COMMUNIS

JUNIPER

Description: Natural Order, Coniferae. In the family with the pines, but more closely allied to the sub-order of cypress, Genus JUNIPERUS: Evergreens, comprising species of every size, from large trees to small and creeping plants. Flowers dioecious, very rarely monoecious, in very small lateral catkins; sterile aments sub-terminal or axillary, anther cells on the under side of the shield-like scales, from three to six in number, opening lengthwise; fertile aments axillary, ovoid, bracteate at base, of three to six fleshy and coalescent scales, each one to three ovuled. Fruit a sort of drupe or berry, with scaly bracts underneath, with one to three hard-shelled seeds, of a strongly resinous odor. Leaves scale-like or awl-shaped, very persistent. J.COMMUNIS: Leaves in whorls of three, spreading in the adult plants, jointed at the base, linear or awl-shaped, glaucous-white on the upper surface, bright green on the under surface, prickly pointed, about an inch long. Branches rigid, with numerous branchlets. Fruit small, round, dark purple, covered with a handsome light bloom which gives the globular berry a bluish appearance, as large as a pea. May.

This species of juniper is indigenous, common through Pennsylvania and northward, much cultivated among the ornamental evergreens. Its usual height is from eight to twelve feet, and spreading; but by under-trimming it is trained to a tree of from twenty to twenty-five feet high. Preferring dry hill-sides. The leaves and berries both have a terebinthinate smell and taste, which arise from a volatile oil they contain. This oil is usually of a faint greenish-yellow tint, warming taste, and a pleasant terebinthinate odor. Nearly all that comes to market is obtained from the leaves. The berries are added to Holland gin during distillation, and give to that liquor its peculiar smell and diuretic action.

Properties and Uses: Juniper *berries* are a mild stimulant and relaxant, chiefly influencing the kidneys and bladder. They are a pleasant and somewhat prompt diuretic, not usable in acute inflammation of any portion of the renal apparatus, but answering an excellent purpose in all renal congestions, aching through the back and loins, catarrh of the bladder, etc. They seem best suited to cases of retained uric acid, with amber-colored wine. (§192.) They exert a moderate influence on the uterus, and some upon the nervous peripheries at large; hence are sometimes useful in sudden suppressions of the menses from exposure, and in the peculiar and half-hysterical forms of nervousness arising under such circumstances. They may be crushed with sugar, and given in doses of half a drachm to a drachm three or four times a day. A better method of using them is to crush an ounce of the berries, and macerate them in a pint of warm water for an hour in a covered vessel; of which two fluid ounces may be taken every two or three hours. In this form they are very effective, and are often added to more relaxing and slower diuretics, as queen-of-meadow, scoparium, etc., in the treatment of dropsies.

The *oil* is a stimulant with relaxant properties, acting as a diuretic, carminative and emmenagogue, and used in much the same maladies as the berries. It is more stimulating than the berries, and is fitted for atonic conditions of the kidneys and uterus; but should not be employed in inflamed or even sensitive conditions. It is usually added to compounds, in the

form of an essence; but may be mixed with sugar, and given in doses of from two to five drops every four hours, in obstruction of the kidneys and atonic forms of dropsy.

The oil has lately come into much repute, in Europe, as a local application in eczema, herpes, lichen, porrigo, and similar cutaneous maladies; and there seems to be good reason to believe that it is of much service. It is sometimes applied in the form of a weak alcoholic solution, but oftener in ointment. A recent favorite method of application is by adding the oil to some mild soap, (as a soap formed on glycerin,) in company with tar water, and using this in washing. Probably a better way would be to combine the oil with glycerin, and use this several times a washing the parts well with suds of castile soap before each application.

Pharmaceutical Preparations: *Fluid Extract.* A good preparation is made from the berries by the use of eighty percent alcohol, after the manner of other fluid extracts. Dose, thirty drops to half a fluid drachm, or more. A compound containing the berries is given under horseradish. Under the head of *Compound Spirit of Juniper*, ten drops each oils of caraway and fennel are made into an essence with a drachm of juniper oil.

JUNIPERUS SABINA

SAVIN

Description: Natural Order, Coniferae. The generic characters of savin are the same as in the common juniper. This species is naturally procumbent, though commonly met with as a low, bushy, straggling shrub, three to eight feet high, compact with numerous branches. Leaves quite small, oval, somber-green, lying close to the branches, and following one another in four imbricated rows. Branches round, tough, with a reddish-brown bark. Fruit small, oval, very smooth, almost black. The young twigs, with their leaves, are used in medicine. They contain an essential oil, which gives them a strong and rather unpleasant terebinthinate odor; and an acrid, bitter, and disagreeable taste. They impart their virtues to warm water and diluted alcohol.

Properties and Uses: The *twigs* and *leaves* are strongly stimulating, exciting the kidneys, uterus, and skin. They are sometimes used by infusion to promote the menstrual flow; but act so powerfully, and with so much irritation both to the stomach and uterus, as to be an injudicious and even a dangerous emmenagogue. The same may be said of their action on the kidneys. The *oil* acts as do the leaves, but is the more irritating in proportion as it is more concentrated. It and the leaves are sometimes used as abortives; but are liable to provoke inflammation of the stomach and uterus, and to cause death, without accomplishing the criminal design. The real nature of the plant may be seen in the fact that a cerate formed with it will indefinitely keep open a sore caused by a blister of Spanish flies.

JUNIPERUS VIRGINIANA

RED CEDAR

Description: Natural Order, Coniferae. This is one of the most stately of the juniper family, growing in all parts of our country, but especially thriving in mild latitudes, where it reaches a height of forty feet and more. The generic characters are the same as in common juniper. Leaves very small, in pairs, on the older branches looking like scales, on younger branches larger and more awl-shaped, numerous, imbricated, and slightly spreading; color dark-green. Branches mostly horizontal, with a thin and scaling bark. Fruit a small and dark-purple berry, covered with a fine bloom as in juniper.

The leaves of this tree contain an essential oil, obtained by distillation. It is of a pale greenish-yellow tint; but has not such a pungent and disagreeable smell as that of savin, nor so much of the turpentine smell as the juniper. Upon the young branches are frequently found excrescences caused by the puncture of an insect, and which are (incorrectly) called *cedar apples*; and these have an aromatic odor and somewhat bitter taste.

Properties and Uses: The *oil* is a stimulant and relaxant; and though usually compared to the oil of savin, is in no way so irritating. Its principal use is in external applications, such as liniments for sprains, bruises, rheumatism, painful joints and synovial swellings, etc. It is an excellent article for such purposes. It may be used as a wash in certain affections of the skin, in the same manner as oil of juniper. It has a quite distinct influence on the kidneys and bladder, when used internally, much as juniper has; but is milder than juniper, and may be combined with such relaxants as spearmint and anise, and given in any demulcent, in catarrh and low congestion of bladder.

The *excrescences* above named are pronounced decided anthelmintics, and may be so when rather fresh; but I can not consider them of much worth when a few months old. A teaspoonful of the powder is given in molasses in the morning; or they may be combined with laxative tonics, and made into a concentrated sirup as in the case of senna.

KALMIA LATIFOLIA

LAUREL, SHEEP OR MOUNTAIN LAUREL, CALICO BUSH, SPOONWOOD

Description: Natural Order, Ericaceae. This is a beautiful evergreen shrub, usually from four to eight feet high, (sometimes twenty feet,) growing abundantly in dense thickets on the hills of Virginia and Pennsylvania, and frequently met on high grounds in other States, especially where the soil is springy. Leaves irregularly alternate, ovate-lanceolate, tapering at both ends, two to three inches long, petioled, leathery, very smooth, deep green above and paler beneath, entire. Flowers numerous, light rose-color, pubescent, somewhat clammy, in terminal corymbs; calyx five-parted, small, persistent; corolla tubular bell-shaped, with the margin spreading and five-lobed, large and showy. Stamens ten, hypogynous, turning outwardly and pressing the anthers into corresponding depressions on the corolla till the time for shedding the pollen, when they spring inwardly to the stigmas. Fruit a globose and five-celled pod, with many minute seeds. May and June.

This and other species of the kalmia are much cultivated for their large evergreen leaves, and the beautiful flowers that so richly contrast with the leaves in early summer. The leaves are reputed narcotic, and prussic acid is said to be obtained from them. There is abundant evidence that this acid has no existence whatever in the green leaves, but is developed only after the leaves have undergone partial fermentation. (§32.) In this respect they resemble the leaves of the peach-tree, (see *Amygdalus Persica*;) and it is an error to judge the leaves by any effects they may produce after having passed through the changes of fermentation. The presence of heat and moisture will determine these changes in a few hours; hence the article should always be used in such form as to prevent all fermentation, as upon liquor. The leaves of *kalmia angustifolia*, when eaten directly from the shrub, will sometimes kill sheep and horses, yet are eaten by deer, goats, partridges, and other animals, with impunity—a fact which of itself proves that its destructiveness is not due to prussic acid in the growing plant; for that poison (in very minute quantities) will kill all animals alike.

Properties and Uses: The *leaves* are relaxant and moderately stimulant, acting slowly and somewhat persistently upon the glandular system. For this influence, it is particularly valued in secondary syphilis; and is good in combination with such stimulating agents as stillingia, dicentra, menispermum, etc. It acts quite decidedly as a relaxant to serous membranes; and hence may be used in rheumatism, syphilitic pains, the peculiar arterial excitement incident to inflammation of serous membranes, etc. The remedy has been over-praised, yet is of value in the cases named. As stated above, it is not of itself a poison; but any infusion, sirup, or other preparation on water, will pass into the first stage of fermentation in from six to eight hours, and *then* the article would be a dangerous one to use. On this account, the best standard preparation is that of *fluid extract*, made after the manner of fluid extract of boneset—only using sixty percent alcohol. The dose of this ranges from five to ten drops, four times a day. It is usually added to sirups of more stimulating alterants; or the saturated tincture may be added to such sirups. The strength of four ounces of kalmia is sufficient for a gallon of sirup.

KRAMERIA TRIANDRA

RHATANY

Description: Natural Order, Polygalaceae. This is a low Peruvian plant, shrubby, with numerous procumbent and branching stems about an inch in diameter. Leaves alternate, sessile, oval, silky. Flowers single, axillary or terminal, on pedicels subtended by two bracts; calyx of four silky sepals; corolla of five unequal, spreading, lake-colored petals; stamens three. Fruit a one-celled globular drupe, covered with stiff, reddish hairs.

The root of rhatany comes to market in cylindrical pieces of various lengths, and in diameters from an eighth of an inch to two inches. The bark is reddish-brown, brittle, and easily separable from the yellowish-red center. The chief medicinal strength lies in the bark, which contains about forty percent of tannic acid. It has a pleasant smell; and yields its properties to water and diluted alcohol, which it colors dull-red.

Properties and Uses: The *root* is a pleasant but decided astringent, mildly tonic in action, and quite styptic. It is soothing rather than exciting in its action, and generally well received by the stomach. Like other tonic astringents, it is of service in profuse and somewhat passive mucous discharges, as old leucorrhea, diarrhea, humid catarrh, etc.; also in passive hemorrhage from the stomach, bowels, or uterus, and locally upon bleeding vessels. Combined with orris root and chalk, it forms a good tooth-powder for those with spongy or bleeding gums. Adulterators of liquors often use it to give color and astringency to factitious port wines. The powder may be used in doses of from ten to twenty grains. An *infusion* is made by digesting half an ounce of crushed bark in ten fluid ounces of boiling water; of which a fluid ounce may be used as a dose. The *tincture* is prepared by treating two and a half ounces of the root with proof-spirit for forty-eight hours; then percolating and using pressure so as to obtain a pint. It is rarely used alone, but added to chalk mixtures or to tonics. Dose, one to two fluid drachms. A *sirup* may be made by treating twelve ounces of the root till two quarts of water have passed by percolation; evaporating this to seventeen fluid ounces, and dissolving in it two pounds of sugar at a low heat. It is best adapted to children; and from ten to twenty-five drops may be given to a child a year old, or four fluid drachms or more to an adult. An *extract* is prepared with water in the usual way; and may be dried and powdered, and given in doses of five grains or more. While it is a good and pleasant astringent, it is very liable to be over-used, like other articles of the same class. As with other astringents containing tannin, no iron vessel must be used in making its pharmaceutical preparations, but only glass or porcelain.

LARIX AMERICANA

HACKMATAK, TAMARAC, AMERICAN BLACK LARCH

Description: Natural Order, Coniferae. The *Pinus pendula* of Aitoun, and *Abies Americana* of several authors. This is a beautiful tree, tall, straight, and slender, with a heavy and coarse-grained wood; common in moist grounds through New England, New York, the Canadas, and westward. Branches slender and horizontal—not drooping, as in European larch. Leaves apparently evergreen, as in the genus *abies*, but deciduous, soft, half to three-quarters of an inch long, like threads; those which appear first are scattered, but the secondary ones are numerous in close fascicles, as in the pines, and developing in early Spring from lateral scaly buds. Flowers in lateral and scattered catkins; cones ovoid, erect, half an inch long, bracts and scales persistent, fertile ones crimson or red in flower.

Properties and Uses: The *bark* is a mild and pleasant relaxant, of moderately stimulating properties. It is among the gentle and agreeable alterants, influencing the skin, kidneys, liver, and bowels, and leaving behind a moderate tonic impression. It has been used in cutaneous diseases and obstructions; and though not sufficiently powerful to use in degenerate cases, is a good associate with other and stronger articles, as *stillingia* or *fraxinus*. A compound embracing it is mentioned under *dicentra*. A once famous prescription called Dr. Bone's Bitters, contained this bark with such agents as prickly ash, aloes, and tansy, on Holland gin; and enjoyed a wide reputation as a stimulating alterant and cholagogue. *Apocynum* might profitably replace the aloes; and if horseradish were added, the compound would meet some cases of dropsy.

LAURUS CAMPHORA CAMPHOR

Description: Natural Order, Lauraceae. The *Camphora officinarum* of Nees; *Dryobalanops camphora* of others. In the same Family with sassafras, cinnamon, and spice bush. The camphor is an evergreen tree, native of Japan, China, and Southern Asia. Trunk straight, much branched above, living to a great age, and known in a few instances to reach a circumference of thirty and even fifty feet. The leaves are alternate, long petioled, oval, smooth, shining, three-nerved, and of a peculiar yellowish-green color, glandular, fragrant. Flowers hermaphrodite, panicled, on long axillary peduncles; calyx six-cleft, membranous, white, small, numerous; nine fertile stamens and three sterile.

The leaves yield the peculiar substance known as *gum camphor*; but all parts of the plant, even to the roots, contain this gum. It is obtained by chipping the leaves, roots, and young branches, placing them with a little water in an iron vessel surmounted by a large earthen cupola, the latter lined with straw, and applying a moderate heat. The camphor sublimes and rises with the steam, and condenses on the straw. The crude gum thus obtained is then mixed with a very small portion of quick lime, put in an iron vessel, and from this resublimed by a gentle heat on a sand-bath—the condensing camphor being received in suitable vessels.

Camphor has a peculiar and penetrating fragrance, and a bitter, pungent taste. It is brittle yet tenacious, with a specific gravity slightly below that of water. It is very volatile, even at ordinary temperatures; may be resublimed without undergoing change; will wholly evaporate if left exposed; and if a large bottle is but partly filled with it, beautiful crystals will slowly collect at the upper part. It melts at 288° F.; will burn with a bright flame and much white smoke. Water, by trituration, will not dissolve more than a thousandth part, yet will receive a distinct camphorous smell and taste. Alcohol of 85 percent will dissolve nearly its own weight, and stronger alcohol still more; but the addition of water will cause the camphor to be precipitated immediately, and it may be obtained thus in a fine powder. With sugar, or magnesia, a larger percentage may be dissolved in water; and the powder is usually obtained by adding a few drops of absolute alcohol to the gum, and then rubbing it in a mortar. It unites with the resins, and bears toward them peculiar relations, as follows: Mixed with guaiacum, asafoetida, or galbanum, a pill-mass consistence is assumed and maintained indefinitely; with benzoin, tobe, ammoniac, or mastic, a pillular consistence which softens slowly on exposure to the air; with myrrh, olibanum, amber, or opoponax, a pulverulent mass that is somewhat grumous; with resin of jalap, or tacamahac, a permanent powder. Mixed with asafoetida, galbanum, sagapenum, or tolu, camphor loses its odor entirely; and with guaiacum, ammoniac, or some others, retains but a faint odor. The profession is indebted for these peculiar facts to M. Planche, Paris Journal of Pharmacy, vol.xxiv.

Properties and Uses: Great differences of opinion exist as to the action and merits of camphor. It seems gently to excite the nervous system, at the same time soothing it, thus proving antispasmodic. (§243.) For this effect it is given in low forms of hysteria, tenesmus, subsultus tendinum, convulsions, chordee, and the crampings of cholera. It usually quiets nervous agitation and restlessness in cases not dependent upon inflammatory excitement; and through the

nervous system arouses the capillary circulation, promotes diaphoresis, and even exalts the general circulation. It is said to be quite effectual in restraining sexual passions, though some assert that it will excite lascivious dreams. It often diminishes mucous secretions; and for this purpose, as well as in the relief it gives to the muscular system and support to the capillary circulation, has come into much repute among Homeopaths for cholera. They use the pure saturated tincture, (as some say, to kill the animalculae which cause the cholera;) and their reported success is astonishing, were it not a well-ascertained fact that physicians of that school many times decline waiting longer on a patient who is about to die, and thence do not include such fatal cases in their reports. This fact was so thoroughly proven by myself and others during the cholera epidemics in Cincinnati in 1866 and 1849, that I am fully justified in making this allusion to the deceptive reports of that school. In 1866, in a few cholera cases, I employed a grain of camphor in powder with rhubarb at intervals of three hours, and with apparently good results. With the people it is almost universally employed as an external appliance in rheumatism, headache, bruises, etc.; and used inwardly in nausea, vomiting, and faintness.

But while this much is said in favor of the article, there are many facts of a widely different character. Given to check sexual impulses, it has been known to cause withering of the testes and impotence. The tincture applied to the breasts to diminish the flow of milk, I have invariably observed to be followed by a withering and atrophy of the breasts, which at subsequent pregnancies almost failed to secrete any milk. And when used in liniments, and applied about the joints, it is my decided impression that it dries the synovial secretion and leaves the joints stiff and weak. In all these cases, it seems to produce a form of paralysis, followed by a greater or less degree of atrophy. Orfila, Alexander, Christison, Wood, and others, report that it will produce ulceration of mucous membranes, giddiness, mental confusion, delirium, coma, strong pressure of blood upon the brain, convulsions, and even death. Several deaths from its accidental use have been recorded. The breath and sweat show it to be absorbed. Such facts throw so positive a suspicion over the article, that I decidedly question whether it should be used at all.

The dose of the gum may range from half a grain to three grains; and some speak of using five and ten grains. It is usually given in emulsion with sugar and gum arable; but may be combined with other powders, and administered in sugar and water or any mucilage; and repeated at intervals ranging from two to six hours.

Pharmaceutical Preparations: I. *Camphor Water.* Rub two drachms of camphor with forty drops of absolute alcohol, then with four drachms carbonate of magnesia, and lastly add two pints of water by gradual trituration, and filter. This is a very mild preparation of camphor, used in doses of a teaspoonful to a tablespoonful every hour or two in the wakefulness and restlessness of typhoid and other low fevers, after pains, tenesmus, colic, etc. II. *Tincture.* Camphor, one ounce; rectified spirits, eight fluid ounces. This is the most common outward application, but is sometimes used inwardly. Dose, five to twenty drops rubbed up in sugar and then added to water. The sugar prevents the camphor from precipitating on the addition of water. III. *Liniment.* Half an ounce of camphor, dissolved in two fluid ounces of olive oil, forms the officinal camphor liniment so much used in sprains, bruises, rheumatism, neuralgia, etc. A *compound liniment* is made of two and a half ounces of gum camphor, one drachm oil of lavender, seventeen fluid ounces rectified spirit, and three fluid ounces of the stronger ammonia.

Allowing camphor to be of use outwardly, the ammonia certainly should be omitted. IV. *Soap Liniment, Opodeldoc*. Slice three ounces of common hard soap into a pint of 85 percent alcohol, and dissolve in a close bottle on a mild sand bath. Add an ounce of camphor, and a fluid drachm each of oils of rosemary and organum. While warm, pour into broad-mouthed bottles. This is an old-fashioned preparation, and probably the best into which camphor enters. It is a soft ointment in consistence, but melts at the temperature of the body. By using white castile soap instead of common soap, and two pints of diluted alcohol, the preparation will be a liquid, known as Camphorated Soap Liniment. Both preparations are used outwardly for the same purposes as the simple liniment.

LAURUS CINNAMOMUM CINNAMON

Description: Natural Order, Lauraceae. Cinnamon was long classed under the genus *Laurus*; but possesses so few of the characters of that tribe as now to be placed in a separate genus of the Lauraceae: CINNAMOMUM ZEYLANICUM. This is the true technical name of the plant; but having by accident been omitted in the proper place in this work, is here introduced under the above caption.

The cinnamon is a tree growing wild in Ceylon, reaching the height of thirty feet; but is much cultivated there and in some parts of China, and is not permitted to grow above ten feet. It is grown in large clamps, presenting the beautiful appearance so peculiar to the evergreen laurels. “Branches somewhat four-cornered, smooth. Leaves opposite, ovate or ovate-oblong, tapering into an obtuse point, three-ribbed, reticulated on the under side, smooth. Panicles terminal and axillary, stalked. Flowers somewhat silky; calyx six-cleft, with the limb deciduous; stamens twelve, in four rows, three inner ones abortive. Fruit a berry, in the cuplike base of the calyx.” (*Wight.*)

The inner bark of the young branches is the medical portion. The best is obtained from the young shoots which spring up from the roots in a cluster after the parent stem has been cut down. These shoots are usually cut once in three years, the bark peeled from them by making two or more longitudinal incisions. The outer and pulpy epidermis is peeled off, and the layers of thin inner bark placed one within the other; and as these dry they roll inwardly, forming long “pipes.” The true bark is thin, smooth, readily splitting lengthwise, breaking transversely with a splintery fracture. It is very fragrant, with a sweet and warming aromatic taste. Coarser qualities (properly CASSIA) are brought from Malabar and China; and these have a thick and somewhat woody bark, which breaks transversely with a short and resinous fracture, and possesses less fragrance and aroma than the true cinnamon. The bark contains a volatile oil, obtained by distillation; which at first is yellowish, gradually becomes reddish, is heavier than water, and has a strong and purely cinnamonic taste and smell.

Properties and Uses: Cinnamon *bark* is one of the pleasantest of the spices, warming, diffusibly stimulating, and leaving behind a gentle astringent influence. It acts upon the stomach, and through it upon the whole sympathetic system—also promoting assimilation, and stimulating the entire nervous and arterial organisms to a moderate extent. It is not allowable in febrile or inflammatory conditions; but is useful in atony of the stomach, looseness of the bowels with griping and flatulence, coldness of the surface, nervous depression, sympathetic nausea and vomiting, and even in passive uterine hemorrhage. It is rarely depended upon alone, but is usually added to tonics, griping cathartics, and diaphoretics; and as a cooperative adjuvant, is among the pleasantest and most acceptable. The dose in substance ranges from five to twenty grains. The *oil* is used for the same general purposes, but is not astringent. It is rarely given alone, but is employed in a variety of compounds.

Pharmaceutical Preparations: I. *Cinnamon Water.* Twenty ounces of bruised cinnamon are mixed with two gallons of water, and one gallon distilled over. Or half a fluid drachm of the oil

may be rubbed with sixty grains of carbonate of magnesia, and afterward triturated with a quart of water, in the usual manner for Medicated Waters. It is used as an adjuvant. II. *Tincture*. Three ounces of cinnamon are treated carefully in the percolator with diluted alcohol till two pints have passed. Dose, half a fluid drachm to two fluid drachms. Used as an adjuvant. III. *Aromatic Powder*. Cinnamon, four ounces; pimento, three ounces; ginger, asarum, and cardamon, (freed from their capsules,) each, one ounce. Procure the powders separately, and then mix with a pound and a half of fine sugar. This is a preparation similar to one of the same name in the American and other Pharmacopoeias, each having a formula of its own. It is an excellent aromatic and stimulating compound for faintness and sudden prostration, and a good adjunct to more positive articles.

LAVANDULA VERA

LAVENDER

Description: Natural Order, Labiatae. Lavender is a small and slender shrub, erect, and divided above into a number of straight and slender branches. The woody stem is covered with a light-brown bark; the branches are obscurely four-sided, grayish, and pubescent. Leaves opposite, sessile, often three inches long, nearly linear, light green, smooth, but somewhat hoary when young. Flowers in terminal, cylindrical spikes, arranged in whorls along the young shoots, with two bracts at the base of each whorl; corolla small, lilac, tubular, bifid. The plant is native to Spain, Italy, and other portions of Southern Europe, growing wild on barren lands, and usually from two to three feet high. It is now much cultivated in gardens for the beautiful fragrance of its flowers; and when well protected in cold weather, often attains a height of six feet. The flowers yield an essential oil, which is one of the most pleasant perfumes. It is lemon-yellow, very fluid, and dissolving with unusual freedom in very strong alcohol.

Properties and Uses: Lavender *flowers* are very diffusive in action, of equally relaxing and stimulating properties, influencing the nervous peripheries. They are used mostly as an adjunct to other agents in nervous agitation and restlessness, with prostration—their own action being soothing, and rendering stronger articles more acceptable to the stomach. The oil is used for the same general purposes, and also as an ingredient in many of the finer colognes and other perfumes.

Pharmaceutical Preparations: I. *Compound Spirits.* Lavender flowers, twelve ounces; rosemary leaves and cinnamon, each, four ounces and a half; nutmeg, six drachms; cloves, three drachms; red saunders, two ounces. Bruise the materials well, and treat with diluted alcohol till five pints are obtained. This is the formula suggested by Mr. Coggeshall, of New York, omitting only three ounces of coriander. It makes the pleasantest and most efficient article. The most common practice among druggists, is that of the London Pharmacopoeia, which first obtains the strength of two drachms and a half, each, of bruised cinnamon and nutmeg, and five drachms of red saunders, in two pints of rectified spirit; and to this filtered product adds a fluid drachm and a half of oil of lavender, and ten drops of oil of rosemary. This compound is a pleasant and acceptable preparation, very diffusive in stimulating action, relieving flatulence and nausea, and sustaining the nervous system in sudden attacks of languor and faintness. It is usually given in water, or upon a lump of sugar, from twenty drops to a fluid drachm being a dose. It is often added to unpalatable medicines, as copaiva, jalap, and quassia. In either formula, pimento is better than nutmeg.

II. *Restorative.* Under this name I have for some years used the following compound: Lavender flowers, three ounces; cinnamon, ginger, mace, anise, and leonurus, each, one ounce. Treat with one pint of brandy, and then with diluted alcohol till a quart is obtained. In faintness, sympathetic palpitation, colic, and similar troubles, this makes a good diffusive preparation. Dose, half a fluid drachm or more, as required.

LEONURUS CARDIACA

MOTHERWORT

Description: Natural Order, Labiatae. Genus LEONURUS: Perennial roots, with annual and herbaceous stems. Stem two to four feet high, minutely downy in young plants; square, smooth, light brown, and shining when older. Leaves cut-lobed, with close clusters of flowers in their axils. Calyx top-shaped, five-toothed, teeth awl-shaped, sharp and rigid in full-grown plants. Corolla purplish-white, upper lip arched and entire, lower lip spreading and three-lobed. Stamens four, ascending in pairs under the upper lip, anthers approximating in pairs. Fruit of truncate and sharply three-angled nutlets, very small. L. CARDIACA: Leaves on petioles half an inch or more in length; lower ones nearly rounded, round-lobed on the margins; middle ones wedge-shaped at base, and in three acute lobes toward the apex; upper ones undivided. July to September.

This plant is said to be naturalized from Europe, but is now common in all parts of this country, usually growing near dwellings, by the side of fences, in rich soils. The roots send up a number of slender, erect, grooved, and tough stems in a clump, which are sparsely branched above. The whole herb is medicinal, and yields its properties to water and alcohol. It has a faint and not unpleasant odor, and a mildly bitter taste. A high heat injures it.

Properties and Uses: This *herb* is a pleasant and moderately strong tonic, somewhat diffusive in action, and combining relaxing properties with a slight excess of stimulation. The nerves receive the most benefit of its influence, whence it is classed as a nervine tonic and antispasmodic. The stomach is braced by it; and the uterus decidedly acted upon. In warm preparations, it maintains a gentle outward circulation, and promotes the menstrual and lochial flow; and in this form proves of value in recent suppression of the catamenia, painful menstruation, and hysterical forms of nervousness and palpitation. In cold preparations, it promotes appetite and digestion, strengthens the uterus, is of superior value in hysteria, facilitates and increases the menses, and relieves uterine pains dependent upon neuralgic or semi-rheumatic conditions. As a tonic for nervousness, pains and palpitation of the heart, the sufferings peculiar to women, and habitual restlessness, it is an agent deserving of the first consideration. It may also be used in convalescence from typhoid and other low conditions; but is not advisable when the menses are too free, or high febrile tendencies are present. Though usually classed as an emmenagogue, it is not very positive in its influence on the catamenial function; yet is quite reliable when the menses have failed from local feebleness, and especially if combined with more specific emmenagogues. The profession will find in it an antispasmodic tonic of the first order. The powder is not used; but half an ounce may be digested for twenty minutes in a pint of warm water, in a covered vessel, and given in doses of a fluid ounce or more every two or four hours.

Pharmaceutical Preparations: I. *Extract.* By the exercise of sufficient care, a good extract of this agent may be prepared by the combined use of water and alcohol, after the method commonly pursued for hydro-alcoholic extracts. It represents the qualities of the herb very well; and may be combined with emmenagogues and used for insufficient and painful menstruation, or with laxatives or cathartics to prevent griping and sustain the tone of the bowels. It is customary

to use this softened extract as a base, and combine with it such concentrated articles as cimicifugin, senecionine, caulophyllin, leptandrin, etc., according to the objects sought. Combined with extract of euonymus, and stiffened with helonias and xanthoxylum, it forms a good laxative and uterine tonic pill. From three to six grains of the extract may be used every six or four hours. II. *Fluid Extract*. Macerate a pound of the well-bruised herb in a sufficient quantity of diluted alcohol, for twenty-four hours; transfer to a percolator, and treat with diluted alcohol till eight fluid ounces pass; set this aside, and continue the percolation with water till exhausted; evaporate on a water-bath, at a moderate heat, to eight fluid ounces, and mix the two products. This is an elegant antispasmodic and tonic preparation; and may be used in doses of half a fluid drachm to three times that quantity, every six or four hours; or thirty drops may be given in a warm tea of ginger or other aromatic every hour, in palpitation, acute nervousness, periodic pains, etc.

Leonurus enters into various combinations with angelica, anthemis, liriiodendron, lavender, and similar nervines and tonics. A preparation embracing it is also given under epigea repens. It is an ingredient in the Carminative Drops.

LEPTANDRA VIRGINICA

BLACK ROOT, CULVER'S PHYSIC, TALL SPEEDWELL

Description: Natural Order, Scrophulariaceae. Prof. A. Wood brings the genus *Leptandra* into the genus *Veronica*, (speedwell;) and gives this plant the technical name *VERONICA VIRGINICA*. This is botanically correct; but the medical profession is so used to the name *leptandra*, (often incorrectly put *leptandra*;) that it will probably be best at present to retain the old generic title.

This is a conspicuous plant, perennial, with a smooth, straight and unbranched stem rising to the height of from three to seven feet, one to several from the same root-stock. The leaves are from three to five inches long by half or three-quarters of an inch broad, long tapering, finely serrate, smooth beneath, on short petioles, arranged in whorls of fours, fives, or sixes, at intervals of six to eight inches along the entire stem. Flowers small, numerous, in a dense and cylindrical spike (sometimes several spikes) from four to ten inches long, erect upon the top of the stem, calyx four-parted; corolla white, deeply four-cleft, united into a tubular claw, lower segments mostly narrow, pubescent within; stamens two, twice as long as the corolla, upon the tube of which they are inserted. Fruit a small, dark, compressed capsule. July.

The root is perennial, and possesses its full strength when two years old. It is several inches long, half an inch or more in thickness, blackish-brown externally, brownish internally, sending off numerous slender and dark fibers horizontally. It contains a resinous substance and extractive, which are medicinal, and a volatile principle that is lost by age. Water, diluted alcohol, and alcohol, extract its virtues.

Properties and Uses: This *root*, when fresh, is a somewhat acrid cathartic; but drying dissipates its harshness, and it is then an almost pure relaxant. Its action is mild and very slow the cathartic result rarely being obtained from a common dose in less than ten hours, and sometimes not for eighteen hours. In this respect it is the slowest of all agents of this class. Nearly its entire influence is expended upon the liver, in distinction from agents which influence the gall-ducts, (§172;) hence it directly favors the elimination of bile, but not its ejection from the gall-cyst, on which account it is not a suitable remedy for jaundiced conditions. The stomach as an organ feels its impression; as is made known by a slight sense of nausea it usually occasions, and which sometimes is quite unpleasant and continues for several hours. The small intestines feel its influence distinctly, as is shown by the thoroughness with which it dislodges scybala and tarry accumulations in dysenteric and typhoid cases; but the lower bowel scarcely feels its action, whence it may deplete the liver fairly and yet not secure the elimination of sufficient bile to move the colon and rectum at all times. Its relaxing impression on the stomach is sometimes extended through the sympathetic system, and in rare instances to the circulation; but this is very mild, and not sought for.

The action on the liver is that for which *leptandra* is most valued; and its mildness, persistency, and reliability, make it superior to almost any agent of its class where hepatic relaxants are needed. In dysentery and diarrhea it is perhaps unequalled—not for any astringent action, as some suppose, but for removing the origin of the trouble by eliminating bile and dislodging

alvine accumulations. In typhus and typhoid cases, it is almost indispensable, and it is a hepatic of the first class in bilious, remitting, synochal, rheumatic, and all other febrile cases, so long as the liver is deficient in activity. While it secures the full action of this organ, and obtains a thorough elimination of bile, its final cathartic effect is mainly due to the biliary stimulation of the alvine canal; hence leptandra is a physic not liable to overwork the organism or induce any prostration. This fact renders it of peculiar value, both in the cases named, and in all other acute cases, so far as failure of the hepatic secretion is concerned. In chronic cases, it is equally useful in hepatic forms of habitual constipation for intermittents, dropsy dependent upon portal obstructions, biliousness other than actual jaundice, diarrhea and dysentery, and those skin diseases which so often have their origin in defective biliary secretion.

While the influence of leptandra is thus beneficial in so many cases, it must be employed with discrimination. Its impropriety in jaundice has already been named; and even when given for common biliousness, some such cholagogue as apocynum is nearly always required with it. Used in typhoid cases, it so thoroughly opens the one great emunctory as to seem almost a specific for such cases; yet then, in ague and all other conditions of much depression, it needs some capsicum, gentiana, or other stimulant or tonic associated with it. (§174.) In old persons, and those laboring under chronic difficulties which induce general and continuous laxity of the tissues, it should scarcely be used at all, or only in conjunction with a large excess of tonics and stimulants. In chronic watery diarrhea, it should be associated with some such astringent tonic as cornus florida—the leptandra effectually relieving the provocative obstructions at the liver, while the cornus gives firmness to the alvine structures. In chronic skin affections and dropsy, it is merely a help-meet (though a valuable one) of stimulating alterants and tonics. In cases requiring a prompt evacuant action on the bowels alone, it is not at all suitable; and persons with a “cold” stomach and a tendency to nausea, will find it a sickening agent.

The usual cathartic dose of leptandra is about twenty grains, which may be given in substance or infusion. A single full dose at bedtime usually secures defecation the following morning, and this is a good method for using this agent, (or any other that acts largely upon the liver.) In febrile cases, two medium doses may be given in twenty-four hours; but this is not a remedy that should be repeated at intervals of two or three hours, as some authors advise and some physicians practice. In chronic cases, it is customary to use not more than five or six grains in some sirup, three times a day, for a slow “alterant” effect; but it should always be associated with the stimulant rather than the relaxant alterants, and even then I doubt if it is often proper to use this remedy for any length of time at short intervals—euonymus, fraxinus, or some similar laxative, being generally preferable in such sirups. The use of the root has of late years been almost superseded by leptandrin or the fluid extract, the leptandrin being usually preferred.

Pharmaceutical Preparations: I. *Extract.* This preparation is made with water and alcohol, after the usual manner for hydro-alcoholic extracts. To be of full strength, it should be prepared from roots that have been dried recently. It is usual to direct a boiling heat to the watery liquor, but this is not good practice. It represents the qualities of the root well; and may be used in pills in doses varying from three to six grains, once or twice a day.

II. *Fluid Extract.* Recently dried leptandra, well crushed, one pound, is to be macerated for twenty-four hours in seventy-five percent alcohol. Transfer to a percolator, and add the same

strength of alcohol till six fluid ounces have passed; set this aside, and continue the percolation with warm water till exhausted; evaporate to ten fluid ounces, and mix with the first product. This is an active preparation, used in doses of from twenty to fifty drops.

III. *Tincture*. Three ounces of leptandra are treated with one pint of diluted alcohol, either by percolation or by maceration and filtration. It is rarely used.

IV. *Leptandrin*. This is a dark-brown resinoid principle, obtained by exhausting the roots with absolute alcohol, distilling off three-fourths of the alcohol from this tincture, and slowly mixing the remainder with three times its own bulk of water. The resinoid separates, and after several days is precipitated. This precipitate is washed with a small quantity of water, allowed to settle, and then slowly dried at a temperature not above 150, F. If too much water is added to the reduced tincture, the resinoid will not separate fully; if too much heat is used in drying, the product will be injured. If the tincture is obtained with a weaker alcohol, a large portion of extractive is obtained, and the product is not a pure resinoid, and is liable to fall into a gummy mass. This seems to be the method pursued by Messrs. Tilden & Co., Lebanon, N. Y.; and by B. S. Keith & Co., New York city. The extractive is medicinal, but not equal to the resinoid; and the water that remains after the resin has been precipitated, may be evaporated into a fair extract. A good quality of leptandrin is one of the best of all the resinoids, is an excellent representative of the root, and may be used for all the purposes above named. It is not an article from which a vigorous cathartic action is to be expected, but one that is slow and reliable. As prepared by Tilden & Co., and B. S. Keith & Co., it has proven very uncertain in our hands; W. S. Merrill & Co. prepare it in one form that seems nearly inert, and in another that acts almost as harshly as podophyllin; .but that of Dr. H. H. Hill, and Dr. T. L. A. Greve, both of Cincinnati, I have found uniformly reliable. The usual dose is two grains. When used in dysentery, it is usually advisable to give a fair dose every six hours; and to combine it with a moderate portion of hydrastis, in order to secure the good. action of the latter agent upon the intestinal mucous membranes.

V. *Compound Leptandrin Pills*. Leptandrin, one drachm; podophyllin, half a drachm; made into three-grain pills with a sufficient quantity of softened extract of dandelion. This is much used by Eclectics, and is an active cathartic, suitable for sluggish conditions, but not admissible in typhoid or dysenteric cases. One or two at bedtime are usually sufficient. Their too frequent use is weakening to the bowels.

VI. *Compound Antibilious Pills*. Mix the powders of two drachms leptandrin, one drachm apocynin, and half a drachm caulophyllin. Shave a sufficient quantity of white castile soap, and add to it enough strong essence of peppermint to soften it. Use this soap as a basis into which to mix the powders to form a pill mass, and make into four-grain pills. This is a mild, unirritating, and very reliable cathartic, influencing the liver, gall-duets, and bowels, and procuring thorough yet not drastic or weakening operations. They rarely gripe the bowels, though they may do so to a slight extent in very sensitive patients. I warmly commend them to the profession as a formula that I have employed for many years, and consider one of superior merits for all general cathartic purposes. Dose from two to four, which usually operate once or twice inside of ten hours. If desired, half a drachm of podophyllin may be added; but it is to be remembered that all cases will not admit this agent, and therefore this addendum should be made only for special cases. In the same way, ten grains of capsicum may be incorporated to meet conditions of unusual

sluggishness; but this is suitable to only a limited number of cases, and the formula as above given will be found most widely applicable without either of these additions.

LIATRIS SPICATA

BUTTON-SNAKEROOT, DEVIL'S BIT, GAY FEATHER, COLIC ROOT

Description: Natural Order, Compositae. Genus LIATRIS: Herbs with simple, erect stems; alternate and entire leaves; rose-colored flowers in long spicate racemes. Flowers all perfect, tubular; involucre oblong, imbricate; receptacle naked; pappus of numerous capillary bristles; styles much exerted, achenia ten-striate. L. SPICATA: Root a roundish tuber, an inch in diameter, stem three to five feet high, slender, without branches, smoothish; bearing at its top a gay spike of flower heads, with ten to fifteen flowers in each head. Leaves lance-linear, punctate, smoothish, lower ones narrowed at base. This species is abundant on the prairies throughout the West, blooming in August and September, and attracting attention by its long spike of bright purple flowers at the top.

LIATRIS SCARIOSA has a stouter and rougher stem; numerous leaves, the lower ones of which are from five to eight inches long and on long petioles, gradually getting smaller above; flower heads more remotely racemed, from twenty to forty flowers in each head, heads an inch in diameter. The root is the same as in spicata. LIATRIS SQUARROSA is not more than two feet high; raceme bending over; flower-heads usually about fifteen, with twenty to thirty flowers in each head; scales of the involucre large, slightly colored, spreading widely, the outer ones appearing almost leafy. It also has a tuberous root.

The roots of these several species often appear in market indiscriminately, and it is probable they all have the same general properties; but those of the spicata are best. They may be distinguished from the others in having the lower end of the tuber abruptly terminated, as if cut or bitten off, (whence the common name of devil's bit—a name also given to helonias.) They are covered with a dark-brown and somewhat scaly epidermis, are fleshy and somewhat grayish-white within, and form a grayish-brown powder. They are mildly aromatic in smell, and have a spicy and slightly bitter taste. This must not be confounded with dioscorea, which is also called colic root.

Properties and Uses: The *roots* of liatris are stimulant and relaxant, somewhat aromatic, moderately diffusive, leaving behind a gentle tonic impression. Their chief action is upon the kidneys, increasing the quantity of urine; upon the nervous peripheries and capillary circulation, and through these upon the skin and uterus. They have had much repute in dropsy, as much for their stimulation of the blood-vessels as of the kidneys; but are too feeble of themselves, though of decided service in combination with such tonics and hepatics as hydrastis and fraxinus. Their general impression upon the system is rather antispasmodic; and they may be used to advantage in colics, cramps, painful menstruation, after-pains, deficient lochia, and as an addition to stronger emmenagogues. By diffusion to the surface, they maintain good capillary action, expedite the eruption of measles and other exanthems, and have received much credit for the elimination of the virus of snakes. It is stated that the negroes bruise the fresh bulbs and apply them to the wounds of serpents, at the same time drinking abundantly of the infusion on milk. I. J. Sperry, M. D., of Hartford, Conn., called my attention to their use in chancres; and I have found much service in employing both the wash and the powder on moderately degenerate ulcers of this class, as also upon other weak and semi-indolent ulcers. While it has sometimes been overrated as a remedy for the kidneys, it is unquestionably among the least likely of all diuretics

to exhaust those organs, and among the most likely to strengthen them and to relieve renal debility and congestion. They form a light stimulating gargle in sore-throat; and may be used inwardly and by injection for leucorrhœa.

From ten to twenty grains of the powder may be given every six or four hours. Most commonly the infusion is employed, half an ounce of the crushed or powdered roots being macerated in twelve fluid ounces of water for half an hour; the dose of which may be from two to four fluid ounces every second or third hour. A fluid extract may be prepared in the method directed for cypripedium. It is an article easily injured by heat. It is an ingredient in a compound for dropsy mentioned at *aralia hispida*.

LINUM USITATISSIMUM

FLAX

Description: Natural Order, Linaceae. Flax is an annual plant, with an erect, smooth, and unbranched stem from eighteen inches to two feet high. Leaves alternate, sessile, smooth, linear-lanceolate. Flowers in corymbose panicles at the top of the stem, large, light-blue, of five sepals, petals, stamens and styles. Fruit a roundish capsule, containing ten oblong, flattish, brown and shining seeds. It is indigenous to Europe, and is extensively cultivated there and in America for the long and flat fiber obtained from the stem, and which furnishes linen.

Properties and Uses: The *seeds* of flax contain a large amount of demulcent property, by virtue of which they are very soothing to the mucous membranes of the lungs and bowels, relieving inflamed and irritated conditions, and promoting expectoration and alvine discharges. Their chief employment is in irritable coughs and similar pectoral difficulties; but, like other demulcents, they may be used in acute inflammation or irritation of the bladder, urethra, and lower intestines. They are generally used by infusion, prepared by pouring a pint of boiling water upon an ounce of the seeds and a quarter of an ounce of crushed licorice root, infusing for two hours, and straining. A nearly boiling heat maintained for one hour, will extract the strength; but the preparation will soon become ropy and unpleasant. It is sweetened, and used warm in any desired quantity for irritable coughs, etc. In recent colds, where acidity of the stomach is not present, this infusion may receive half a drachm of ginger, and then be made quite tart with lemon juice; when a free use of it on going to bed will secure an abundant perspiration of great value. If the lemon is objectionable, it may be omitted, and a larger proportion of ginger used.

The ground seeds form an emollient and oily poultice, which retains its soft character indefinitely upon inflamed surfaces. Often these have their oil expressed by pressure, and then the oil-cake that remains is ground into a powder, (which is grayish-brown,) and appears in market as *linseed meal*. It contains the original demulcent property, but only a little oiliness; and forms a good poultice, or basis for a poultice, but is liable to smell unpleasantly sour after a few hours. The seeds and meal are not so absorbent as powdered ulmus, but are more emollient; and the two are often mixed.

The *oil* is the common linseed oil of commerce. It is usually obtained by grinding the seeds, and then subjecting them to a cold pressure; but steam pressure of about 400 F., is now much used, and yields an oil less liable than the other to smell rancid. This is emollient, but is scarcely ever used internally; though a fresh article makes a bland purgative, much like sweet oil. It is a good soothing and shielding application to burns, scalds, and similar irritated surfaces. It may be mixed with an equal quantity of lime water, when it forms the *lime liniment* (linimentum calcis) of the U. S. Pharmacopoeia, which is a good soothing application.

LIQUIDAMBER STYRACIFLUA

SWEET GUM, STYRAX

Description: Natural Order, Hamamelaceae. This is a tree many times met with in the latitude of Cincinnati, from Virginia to the Rocky Mountains; but much more common to the South, where it is a beautiful tree three or four feet in diameter, and sometimes sixty feet high. Leaves palmate, deeply divided into five acuminate and serrate lobes, somewhat of the star-like form of the leaves of the rock maple, deep green. Flowers in conical, dioecious, aments; without calyx or corolla, but with a four-bracted and deciduous involucre. Fruit a globular and compact ball, suspended by a slender pedicel, consisting of numerous capsules. The leaves are of a sweet balsamic fragrance, and yield a resinous material known as *sweet-gum*.

The incised bark of this tree yields a nearly transparent, amber-colored, fragrant, and somewhat sweetish balsam. Though at first fluid, it gradually dries into a sottish resinous mass, and I have seen it so dry as to be almost pulverulent. In drying, it loses a portion of volatile oil, and is less fragrant than before. It is soluble in alcohol, lard, and the fatty oils. Southern trees yield it most abundantly.

Properties and Uses: The *gum* (resin) is stimulating and moderately relaxing, warming yet pleasant to the taste, and mild in action. It is used with lard and sweet oil to form an ointment for tetter, ringworm, scalled head, and similar scaly forms of skin disease, for which it is pronounced excellent. Prof. S. E. Carey says the tincture on 75 percent alcohol, rarely fails to cure the itch. The ointment may be used to advantage on indolent ulcers and fistulas, where it will secure fuller suppuration and promote granulation. I have at times used a drachm in each four ounces of copaiva emulsion with happy effects in gleet and sub-acute gonorrhoea. The emulsion added to such articles as aralia or prunus in sirup, may be used in catarrhal coughs and pulmonary debility. The dose of the resin is from three to ten grains, three times a day. It resembles the styrax, but is much less stimulating and nauseous.

The bark is demulcent and mildly stimulating. An infusion of it may be used freely in sub-acute dysentery, diarrhea, gonorrhoea, and catarrh of the bladder, to decided advantage. It deserves the careful notice of the profession. An infusion may be prepared in milk, or a sirup made with the bark of prunus.

LIRIODENDRON TULIPIFERA

TULIP TREE, YELLOW POPLAR, WHITE WOOD

Description: Natural Order, Magnoliaceae. This tree is one of the noblest in America, growing with a perfectly straight trunk of from eighty to one hundred and fifty feet, old trees without a branch till within twenty feet of the top, young trees low-branched and of a conical outline. The wood, under the name of poplar, is extensively used in the Western States as a substitute for pine. Leaves three to five inches long, and two-thirds as broad; the sides lobed much in the form of great ears, and the end abruptly cut off about two inches beyond the apex of the side lobes; smooth, somewhat leathery, on long petioles, margins entire; sheathed with membranous stipules, which soon fall off. Flowers very large, somewhat bell-shaped, solitary, erect; sepals three, colored like the petals, reflexed, caducous; petals six, erect, greenish yellow without, orange within, smaller and less brilliant than the tulip of the gardens, but of much the same general form. Fruit a series of imbricated capsules, forming a short cone, each one to two seeded. Blooming in May and June.

The inner bark of the trunk, and also that of the root, is medicinal. It is pale yellowish, sparingly tinted reddish, light, a little fibrous, and of a pleasant aromatic, somewhat spicy-camphorous odor. It imparts its virtues readily to water and diluted alcohol, but is easily injured by heat. Its taste is mildly bitter and somewhat aromatic.

Properties and Uses: Many physicians, and most writers, confound this bark with *populus tremuloides*, and others of that genus, because of the similarity of the common name, poplar; but the two articles bear no resemblance to each other, either in botanical or medical properties. The *bark* of the *liriodendron* is one of the mildest and least bitter of the tonics, chiefly relaxant and only moderately stimulant, but with no astringency whatever. While it improves the appetite and digestion to a fair extent, and for this purpose is unsurpassed in convalescence, its most valuable action is upon the nervous system and uterus. In nervousness, nervous irritability, hysteria, and chronic pains through the womb, it is an agent of the greatest efficacy—both soothing and sustaining. The menses are not influenced by it; but it proves valuable in chronic dysmenorrhea as well as in leucorrhea, prolapsus of a mild grade, and the uterine suffering incident to pregnancy. By its influence on the nervous system it sometimes promotes the flow of urine; and it favors greater freedom of the bowels, without being in any sense cathartic. If combined with spikenard, boneset, or other agents influencing the lungs, its virtues will be directed largely to these organs; and then is of peculiar service in old coughs and pulmonary weakness. The mildness of its action sometimes suggests inertness, but this is quite an error; for its gentleness increases its value as a peculiar nervine tonic, and makes it very acceptable to the stomach; though it is not an agent fitted to languid or sluggish conditions, or states of depression. It is rarely used in powder, but a scruple or more may be used as a dose. If infused, half an ounce may be digested for an hour, in a covered vessel, with a pint of water not above a blood warmth; of which a fluid ounce may be given every six or four hours. It is variously compounded with *hydrastis*, *sabbaatia*, or *calumba*, with orange peel, for a stronger tonic influence; and with *caulophyllum*, *leonurus*, *viburnum*, or *senecio*, when the uterine organs are particularly to be impressed. Some value it for worms, and others apply the leaves on ulcers.

Pharmaceutical Preparations: I. *Sirup*. Macerate eight ounces of crushed bark with a sufficient quantity of water for twelve hours; transfer to a percolator, and add water till twenty fluid ounces have passed; to this add two pounds of sugar, and four ounces of Sherry wine. Or the bark may first be macerated with four ounces of the wine and a sufficient quantity of water, and water added in the percolator till twenty-four fluid ounces have passed, and the same quantity of sugar then used. The sugar is to be added to the liquor in a bottle, and shaken till dissolved—no heat being used. It is an elegant preparation, but requires to be kept in a cool place. Dose, four to eight fluid drachms. II. *Wine Tincture*. Crushed liriodendron, four ounces, treated first by maceration and then by percolation till a pint has passed, the dregs being then strongly expressed, makes a good tincture, better than if made upon diluted alcohol. Dose, two to six fluid drachms. III. *Fluid Extract*. This may be prepared as in the fluid extract of cypripedium. The application of heat, however, so readily impairs this article, that it is nearly impossible to make any fluid or other extract that will fairly represent the virtues of the bark. IV. *Compound Wine of Liriodendron, Female Tonic*. Liriodendron, eight ounces; convallaria and scrophularia marilandica, each six ounces; hydrastis and scutellaria, each two ounces; peach kernels, six drachms. Crush well, macerate for two days in a covered vessel with a sufficient quantity of Sherry wine, (or thirty percent alcohol may be used;) transfer to a percolator, and treat with wine till four pints have passed. Set this aside, and add water till two pints have passed; and in tills dissolve three pounds of sugar, employing a very close vessel and a low heat. When cold, mix the two liquids. I have employed this preparation in my private practice for the last sixteen years, and have been more pleased with it than with any preparation I have ever used for hysteria, leucorrhea, prolapsus, pains during gestation, and all other female difficulties connected with nervousness and a poor appetite. It exerts no special influence upon the menstrual function; but is of much service for intermediate treatment in painful menstruation. Dose, six to twelve fluid drachms three times a day. I commend it to the profession as a compound equal to the Compound Sirup of Mitchella as a uterine antispasmodic and nervine, and superior to that preparation as a tonic. This bark is an ingredient in the Compound Wine of Columbo.

LOBELIA INFLATA

LOBELIA, EMETIC WEED, INDIAN TOBACCO, EYEBRIGHT

Description: Natural Order, Lobeliaceae. In this group are the brilliant scarlet and large blue cardinal flowers, with two small species cultivated for hanging baskets. All the species are common in every section of North America—the family being named in honor of the English Botanist, Mathias de Lobel. Genus LOBELIA: Herbaceous plants, with alternate and ex-stipulate leaves. Flowers axillary and solitary; calyx five-lobed: corolla tubular, somewhat two-lipped, cleft nearly to the base on the upper side, upper lip of two separate lobes, lower one three-lobed; stamens five, the anthers united in a curved tube; style one, with a two-lobed stigma—the latter surrounded by a minute fringe. Fruit a two or three-celled capsule, opening at the summit, with numerous small seeds. L. INFLATA: Stem erect, six to twenty inches high, unbranched; in good soil usually branched above, and attaining a height of two feet or more: somewhat angled, and a little hairy. Leaves sessile, scattered, elliptical or ovate-lanceolate, serrate, veined, hairy or pilose beneath. Flowers in leafy terminal racemes, on short peduncles; corolla small, pale blue, inconspicuous. Fruit an inflated and thin capsule, crowned with the persistent calyx, striated, two-celled, ten-angled; seeds small, (one-thirtieth of an inch in length,) dark-brown, almond-shaped, oily. This plant is annual in warm latitudes, but biennial in the Middle and Northern States, blooming from July to September. It prefers meadows, pastures, roadsides, and other grassy places, where the soil is gravelly and not too rich.

History: This herb has had to fight its way into use through opposition the most extended and bitter; and has had combined against it the deepest venom of the whole one hundred and fifty thousand Allopathic physicians in this country, who in turn brought to their help the prejudices and passions of the people, and the power of legislative enactments. Enmity so malignant has scarcely been equaled in medical history. Although the “regular” profession has too often marred its name by the blindness with which it has opposed every step in medical progress—reducing Harvey to beggary for discovering the circulation of the blood, crushing Jenner into the vilest disgrace for introducing the practice of vaccination, heaping the coarsest obloquy upon Pare and others for tying arteries instead of plunging the bleeding stumps into scalding tar, cursing Peruvian bark as a pestilence and a device of the devil—it would seem as if the concentrated malignity of ages had been gathered up in its ranks, that it might be heaped upon this valuable medicine. In this as in all other cases, the more beneficial the article promises to be to the world, the more deep and bitter the Allopathic opposition. As Prof. M. Paine says of the introduction of cinchona, (p. 349,) “We see in the nature of the hostility waged by a great part of the profession against this invaluable remedial agent, and *in the very face of its triumphant success*, a disposition to *trample on the best interests of society, when professional pride, or cunning jealousy, or malevolent envy, may hope for gain.*” The innumerable instances in which similar hatred has “trampled on the best interests of society,” should be sufficient to deter such intelligent gentlemen as Profs. Paine, Wood, Griffith, Stille, Pereira, Taylor, Christison, and hosts of others, from lending themselves to a repetition of that “malevolent envy” which would crush out the truth in order to warm its own “professional pride” on the ashes.

All Allopathic authors who allude to the origin of the professional use of this article, ascribe its introduction to Rev. Dr. Cutler, of Massachusetts; who testified, in the fall of 1809, to having

cured himself of asthma by its use in September of that year. The first professional attempt to give an account of its action, was that made by Dr. Thatcher, of Boston, in his *Dispensatory* published in 1817. This account was a remarkably incorrect one; and, from a medical standpoint, was of no use in showing the true nature of the plant. Thatcher and others say that the article was in use among the Penobscot Indians from a very early day; and this may have been the case, though the fact was never named till 1810—a year after the trial of Dr. S. Thomson for producing death by its use. There seems reason to believe that its emetic qualities were known in some portions of New England quite early in the present century; but no evidence that that action was known to, or was used by, the medical profession. To Dr. Samuel Thomson is unquestionably due the credit of first clearly defining its qualities and employing it for definite medical purposes. As early as 1773, he became aware of its power to procure vomiting; and from that time till 1791, frequently gave it to his young companions for amusement. During 1791, he first became practically acquainted with its ability to afford relief in disease; from that date, he resorted to it in colic, rheumatism, fever, and many other complaints; and by 1805 had made himself famous over a large portion of New England for the marvelous quickness with which he cured scarlet fever, putrid sore-throat, erysipelas, dropsy, and other very severe maladies, by the use of this and other remedies. From 1805 onward he repeatedly cured the most unpromising cases of asthma with this agent, and that in the immediate neighborhood of the above Dr. Cutler; but it was not till 1809 that Dr. Cutler claimed ever to have used it in asthma, and then he knew nothing of its value in other cases. Thus for several years before Dr. Cutler used this remedy, according to his own testimony in court, Dr. Thomson employed it extensively in various places through Vermont, New Hampshire, New York, and Massachusetts. And he thoroughly understood the relaxant, diaphoretic, emetic, and nervine qualities of this agent as early as 1795, while Dr. Thatcher did not write his account of it till 1817; and that account was utterly incorrect, and in no sense descriptive of the action of the article except in the single malady asthma, as made known to Dr. Thatcher by Dr. Cutler in 1810. And the account in Dr. Thatcher's *Dispensatory* of 1817 bears evidence of having been written solely to bring disrepute on the practice which Dr. Thomson was compelled to protect by letters patent in 1813. These are current matters of fact in the prints of those dates, and clearly bestow upon Dr. Thomson the credit of first learning and employing this article in the wide range of maladies to which it is applicable. If the Penobscot Indians and some of the New England settlers did know of it, the information was assuredly kept to themselves; as there is no proof that the knowledge was common, no printed or written evidence in support of the assertion prior to 1810, and none whatever that Dr. Thomson ever heard of others being acquainted with it. He himself solemnly declares that no intimation of its virtues ever came to him from any source, but that he learned its value by his own perseverance in observations and experiments; and the sterling character of that much-persecuted man lifts his veracity above question. Prof. B. Waterhouse, in a letter of introduction given to Dr. Thomson to present to Prof. B. Mitchell, of New York, dated at Cambridge, December 19, 1825, says: "Dr. Samuel Thomson has the honor of introducing the valuable lobelia to use, and fully proved its efficacy and safety." Prof. Waterhouse lived at a time when and in a place where it could easily be ascertained to whom the honor of this discovery belonged. He had all the pride of his professional position to gratify by denying it to Dr. Thomson; and his unqualified language in giving the credit of discovery to Thomson, even if all other evidence of the fact were wanting, should forever silence those little pettifoggers who would now rob that noble man's name of his dues. The attempt of Allopathy, even in high places, now to wrest from him the honor of making a discovery for which that same Allopathy so

maliciously persecuted him, is far from being creditable to those partisan writers who would ignore printed history to gratify their “malevolent envy.”

As early as 1817, Dr. Bigelow, in his *Medical Botany*, alludes to the trial of Dr. S. Thomson for the murder of Ezra Lovett by the use of lobelia, giving a horrible account of the doctor’s proceedings, and saying that this “empiric” and “pretending physician” “thus terminated the disease and the patient at once.” A similar statement was made in *Thatcher’s Dispensatory*, the same year. From that date to the present, it is probable that every Allopathic *Materia Medica* that mentions lobelia, contains the assertion that Thomson was tried for committing murder by the use of it. Griffith, Pereira, Christison, the *United States Dispensatory*, Royle, Dunglison, Taylor, and Carson, are among the standard authors who use the nearly stereotyped phrase, “Thomson himself was tried for murder for killing a man with this article.” This is a grave accusation; and, as it stands in this naked and unqualified form, it is a severe record for writers of such eminence to keep repeating for so many years after their victim is in his grave. If lobelia is a dangerous article, by no means let one jot of the evidence against it be concealed; but in the trial above alluded to, the death was proven to be in no way connected with the use of lobelia, and Dr. Thomson was declared to be an entirely innocent man. By repeating the charge against him, yet studiously and persistently omitting all mention of his acquittal, those eminent Allopathic authors show themselves so moved by malice as to be willing to brand an innocent man with the darkest criminality, and to fasten a heritage of disgrace upon his children, in order to vent their “malevolent envy” against him and his discovery.

The trial of Dr. Thomson alluded to, took place before the Supreme Court in Salem, Mass., in December, 1809. It was on a charge of murder, in that Dr. Thomson had administered lobelia to sundry persons, and especially to one Ezra Lovett, jr., in January of the same year, whereby death had been caused. The prosecuting complainant was an Allopathic physician by the name of French. During the previous year, this Dr. French had repeatedly threatened to take Dr. Thomson’s life; and sought to entice the latter into his neighborhood with the determination, publicly avowed, of blowing out his brains. Dr. Thomson was finally compelled to appeal to the courts, and Dr. French was bound over in \$200 to keep the peace. Pursuing Dr. Thomson with every species of persecution, but steadily failing in them all, French finally procured a warrant for his arrest on the charge of *murder*. Dr. Thomson’s narrative of the proceedings is, in part, as follows:

“Just before night, Dr. French arrived with a sheriff, and ordered me to be delivered up by the constable to the sheriff. Dr. F. again vented his spleen upon me by the most savage abuse that language could express; saying that I was a murderer, and that I had murdered fifty and he could prove it; that I should be either hung or sent to the State Prison for life, and he would do all in his power to have me convicted. I was then put in irons by the sheriff, and conveyed to the jail in Newburyport, and confined in a dungeon with a man who had been convicted of an assault on a girl six years of age. I was not allowed a chair or a table; nothing but a miserable straw bunk on the floor, with one poor blanket which had never been washed. I was put into this prison on the 10th day of November, 1809. The weather was very cold. No fire, and not even the light of the sun or a candle; and, to complete the whole, the filth ran from the upper room into our cell, and was so offensive that I was almost stifled with the smell. I got no sleep that night, for I felt something crawling over me, which caused an itching; and my fellow-sufferer said it was lice.

In the morning, I was called on through the grate to take my miserable breakfast. It consisted of an old tin pot of musty coffee, without sweetening or milk, and was so bad as to be unwholesome; with a tin pan containing a hard piece of Indian bread, and the nape of a fish which was so hard I could not eat it. The weather was very cold, and I suffered from that cause; and likewise from the bad air in our miserable cell. Many of my friends came to see me, and some of them were permitted to come into the cell; but the air was so bad, and the smell so offensive, that they could not stay long. My friend, Dr. Shepard, came to see me, and was admitted into our dungeon. He staid a short time, but said it was so offensive he must leave me; that he would not stay a week for all Newburyport. There was nothing in the room to sit upon, higher than the thickness of our bed.”

There was to be no regular session of this Court till the fall of 1810, so that the prisoner would have to lie in this miserable condition for a year—a period sufficient to have destroyed him. Through the efforts of some eminent jurists who interested themselves in his case, and who went from Salem to Boston fifteen times on this errand, Judge Parsons finally consented to hold a special session on December 10th, 1809. Judge Parsons with his own hand drew up the judicial account of this trial, which is published in vol. vi, *Massachusetts Criminal Reports*. The Judge, on the trial, showed the fullest sympathy with the prosecution, and none for the prisoner beyond what plain justice demanded. After giving an abbreviated account of Dr. Thomson’s treatment of the deceased Lovett, and of the fact that the patient had several times been vomited by lobelia, the report proceeds:

“The Solicitor-General also stated that, before the deceased had applied to the prisoner, the latter had administered the like medicines with those given to the deceased, to several of his patients, *who had died under his hands*; and to prove this statement, he called several witnesses, of whom but one appeared. He, on the contrary, testified that he had been the prisoner’s patient for an oppression at his stomach; that he took his emetic powders several times in three or four days, and was relieved from his complaint, which had not since returned; *and there was no evidence in the case that the prisoner, in the course of his very novel practice, had experienced any fatal accident among his patients*. As the Court were satisfied that the evidence produced on the part of the Commonwealth did not support the indictment, *the prisoner was not put on his defense*. The prisoner was acquitted.”

It seems astonishing that an innocent man should be thus persecuted and abused, in the nineteenth century, merely because he had made an innovation upon an existent practice of medicine. Such treatment in prison, sounds more like the barbarisms of Russia in the middle ages, than like free and enlightened America. But the prosecution utterly failed. The testimony of Dr. French was a mass of venom; and his **description**, under oath, of the plant lobelia, was a tissue of misstatements. The only witness whom the Solicitor-General could obtain to prove his bold assertion of Dr. Thomson having killed several patients, testified to the rare value of his emetics on the witness’s own person! The Court declared that there was “*no evidence of any fatal accident among his patients*.” and dismissed the prisoner without even allowing him to enter upon his defense! Four Justices were on the Bench. A more complete acquittal, a more thorough rebuke of malicious persecution, could not be furnished; and law and society have no higher evidence of an accused man’s unqualified innocence. In the face of such an acquittal, the author must be deaf to honor who can refer to that trial as proving the guilt of Dr. Thomson and

the poisonousness of lobelia. The writer who uses such an argument against lobelia, shows himself possessed of enough malevolence to persecute a dead man's honest name, if in so doing he can hope to gain any thing to his own "professional pride." A lower form of baseness is scarcely known to the moral sense of the civilized world; and if honorable Allopathists wish to escape the odium that naturally attaches to any man who falsifies Court records in order to injure another, they must cease making this untrue reference to the trial of Dr. Thomson, and also discountenance those who do make it.

After the trial of Dr. Thomson, no way being left by which it seemed probable that lobelia could be put down in courts of justice as a poison, the Allopathic profession used their influence to get the State Legislatures to enact laws making it an offense to practice medicine without a diploma. As there were none but Allopathic colleges, this method was considered effectual for putting down this "new practice," and Massachusetts, Connecticut, Maine, Vermont, New York, Michigan, Georgia, Virginia, the Carolinas, and probably some other States, enacted such laws. In New York, the law forbade the prescribing, the selling, and even the giving away, of lobelia; and in all the States, the spirit of the American Constitution was violated in thus denying to the people all right to choose their own medical advisers, and to "new-school" physicians all power to collect pay for services performed under contract with those who employed them. The drift of these laws may be seen in the facts that, *First*. Fines to be imposed under them were to be divided between the informer, (always an Allopathic physician,) and the State Allopathic Society. *Second*. That no restriction was placed on the use of arsenic, antimony, blood-letting, prussic acid, strychnine, and similar powerful means of destruction currently used by Allopathists. The people in their majesty finally abrogated such tyrannical laws, and left Allopathy to stand as best she could without these monopolies; but the oppressing spirit that guided the greater number of that branch of the profession, was thoroughly illustrated in these enactments which they procured. It was in consequence of these laws that Dr. Thomson was at last driven to procure from Washington letters patent to protect himself in his practice.

While the laws above named were in operation, numerous indictments were found against reformatory physicians in various parts of the country. The prosecutors were invariably Allopathic physicians, and the greater portion of the witnesses were of the same class. There was no lack of evidence against lobelia—*many* Allopathic physicians of high standing unqualifiedly asserting, *on oath*, that ten, or eight, or even *four* grains of this article, were sufficient to cause death. An oath, especially when it is to affect the life of a fellow-being, is a solemn thing; but when those oaths came to the test-question of their correctness, *they could not be substantiated*. There was nothing to prove that any person had been destroyed by such doses of lobelia, or by doses of any size whatever, or that the bold witnesses had ever seen man or animal either killed or injured by this drug; but there was abundance of evidence, by physicians and patients, that these latter witnesses had given, and *had themselves taken*, from half an ounce even to *four ounces* of lobelia in the space of a few hours, and always to the improvement of their health. Thus the Allopathic testimony was proven in open court to be nothing but closet speculation, without a shadow of truth, and from the lips of men who had not used lobelia, and who in one instance solemnly swore that the herb marsh rosemary was lobelia! In no instance was any man convicted of doing harm by the use of this agent. I challenge any one for evidence that such a judgment was any where rendered by any court against this article;

and though there was always enough Allopathic swearing against it, the character of that swearing was always as above indicated.

Yet it is currently stated that convictions have been had in England for causing death by lobelia. It seems anomalous that evidence of this kind has to be brought from so far, when the use of the agent originated in America, when so many thousands of physicians in our own country have used the article so long and in such enormous quantities, and when so many attempts at conviction here have failed. Such distant proof smacks of trickery. However, truth in England is as good as truth in America; and if lobelia is a poison there, it is a poison here. Let the evidence be looked into. One man is reported to have been condemned to three months' imprisonment for "killing a man with lobelia." The punishment looks remarkably small for so grave a crime—especially in England, whose courts have not unfrequently condemned a man to ten years of banishment for stealing a loaf of bread when starving, and one of whose local courts has just now (November, 1868) condemned a young girl to twenty-one days' confinement at hard labor for plucking a sprig of lavender from a shrub in a gentleman's garden! It is improbable that any such verdict was meted out for causing death by lobelia; and the actual fact simply is, that a man in London gave an emetic to a fellow-workman, and the workman died, and the man was sent to prison for *daring to practice without a license*. This was the ground of the conviction, and the poisonous or non-poisonous quality of lobelia was not pronounced on by the court, nor was the man's death charged to lobelia.

Again, it is asserted that Dr. Letheby, of London, made a chemical analysis of the stomachs of several persons for whom lobelia had been prescribed, and found in them a large quantity of this drug. This looks like very positive evidence; for Dr. Letheby is an eminent and learned man, and chemistry is a very definite science. But chemistry has no means of detecting lobelia by analysis; and not a single reagent is known which will give the least intimation of the presence of this article. Morphine, strychnine, nicotine, and other chemical products of plants, may be detected by chemical means lately discovered; but no such tests are yet known for lobelia. This single fact, which is indisputable, shows that Dr. Letheby could not, and never did, detect the presence of lobelia in the stomach by chemical analysis. But Dr. Letheby was an honest man, and one who would not degrade his science to bad purposes. He did make analyses of persons said to have been killed by lobelia; and it was clearly proven that lobelia had been prescribed for those persons a short time before their death. But it was also proven that an Allopathic physician prescribed lobelia to "try" it, and the druggist had no lobelia; but as the physicians had all been asserting that lobelia and tobacco were one and the same thing in action, the prescription was filled with tobacco instead of lobelia. This was what the patients took; and this was the "peculiar brown powder, with the smell of tobacco," that Dr. Letheby found in their stomachs. Judging only from the prescription, it would be fair to say that lobelia was found in those stomachs; but judging from the "*whole truth*," as required by law and common honesty, and the deaths were from tobacco. And this article was given to them because the doctors had falsely represented the action of lobelia, so as to make the druggists believe that tobacco could be substituted for it. The deaths thus really arose as a remote consequence of those malevolent misrepresentations; and so the juries found verdicts, neither condemning the druggist for making a substitution that accorded with the "regular" statements, nor convicting the doctor for directing the use of a deadly article. Had lobelia really caused death, the Allopathic physician should have been condemned; for he professed to know beforehand that the drug was of a deadly character.

Prof. Alfred S. Taylor, in his *Medical Jurisprudence*, a standard volume in Europe and America for the use of lawyers and judges in all questions at law, gravely asserts that lobelia is a poison; and he quotes the above trial of Dr. Thomson, and the above analyses of Dr. Letheby, as proof in the question. He carefully keeps back the results both of the trial and the analyses; and thus places himself before the world as one who would offer information to guide the courts, by presenting legal statements in a light known to the law to be perfectly false! And this same author presents as additional evidence of the poisonous character of lobelia, the statement that, in six instances, coroners' juries in London had found parties guilty of causing death by its use. This statement, from an English writer of such eminence, is quoted the world over as conclusive proof on this mooted question. Any man of good sense knows that the "conviction" of a *coroner's jury* is not a conviction at all. Their verdict merely holds an accused party for *examination* before a proper court; and he is not even held for *trial*, till the latter examination justifies it. Thus a coroner's jury has no power whatever to pronounce on the guilt or innocence of an accused party who is not so much as on trial before it. Its verdict against a man is not worth the paper it is written on, unless sustained by a subsequent trial before a proper tribunal. Of course, Dr. A. S. Taylor knew these facts. The persons "found guilty" by London coroners' juries evidently were not convicted by any court with powers to try them, or else Dr. Taylor would have recorded it. This his so-called "proof," therefore, stands condemned on its own face as a subterfuge to bolster up an untruth. It is humiliating to see a man of Dr. Taylor's learning resort to so weak a method of bringing disgrace upon a remedy, and dishonor upon all who use that remedy; but he has chosen his own course, and it is my duty to expose the sophistry of his statement, that all honorable-minded men may see, and seeing refuse to become parties to, his shuffling prevarication.

Allusion has been made to the assertion that lobelia acts like tobacco. This assertion has been examined so thoroughly in the first part of this volume, that a child may see there is no resemblance between them. It is also said that it does not always kill patients, because they usually vomit, it up; but that if it be not ejected, then it will certainly destroy. This also is an utter fallacy, as thousands of physicians, and hundreds of thousands of patients can certify. The system may be so filled with it as to relax every fiber, and the patient retain such large quantities for six, or twelve, or more hours, and pass out of this condition without purging or vomiting, and find his health improved by the act. And by similar testimony can it be proven that not only is a little harmless, but that enormous quantities may be given with impunity. I have myself many times used an ounce of the herb within a few hours, and had it all retained; have given half an ounce to a babe six months old, in two hours' time; have given a child of five years four ounces of the seeds inside of seven hours, and had it retained; and in so doing have broken up most alarming attacks of disease, and promptly restored health from spasmodic conditions that otherwise would have been fatal. Other physicians have done the same, and many of them have given even larger quantities than this. Within the last seventy-five years, it is probable that not less than five thousand active practitioners have used this article every day, in all forms and in all imaginable quantities; and today their united experience comes up with one loud answer to the effect that lobelia is an *absolutely harmless* agent. During the same space of time, probably a million of people have used it on themselves according to their own judgment; and these also raise their voices to declare that the article is without any narcotic or other harmful property. Irresponsible parties make wild statements which they can not prove; and Allopathic physicians still assert that the agent is a narcotic poison, though in all their lives they probably have not used

as much of it as any one of the above five thousand physicians prescribes in a single day. To their own discredit do they make these assertions; for, as Prof. Paine says of the opposition to Peruvian bark, they make them “in the very face of its triumphant success;” and the testimony of the above masses who have employed it so long and so largely, sweeps into nothingness this unsupported opposition raised by Allopathists to gratify their “professional pride or malevolent envy.”

Scores of Allopathic physicians of the first eminence have seen the wonderful powers of this remedy; and have openly adopted its use, given its discoverer the credit he deserves, and defended its powers and its innocency, and that without mixing it with opium and prussic acid, as is now done. Among these I have room only to name Prof. B. Waterhouse, of Harvard University; and Prof. W. Tully, of Yale College. Prof. Waterhouse resigned the position he had held in Harvard for over twenty years, and openly adopted the new practice—setting an example of honesty in conviction and conduct that would soon close all the old-school colleges if followed by others. Prof. Tully, at Yale, equally honored with Waterhouse, made no concealment of his convictions in this matter; but at once adopted the remedy, and taught its true qualities as he learned them from Dr. Thomson. As his name is everywhere respected, as one of the brightest stars that Allopathy has had in this country, I will close this defense of lobelia with some extracts from a letter he wrote to Dr. H. Lee, of Middletown, Conn., dated March 22d, 1838:

“DEAR SIR: It is true that I have stated, in my public instruction, that lobelia inflata is entirely destitute of any narcotic powers. I have now been in the habit of employing this article for twenty-seven years, and of witnessing its employment by others for the same length of time, and in large quantities, and for a long period, without the *least trace* of any narcotic effect. I have used the very best officinal tincture in the quantity of three fluid ounces in twenty-four hours, and for four and seven days in succession; and I have likewise given three large tablespoonfuls of it within half an hour, without the least indication of any narcotic operation. I have superintended experiments with it, made by young men, and always with the same results.* * *The experiments here alluded to, as Prof. Tully afterward explained, consisted in giving enormous injections of it to dogs, cats, rabbits, and other small animals, none of which could be killed by the article.* I have known four and five tobacco-pipes full of it smoked in immediate succession, and without any narcosis; and I have also known it given by enema, and with the same result. In addition to this, no species of the genus *lobelia*, nor of the order *lobeliaceae*, is known to possess a particle of narcotic power. Dr. Bigelow, of Boston, was the first person who ascribed narcotic powers to this agent; and this he first did in 1817, but not from his own observations. [This was eight years after the above acquittal of Dr. Thomson, within 75 miles of Boston.] After Dr. Bigelow first pronounced it narcotic, subsequent writers very speedily converted ‘something as black as a crow, into three black crows;’ and Dr. Ansel U. Ives, of New York, at last pronounced lobelia inflata to be a ‘deadly narcotic,’ and that its action as an emetic ‘is secondary, or symptomatic of the primary impression upon the brain, like that caused by tobacco and other narcotic poisons.’ *But all this is mere stuff, and closet speculation, and does not contain a single truth.* There is no probability that Dr. Ansel U. Ives ever used the article in his life. . . . I am confident (the old women’s stories in the books to the contrary notwithstanding) that lobelia inflata is a *valuable*, a *safe*, and a sufficiently *gentle* article of

medicine; and I think the time will come when it will be much better appreciated.
WILLIAM TULLY.”

Components: *Lobelia herb* contains a moderate portion of a volatile oil, which is readily dissipated by heat, and may mostly be driven off by water quite below the boiling point. The most effective diffusible power of the article seems to depend upon this oil; whence age somewhat decidedly impairs the herb, and boiling water materially injures it. The *seeds* contain a notable quantity of fixed oil, sufficient to saturate in a few days any soft paper in which they may be placed. This oil may be obtained by warm pressure, or more effectually by treatment with ether, as will be mentioned hereafter. An alkaline liquid called *lobelina* may also be separated from its associated lobelic acid, by treating the seeds in a suitable manner. Water extracts the greater portion of the properties of the herb; but acts only partially upon the seeds, with which it makes a rather milky infusion. Alcohol acts on both portions of the plant, and diluted alcohol acts upon them both quite efficiently. The fixed oil is soluble in absolute alcohol and sulphuric ether. Vinegar, or diluted acetic acid, acts largely upon both herb and seeds; and has the additional property, in common with other acids, of fixing the volatile oil so as to prevent its dissipation. It is probably on this account that the use of vinegar in preparations of lobelia, or an acid state of the stomach when the article is taken, so effectually prevents the diffusion of its relaxing influence, and limits its action quite locally. (§227.)

Properties and Uses: The *herb* and the *seeds* are of the same action, the seeds being twice the strength of the herb. The herb is usually spoken of, unless the seeds are especially mentioned. It is a pure relaxant, possessing only the faintest moiety of stimulating property, and this of a transient character, expending itself upon the fauces, and the glands and mucous membrane of the mouth and respiratory organs. The quality for which it is so greatly valued, is its peculiar influence in relaxing the entire circuit of the organs and tissues—making prominent and diffusible impressions upon and through the nervous structures, but proving itself capable of reaching every portion of the body under the directing influence of the vital force. (§138, 139.)

When chewed, or taken in any liquid preparation, it first causes a peculiar and somewhat acrid (but never excoriating) feeling about the fauces. This is soon followed by an increased flow of saliva and mucus in the mouth; and this increase of the salivary secretion is always marked in the use of this agent, and renders it appropriate to the dry tongue and throat incident to all forms of fever. After being swallowed, it induces a sense of nausea; and the increase of mucous secretion is manifested through the whole length of the oesophagus. By the repetition of small doses at intervals of thirty or fifteen minutes, its relaxing impression will soon begin to be distributed through the body; first upon the capillaries and nerve peripheries, then upon the general circulation, and finally throughout the muscular and glandular systems. As some of the most valued benefits of the agent are derived from employing it in this manner, without either seeking or obtaining its emetic action, its advantages upon these several classes of structures may be studied separately.

The *circulation* is materially equalized by its use, and the blood-vessels relieved from a condition of tension, whether the case be one of inflammation or fever. By relaxing the circulatory apparatus, it favors a full outward flow of blood, with diaphoresis; secures greater fullness and softness of the pulse, with a reduced excitability of the heart; and from the

universality of this influence, expedites the reestablishment of the secretions of the skin, liver, and kidneys. Such extensive impressions fit it for the treatment of phrenitis, meningitis, pneumonia, pleurisy, hepatitis, peritonitis, and nephritis, and to inflammation of the periosteum—whether on the long bones, alveolar processes, about the ear, or other places. In some of these cases, as of pneumonia and pleurisy, this agent alone (especially in the form of tincture) is many times sufficient to cure acute cases, providing they have not yet passed into the stage of actual congestion—as congestion requires very little relaxation, and that always associated with an excess of stimulation. This action also qualifies it for almost universal use in synochial, catarrhal, bilious, rheumatic, typhoid, and other forms of fever. Its use in fever is valuable beyond any other remedy that has ever been introduced to the notice of the profession, and that without any reference to its emetic action; for it secures that sanguineous distribution, cardiac relief, and secretory activity which are so positively demanded in all such cases, and this in a manner at once powerful and harmless. The article is rarely used alone in such connections, but usually with such diffusible relaxants and stimulants as the case may require; hence is generally made into infusion with an excess of such agents as *asclepias*, *zingiber*, *polemonium*, and others of this class. If the febrile action is of the congestive class, as a low typhus, a moderate quantity only of *lobelia* is required, and more and stronger stimulants are necessary. By suiting the amount of *lobelia* to the tension and force of the arterial action, it can be applied to the widest possible range in febrile action; and will manifest a curative power that of itself is sufficient to rank this agent as one of the most truly valuable ever offered to the medical profession.

The *nervous system* derives great benefit from it, as it is one of the most reliable articles to relieve all forms of suffering arising from tension and excitement of the tissues. Thus as a local application in external inflammation, over the seat of an abscess or a periostitis, on acute erysipelas or ophthalmia, and all other cases of the kind, it is of great efficacy; and internally in the suffering of acute rheumatism, or pleurisy, or periostitis, or meningitis, or neuralgia, it can be used to great advantage. In like manner, it is probably unsurpassed for securing relief from the nervous restlessness of acute hysteria, typhoid fever, delirium tremens, etc. As it acts upon the circulation simultaneously with its impressions upon the nerves, a large portion of the relief obtained in some of these cases is due to the manner in which it hastens the equalization of the blood; and thus it is of a double advantage to the system. Its action being diffusible, is rather transient, whence the article needs repetition at moderate intervals, yet not so frequently as in fever. When pain arises from approaching congestion, *lobelia* alone is not sufficient, but needs to be combined with diffusible stimulants; while in the suffering of gangrene, it is not applicable at all. (§238.)

Upon the *muscular* and *fibrous* tissues it expends its influence with a very direct and peculiar force. The nausea induced by it at the stomach, is the first manifestation of this, and the enlarging caliber of the pulse is from a similar influence upon the fibers of the blood-vessels. It is by this combined action upon both the nerves and muscles of the stomach, that small doses of weak *lobelia* infusion allay irritation of the stomach, and arrest spasmodic and even sympathetic vomiting; and so long as these doses can be regulated so as to make a nearly continuous impression, without any distinct intermission in which a contracting oscillation may occur, all efforts at emesis will prove ineffectual. (§210, 212.) By a persistent repetition of moderate quantities till the contractile efforts of the stomach are allayed, and then by the use of larger

quantities either by drink or as injection, or both, (or more considerable quantities may be used at the outset, if the stomach is not peculiarly susceptible,) there is probably no fibrous structure of the frame but may be reached by this agent. And though it is a remedy chiefly used for acute cases, it may be employed to distinct advantage, in combination with more permanent agents, for chronic maladies of the same structures. The relief obtained from the use of lobelia in meningitis, pleurisy, peritoneal inflammation, and acute rheumatism, is probably due as much to its relaxing power over serous tissues as to its soothing impression upon the nerves. Its virtues are exhibited to the highest advantage in spasmodic and true membranous croups, whooping-cough, spasmodic asthma, (but not the humid asthma, nor that form of difficult breathing accompanying heart disease,) spasmodic strangury, subsultus tendinum, spasmodic occlusion of the gall-ducts, (as in the paroxysms of suffering from the passage of gall stones,) strangulated hernia, etc. So prompt and positive is its action in these several difficulties, that it may safely be set down as an absolute and reliable specific for them, so far as the excessive muscular contractility is concerned. In rigidity of the os tincae during labor, small doses at short intervals will secure the relaxation of those fibers in the most prompt and thorough manner; and this peculiar action of the agent, under the directing influence of the vital force, (§138, 139,) enables it to overcome a grave obstruction which has always caused the profession much anxiety, and makes this remedy one of rare value, even if it did not possess another useful property. The same remarks will apply to hour-glass contractions of the uterus; and to those ineffectual forms of labor in which a portion of the uterine fibers are rigid; under all which circumstances small portions of lobelia infusion, at intervals of ten or fifteen minutes, will presently relax the rigid fibers without at all interfering with the action of those which are contracting properly—results which the accoucheur many times desires with the greatest anxiety, and for the lack of which he too often resorts to his destructive instruments, but which are effected by lobelia in the most complete manner. At the same time it secures a free lubrication of the passages, and a more equable action of the nervous system. Yet lobelia is not a distinct parturient; and though its efficacy in expediting labor under the above peculiar circumstances is unsurpassed, it at no time gives vigor to uterine contractions, nor improves the force of weak and ineffectual pains. On the contrary, its *persistent* use will gradually relax the entire uterus, and finally all contractile efforts will cease till the action of the lobelia has passed by; and this may readily ensue in cases where the uterine and vaginal structures are already flaccid, or may be effected where the parts are somewhat unyielding and the pains so active as to be exhaustive.

The extent to which lobelia will relax the muscular tissues, may be inferred from the last paragraph. By its frequent repetition in full quantities, even if emesis should ensue for a few doses, it will eventually relax all the muscular structures, so that the patient will be unable to move a limb—not so much as to speak or to lift an eyelid. This is the condition which is currently described as the “*alarm*,” from the fact that most Allopathic physicians become hugely frightened when they see a patient in this condition; and are apt to declare the patient about to die. To one ignorant of the action of lobelia, and unskilled in distinguishing the signs of disease, the state thus induced might indeed be pronounced “*alarming*,” but the experienced practitioner, and he who knows the difference between the physiology of health and disease, will feel no perturbation under the circumstances. The pulse is soft, slow, and steady; the breathing as even and as gentle as a sleeping babe’s; and the secretions of the skin, and of all the emunctories, are increased largely, yet in a perfectly quiet manner. The distinctions between this state and that of narcotism were fully made in the department of Therapeutics. (§95, *et seq.*) It is a state often for

a short period preceded by restlessness, and sighing respiration; but these are owing merely to some portions of the frame being more relaxed than others, and they cease so soon as all parts become relaxed alike. It is a condition in which every obstruction to the freest vital action of the blood, nerves, and secreting organs, seems completely broken up; and one from which the patient rallies in from one to three hours, or from which he may be rallied sooner by composition or other stimulants, enjoying a wonderful sense of relief from all previous weight of disease and morbid accumulations. If resorted to at the earlier stages of almost any form of fever, it often enables the practitioner to cast out the offending impurities at once, and to cut short the most unpromising attacks in a few hours. Its power in this respect is unequalled, and wholly unknown to those who have never employed the agent thus; and so rapid and effectual has been its work in this direction, that patients have rallied so quickly from alarming attacks in the incipient stages, as not unfrequently to think that they were scarcely threatened with illness. It was this method of using lobelia that gave Dr. Thomson and his coadjutors such almost miraculous success in febrile difficulties; and at the same time spread the impression that lobelia was a deadly narcotic, of similar action with tobacco. It is a procedure best suited to difficulties of the synochial grades, as to bilious, bilious remitting, and rheumatic fever, inflammation of the liver and periosteum, and similar cases where the arterial action is full and strong. But it is not adapted to asthenic forms of fever, and to low and semi-putrescent conditions, such as diphtheria, malignant scarlatina, typhus and typhoid fever, (particularly after the first few days,) nor to puerperal or pleuritic fever at a stage when effusion is liable to take place. Patients whose limbs are fixedly drawn into contorted positions by chronic rheumatism, can usually have those limbs straightened in a remarkable manner when relaxed into this condition of "alarm;" and that replacement of contorted muscles is quite sure to remain, in part, after the relaxation has passed off; and a repetition of this procedure, with suitable intermediate treatment, will many times effect complete restoration.

This relaxing power over muscular structures is of great advantage not merely in the spasmodic affections above alluded to, but in spasmodic and convulsive troubles of the severest grades. Thus, in strangulated hernia, and in fits of hysteria and epilepsy, it is powerful in cutting short the clonic contractions; and in puerperal convulsions it presents to the profession a curative agent of the most unfailing character against one of the most alarming difficulties in the nosology. The latter remark applies with equal correctness to the influence of this remedy over trismus, tetanus, and all forms of tonic spasms. This class of maladies, and also puerperal convulsions, are among the most intractable to which physicians are called; and are commonly looked upon as irremediable, except as nature may voluntarily cease the abnormal contractions from utter exhaustion. But in lobelia inflata is found a cure that probably has never failed in any case where it has been tried properly and faithfully; and the perfect relief it has afforded in numbers of the severest cases, attests its reliable power under the most unpromising circumstances. Failure in its use may result from two causes: *1st.* In not giving sufficient quantities, which in such maladies require to be enormous. *2d.* In not associating with it caulophyllum or scutellaria or similar nervine tonics, in puerperal cases; or xanthoxylum or capsicum to sustain the circulation, in tetanic cases. (§245, 246.) If due care is thus taken to maintain a proper action on the nerves and blood-vessels, lobelia may be depended on to accomplish the relaxation of the muscular structures; and by making the doses commensurate with the severity of the case, experience warrants the belief that this remedy will prove as nearly unfailing in such maladies, as it is possible for any remedy to prove in any case. In the contraction of the muscles about a

joint, incident to dislocation, and which often presents such an almost insurmountable obstruction to the return of the bone, a due use of lobelia (by drink and enema) to the point of relaxation will unfailingly relieve the tension and allow an easy reduction of the parts. And in that peculiar and terrific malady, hydrophobia, its bountiful use has been attended with the most gratifying results. Possibly the paroxysms of this malady may never be overcome so effectually but that the virus remaining latent in the system will continue to manifest itself at intervals; but the evidence is unquestionable that the free use of lobelia—first to secure vomiting, and then profound relaxation—has repeatedly, and perhaps in every instance where used, saved the lives of patients bitten by rabid animals; and it will prove effectual in cutting short any light paroxysms of the malady that may occur subsequently. The same remarks apply with equal force to the treatment of other poisoned wounds, as the bites of serpents, enraged rats, etc. in which cases lobelia emetics carried to a point of very considerable relaxation, and followed by diffusive and depurating stimulants, will prove most powerful means for procuring the ejection of the virus.

The action and the value of lobelia in procuring emesis, have been described fully in the department of Therapeutics, and need no repetition here. Many suppose that the agent is good only to procure vomiting; but while it is unlike, and immensely superior to, all other agents for this purpose; and while emesis secured by lobelia, with a suitable use of stimulants and astringents, is a measure of vast power under such a variety of circumstances; the value of this agent in this connection is only one of its useful employments. Indeed its use in this connection is perhaps scarcely as important as in some of the above cases, where it may be given in free quantities, and in such a manner as not to induce any vomiting whatever; though in many of these it is often advisable first to secure vomiting, and then to continue the agent so as to secure suitable relaxation; but this course is one which is left to the judgment of the practitioner.

Allusion has been made to the influence of lobelia upon the *secretions*. This is somewhat peculiar, and also very extensive. During complete relaxation, the flow of perspiration is abundant; and a free discharge of urine and faeces, as well as of bile, is sure to follow. The same takes place in using lobelia for procuring emesis—a good sweat being a direct accompaniment of this act, and the evacuation of the bowels and bladder almost surely ensuing. Not that the article is in any sense cathartic; but its relaxing power over the liver and gall-ducts rarely fails to secure the excretion of bile; and its influence upon mucous membranes induces a free lubrication of the alvine canal; whence the bowels are soon naturally evacuated, as a common rule, yet never in the manner of a physic. (§172.) In the same manner it secures a discharge of urine; it is a pure and positive relaxing expectorant; and thus also the menstrual and lochial flows will usually be promoted with great promptness by a lobelia emetic, if these discharges have recently been obstructed. By the extensive distribution of blood that an emetic induces, this measure is also peculiarly powerful in arresting hemorrhages of the most violent character, whether from the lungs, uterus, or other organ. It is true that a considerable portion of the good effects is, in this as in all the other cases, due to the agents used simultaneously with the lobelia. This is a fact to be remembered at all times in using this article; whence it is combined with such agents as asclepias and zingiber in treating fever; with caulophyllum and capsicum in treating convulsions; and with the astringing and stimulating Composition Powder in managing hemorrhages. But while lobelia is thus variously combined to meet the requirements of different conditions, it is none the less true that its relaxing power expedites the diffusion and intensity of any agent with which it may be associated. (§260.) This

fact is made available in employing a *limited* quantity of lobelia in conjunction with remedies suitable for dropsy, and chronic abscess, and pleuritic effusions, where its relaxing influence relieves local rigidity and facilitates absorption; or with other agents for chronic gastritis, chronic hepatic irritation, chronic irritability of the kidneys or uterus, etc. In such cases, the amount of lobelia used needs to be quite small indeed; yet its effect on all the secretions is then as perceptible as is its influence in procuring salivary discharges when the tongue is dry and furred. As an outward application, lobelia is joined with demulcents for external inflammation in all positions boils, acute swellings of muscles and other parts, incipient abscesses, sprains, bruises followed by acute inflammation, etc. In deep-seated inflammation, as in various forms of periostitis, during the earlier stages of hip disease or white swelling, and on similar dense structures, the amount of lobelia needs to be very great; and the seeds are then usually preferred to the herb. In acute ophthalmia, its infusion may be used in the eye three or more times a day, to great advantage; and nightly poultices used over the lids, though these will make the lids puffy after the acute inflammation has subsided. In chronic ophthalmia, when the circulation in the blood-vessels becomes sluggish, a moderate quantity of lobelia will prevent gumminess of the secretions, while such agents as hydrastis secure tone. It is not a suitable agent to use on carbuncles or other sores of a gangrenous cast, and it usually promotes the absorption of virus from a bubo to the disadvantage of the patient; though small quantities may be combined to advantage with tonics and stimulants to preserve a free discharge in chancres and other semi-indolent sores. It is useful externally in irritable forms of tetter and eczema, the poison of rhus toxicodendron, etc.

I am aware that this account of lobelia awards to it most extensive and remarkable powers; but not one jot more than is verified to the fullest degree by the united experience of the thousands of physicians who have used it so largely during the last seventy-five years. No one article of the *Materia Medica* influences such a vast range of structures, nor influences them so promptly and powerfully; hence no other remedy can be used in such a variety of maladies. It is not pretended, however, that it is the only agent to be used in the above-named forms of disease; for such an idea would not accord with the facts, nor be in keeping with the true teachings of Therapeutics on the subject of Specifics. (§155,165.) So far as its own individual action is concerned, it is indeed a specific relaxant; and because some grade of relaxation is needed in such a large number of affections, and because the laws of vitality (§138) and the principles of combining remedies (§263) admit of its influence being directed upon any desired part, lobelia becomes one of the most universally employed of all relaxing agents. But, like any other agent, it may be wholly misapplied; and if the practitioner does not fix his mind clearly upon its true character, its vast power may lead him to employ it indiscriminately, and thus draw him into its use for conditions to which it is not at all suitable. These conditions may, in brief, be brought, under the simple expression of, *Maladies in which relaxation is already present*. These would include all cases of soft and sluggish pulse, greatly hurried but prostrated (or intermitting) pulse, loss of nervous sensibility, loss of consciousness, paralysis, and mortification or gangrene. As the structures are then in a too flaccid state, it is plain that relaxation is not required, (§55;) and as certain forms and stages of asthma, croup, pneumonia, pleurisy, cough, and all the maladies named above, may present a state of relaxation, or of very moderate irritability with great depression, it at once follows that the use of lobelia must be greatly diminished, or even discontinued—while the use of stimulants is proportionately increased—under the new circumstances. An instance of this kind is found in typhoid fever; for here the arterial and

nervous centers may present such a strong tendency to relaxation, that any material amount of this agent (especially if given by the stomach) will induce unneeded relaxation of the heart, with sighing respiration and intermitting pulse. Here a great error might easily be committed by employing this agent in considerable quantities; and the more so if the malady have continued for several days, and a tendency to putrescence is increasing. And yet a certain wiriness of the pulse, and continued subsultus tendinum, may call for some relaxation; and continued dryness of the mouth, with stupor or delirium, may indicate the need of emesis. In such conditions, lobelia may be given in suitable quantities by enema, even to the procurement of efficient vomiting, while the necessary stimulants are given by the stomach; and thus the nerves be relieved, and obstructions of the portal circle be overcome, and the blood be distributed toward the surface, while the tone of the heart and large arteries is maintained or increased. (§143.) In like manner, it is improper to use *large* quantities of this article in dropsy, peritoneal effusion, congestive chill, delirium tremens, or any form of congestion with distinct prostration; and in putrescent maladies, it is improper to induce relaxation by its use, though such cases are often very positively arrested by a prompt emetic if of the truly stimulating grade.

Dose: The quantity of lobelia given at a time depends materially upon the object sought. In the cases named in the last paragraph, where a very little relaxation is to be associated with a large excess of stimulation, two grains an hour would be sufficient; and a smaller quantity than this would answer the purpose, if the agent were to be continued for any length of time. In febrile cases, and for expectorant purposes, where a medium relaxing influence is sought, the strength of from two to five grains (according to the nausea induced) may be given in infusion within an hour; though rheumatic fever, periostitis, hepatitis, and other cases in which the tension of the structures is considerable, will require larger quantities than this. These are called “broken doses,” from their being portions of the representative emetic dose of forty or sixty grains. If used by enema, five or ten grains at intervals of six or four hours, are usually sufficient; though such a quantity may be repeated every two hours, or even oftener, if circumstances require it; but much larger quantities are often needed. Enemas should usually consist of the powder in a suitable quantity of demulcent; and is a form especially advisable in spasmodic cases, rheumatic contractions, typhoid maladies, and meningitis or similar affections of the brain. But in these and all other cases, the quantities may be increased to suit the emergencies; croup and puerperal or other convulsions require very great quantities, in company with strong stimulants; and if profound relaxation is sought, moderate doses should be continued for a time at quite short intervals, and then the size of the dose greatly increased—enema and infusion often being employed at the same time. The seeds have at least twice the strength of the herb. On the other hand, if an irritable stomach is to be quieted, the strength of one-fourth of a grain, by infusion, with a little demulcent, is usually enough; and if the os tincae is to be relaxed, one grain every five minutes is generally sufficient. When a very large dose is given in some cases, and especially so if by injection, and without previous relaxation, one portion of the system may be relaxed, and some interfering obstruction prevent the relaxing impression from reaching all the structures quickly. This causes a loss of balance between the two portions of the frame; and while this continues, the patient may manifest symptoms of a peculiar and somewhat violent character—such as severe crampings in the stomach and bowels, intense pain in the head or liver, or ungovernable restlessness. Sometimes the patient will writhe about as if in spasms; at others, he will throw himself out of and under the bed, or otherwise run about as if a maniac; and in a few cases, the most agonizing priapism has occurred. These symptoms are dependent entirely

upon a lack of equalization of the relaxing impression so suddenly made, and evidence the extent to which obstructions prevail somewhere. So soon as these obstructions yield, the agitations cease, and no anxiety need be felt at such symptoms, as they are not dangerous.

Pharmaceutical Preparations

I. *Infusion.* The strength of an infusion should depend entirely upon the objects sought. A full average strength would be a drachm to half a pint of water; but in compound infusions for febrile cases, it is seldom that more than from ten to twenty grains are used in a pint of the preparation, and this given in doses of from two. to four fluid drachms every thirty or forty minutes. For emetic purposes, or to secure full relaxation in rheumatic or convulsive difficulties, or in dislocations, a drachm to four fluid ounces is usually preferred. In making any infusion, boiling water should not be used, as such a degree of heat readily impairs this agent. The infusion is by all means the most suitable form of preparation for emetic purposes. It is also the best form for enemas, when the article is not given in powder.

II. *Extract.* A solid extract of this agent may be prepared by bruising the green herb, macerating it for a few hours with a small quantity of diluted alcohol, and then subjecting it to very strong pressure. Or the juice may first be pressed out, and the herb then macerated with diluted alcohol and subjected to a second pressure. To each quart of the fluid product, add two fluid ounces of good cider vinegar, by which the volatile qualities will be retained, and without which the product will be nearly inert. Evaporation must then be hastened by putting the juice in quite shallow vessels, and exposing it to the sun. Unless evaporated to the consistence of molasses in a short time, it will become sour; yet the heat of an oven, or even the rays of a too hot sun, will materially weaken the product. It does not reach a solid form, but remains slightly plastic; and if the seeds of the plant used have been advanced well toward ripeness, the extract will be of a somewhat oily feel. It is a powerful article, when properly prepared; but very little that is really good ever comes on the market, though Dr. H. H. Hill, of Cincinnati, often has an excellent article. It may be given in pill form, in doses of from one to three grains, at intervals of four hours or less. Like other substances in pillular form, it exerts its influence slowly; and is a good article to use when a moderate and continuous relaxing influence is needed in febrile and acute rheumatic cases—suitable diaphoretic stimulants being given in infusion in the usual manner. By enlarging the dose of lobelia extract, and making use of rather stimulating drinks, light emesis will be secured at intervals of a few hours, without much complaint on the part of the patient; and this is an admirable and effective method of securing the ejection of morbid materials and the breaking up of ordinary fever. I have sometimes used this extract as a plaster over seats of acute suffering, as irritation of the spine, chronic synovitis, incipient necrosis, etc., with excellent results. In one case of incipient morbus coxarius—where the parts contiguous to the joint were much swollen, hot and tender, and the suffering so acute that for two weeks the patient had had no refreshing sleep, despite the large quantities of morphine that had been used under other physicians—a large plaster of lobelia extract relieved the suffering and secured sleep in less than ten hours, and the progress of the patient was remarkably excellent. [See *P.-M. Recorder* for 1862.]

III. *Fluid Extract.* Crush one pound of lobelia herb well, and macerate it for twenty-four hours with a pint and a half of diluted alcohol and one fluid ounce of acetic acid; transfer to an earthen

percolator, add another pint and a half of diluted, alcohol, and then continue the process with water till three pints of tincture have passed. This is now to be evaporated on a water bath till ten fluid ounces remain; to this six ounces of 90 percent alcohol are to be added, to dissolve all the extractive matter possible, when the whole is to be filtered through paper. This formula was proposed by Dr. Wm. Procter, of Philadelphia, and is the one now usually employed. The acetic acid effectually prevents the dissipation of the virtues of the plant during the evaporating process. It is mostly used as an expectorant and nauseant, for which purposes five drops are an average dose. About thirty drops are usually efficient as an emetic, though the small portion of acetic acid does not make it very desirable for emetic purposes.

IV. *Tincture*. Four ounces of crushed lobelia herb, including the seeds in the capsules, are to be tinctured for ten days in the usual way in a quart of diluted alcohol. Or the process of percolation may be used. The tincture is a very diffusive preparation, most usable in acute pleurisy, pneumonia, rheumatism, and spasmodic croup; but not as available as the infusion for membranous croup, fevers, peritonitis, hepatitis, or emetic purposes. Though frequently employed for emesis, its diffusion toward the surface is so very rapid that the result is not always satisfactory—especially as it seldom so affects the internal secretory organs as to secure a good discharge of bile or urine. By some physicians, it is considered superior to the infusion for all classes of clonic spasms, including asthma and whooping-cough. It is more acridly exciting to the fauces than any other form of the article; and is also very nauseating, but not suitably quieting to the nervous system.

V. *Acetous Tincture*. Lobelia seeds, well ground, two ounces; distilled vinegar, (or twenty percent acetic acid,) one pint; macerate for a week, express the liquid, filter, and add an ounce of diluted alcohol. As acids curtail the diffusiveness of lobelia very much, the action of this preparation is mainly local. It acts powerfully on the respiratory organs as a relaxant and stimulant, promoting expectoration rapidly, loosening the exudation of membranous croup, and relaxing the spasms of whooping-cough, spasmodic croup, and asthma. It is mostly employed for these purposes in doses of from five to ten drops in flaxseed tea, or other demulcent, every hour or oftener. In doses of from one to two fluid drachms, in a demulcent, every fifteen minutes, it proves quickly emetic in membranous croup; but no acetous preparation can secure that form of vomiting which induces that grand outward flow of blood and opening of the excretories which are such important adjunctive results of an ordinary lobelia emetic. It is not, therefore, a suitable form to employ in common emetics, though it may serve a good enough purpose in the cases where a very prompt and wholly local action is required. It seems to me probable that the use of this tincture, in conjunction with a tea of bayberry, might prove a good method of procuring vomiting in cases of narcotic poisoning. Diluted with its own volume, or more, of rose water, it forms a good wash for ringworm, dry tetter, eczema, and similar scaly affections of the skin. At present, it is seldom employed internally, the acetous sirup superseding it.

VI. *Acetous Sirup*. In one pint of the above acetous tincture, dissolve two pounds of white sugar at a gentle heat, carefully removing the scum which arises. It is far more pleasant than the acetous tincture, and equally efficient; and is employed in the same cases as those for which the latter preparation is prescribed. I especially value it for membranous croup and dry asthma, for both which it is a stimulating expectorant of great power. Dose, half a teaspoonful or more, repeated every half hour or hour in acute cases.

VII. *Oxymel, Honey of Lobelia.* Tincture bruised lobelia herb (the green herb being preferable) in enough good cider vinegar to cover it thoroughly; express after a week; and mix with it clarified honey at the rate of three pounds to a quart of the tincture. Evaporate on a water bath to the consistence of thin molasses. This is a very serviceable preparation for dry and irritable coughs, humoral accumulations in the lungs, and similar difficulties. It is much less stimulating, and more soothingly expectorant, than either of the acetous preparations. Dose, ten to thirty drops at such intervals as suit the case in hand. It requires to be kept in a cool place. The Balsam of Honey, named below, is pleasanter than oxymel.

VIII. *Oil.* This oil is best obtained by treating half a pint pulverized seed with ten fluid ounces of sulphuric ether for a week; then transferring to a close percolator, and treating with ether till twenty-four fluid ounces have passed. The product is then to be evaporated spontaneously. This is a pale-yellow, transparent, and slightly viscid fluid. By many it is claimed to be a remarkably concentrated representative of the seeds, and five drops are spoken of as an emetic dose. For myself, my experience does not warrant the opinion that this oil is any thing better than the fixed oil which may be obtained by warm pressure, except that a little odor and taste of the ether cling to it persistently. I have repeatedly given a teaspoonful without any more effect than would be obtained from a teaspoonful of an ordinary infusion. This may be owing to no reliable specimen having yet fallen into my hands; and I would be pleased to hear from the profession on the subject.

IX. *Lozenges.* A pleasant lozenge may be formed by adding of strong acetous tincture, one pint, to four pounds of white sugar, and drying into a candy form at a quick heat. They are an efficient relaxing expectorant for irritable coughs.

X. *Compound Tincture of Lobelia and Capsicum, Antispasmodic Tincture, Thomson's Third Preparation.* Lobelia seeds and capsicum, each half an ounce; cyripedium, two drachms. Tincture with eight ounces of the Compound Tincture of Myrrh. This is the form in which Dr. S. Thomson made the compound which has become famous as the "Third Preparation of Lobelia." It is probably the most powerful stimulating and relaxing compound ever devised, making its impressions with wonderful force, and extending through the system, as Dr. Thomson well remarks, "like electricity." It will not secure the relaxation of lobelia; but powerfully arouses the stomach, the circulation, and the nervous system. It may be used in doses of a teaspoonful, or much more, in water or some demulcent infusion, when vomiting is required under circumstances of depression—as in narcotic poisoning, apoplexy from over-eating, membranous croup when lobelia alone will make no impression, etc. It is to be given at short intervals, so as to obtain very prompt action. In sudden depression of the pulse, all forms of collapse, and shock of injury, it is unequalled as a stimulant; and may be given in doses ranging from a few drops to one or two teaspoonsful, every five or ten minutes, till reaction is obtained. In drowning, it powerfully excites the fauces and ganglionic system; and half a tea spoonful or more poured into the mouth at short intervals, and made to run down the throat, may arouse a gasping effort at breathing which may save the patient. It is a most efficient antispasmodic, (§246,) and may be used in severe cases of lockjaw, hysteria, epilepsy, puerperal convulsions, and similar cases. In the latter maladies, it may be given by the stomach or as enema. For antispasmodic purposes, it is usually more intensely stimulating than even prostrated cases require; whence a variety of formulas has been proposed under the general term of *Antispasmodic Drops*. Dr. Wilkinson

employed equal parts of the saturated tinctures of lobelia seeds, cypripedium, and capsicum. My own formula for these purposes, is the following: Lobelia seeds, two ounces; caulophyllum, cypripedium, and anise seeds, each one ounce; capsicum, half an ounce. Macerate with a sufficient quantity of 60 percent alcohol; transfer to a percolator, and treat with the same alcohol till a quart has passed.

XI. *Balsam of Honey*. Under this title, Dr. Wilkinson offered the following compound in his Botanic Medicine: Tincture of lobelia, one pint; essence of anise and of sassafras, each four ounces; clarified honey, twelve ounces. So much alcohol is objectionable; and I have found it preferable to add fifteen drops each of oils of anise and sassafras to the tincture, by trituration with a suitable quantity of sugar, and then add the honey. It is a very efficient expectorant and antispasmodic in recent coughs, hooping-cough, dryness of the air passages, etc. Dose from ten drops to a teaspoonful.

XII. *Compound Pills*. Lobelia seeds, cypripedium, and asarum, each one ounce; softened extract of boneset, a sufficient quantity. Make into four-grain pills. One or two of these may be used at proper intervals as a mild nauseant and expectorant; but are of much value in ordinary nervousness, mild hysteria and neuralgia, nervous headache, and ordinary sleeplessness. I have also employed from two to four of them during the night, for chordee, and with success. Two every four hours will usually relieve the wiry pulse and nervous tension which often remain after an attack of inflammatory rheumatism.

XIII. *Stomach Pill*. Lobelia seeds, three ounces; apocynum, hydrastis and capsicum, each one ounce. Form into pills with a sufficient quantity of slightly softened extract of taraxacum. This is a good preparation in chronic atony of the stomach, with dryness or "slimy" of the mouth and bowels, and in cases of dropsy and atonic forms of digestion. One may be used after each meal; or at shorter intervals if desired. They promote evacuations in atonic and semi-paralyzed forms of costiveness.

XIV. *Suppositories*. Lobelia seeds may be incorporated with simple cerate, and the mass stiffened with a suitable quantity of pulverized gum Arabic, and made into small conical suppositories. Each suppository should contain three grains of these seeds; or they may be made so as to contain, each, two grains of lobelia seeds and three grains of powdered cypripedium. By moistening the suppository for a few moments in lukewarm water, it may be inserted into the bowel without trouble. I have used them for several years to the greatest advantage for all acute pains in the pelvic region and lower bowels, and especially for restlessness, acute or chronic ovaritis, sciatica, neuralgia and rheumatism of the womb, and similar forms of suffering. Their action is slow, but very persistent; and the relief they afford is sometimes remarkable. One may be introduced every twenty-four, twelve, or six hours, according to necessity; and they enjoy a great advantage over injections in being able to exert a steady influence for so long a time.

Lobelia also enters into a great variety of other preparations, the tincture being often combined with stimulants and the essential oils in liniments; and the seeds used to make relaxing ointments with lard or other unguent. A good relaxing embrocation may be formed by using a pint of a saturated tincture of lobelia seeds, (on 90 percent alcohol,) two ounces essence of wormwood, and enough common hard soap (about two ounces) to form it into an opodeldoc. For expectorant

uses, a few drops of tincture of tolu is excellent to disguise its taste. The mints, and the seeds of burdock, often moderate its nauseant impressions.

LYCOPUS VIRGINICUS

BUGLE WEED, WATER HOREHOUND

Description: Natural Order, Labiatae. Genus LYCOPUS: Perennial herbs, with square stems, resembling the mints. Leaves sharply toothed, sometimes pinnatifid. Flowers small, mostly white, in axillary whorls. Calyx bell-shaped, four to five-toothed; corolla bell-shaped, four-toothed, scarcely longer than the calyx. Stamens two, distant; the upper pair wanting, or with only sterile rudiments. L. VIRGINICUS: Stem ten to twenty inches high, obtusely four-angled, furrowed, erect, smooth, sometimes purplish, rarely branched. Leaves ovate-lanceolate, toothed, entire toward the base, on short petioles, glandular dotted beneath, dull green, often purplish. Flowers very small, in close capitate clusters; corolla white, tubular, four-lobed, but little longer than the calyx. August.

This plant is common in shady and moist places, especially northward. It is to be distinguished from *eupatorium teucrifolium*, also called water horehound. The whole plant has a faint balsamic odor, and a pleasant, slightly bitter taste, yielding its properties to warm water and diluted alcohol. The other species of this genus seem to be similar in their qualities.

Properties and Uses: This herb has always been set down by writers as a mild narcotic, on which account I long avoided its use. Dr. J. Overholt, of Columbus City, Iowa, first assured me that there was absolutely no narcotic quality about it; and my confidence in his judgment led me to employ it, and myself and many others have verified his opinion. It is indeed distinctly soothing, but acts upon the nervous peripheries and not upon the brain. Over-sensitiveness and irritability are relieved by it; but no stupor or sedation is induced. It relaxes the capillaries at the same time that it soothes arterial excitement; and thus slowly diverts the circulation outwardly, and relieves a too frequent and hard pulse, and lessens labored efforts of the heart. Prof. C. S. Rafinesque says in his *Medical Flora*, "it lowers the pulse without producing any bad effects, or accumulating in the system. Volumes have been written on the *digitalis*, a rank poison; and this excellent substitute is hardly noticed yet." Its influence on the pulse is not suited to febrile conditions; but rather to those forms of excitement connected with cardiac and nervous irritability, rheumatic and gouty taints, etc.

The action of the agent is relaxant and moderately stimulant, of the very mild tonic character, and apparently leaving behind a slightly astringed impression on mucous membranes. By equalizing the circulation and soothing the nerves, it relieves harsh coughs and arrests bleeding of the lungs, for both which purposes it is of great value. It has been much spoken of in consumption; and its soothing and tonic influence is much more favorable in that malady, than the relaxing expectorants which are so commonly employed. For pectoral purposes, it may be combined with *aralia racemosa*, *symphytum*, *prunus*, and similar agents. Rafinesque says the infusion is useful in sub-acute dysentery and diarrhea; and this statement I have had verified by Drs. Stafford and Snodgrass, of Indiana, and several others. It relieves the pain, diminishes the discharges slowly, and gradually gives tone to the alvine canal. It acts in the same manner upon the kidneys, lessening excessive irritation, (but not relieving actual diabetes mellitus,) abating enuresis, and relieving achings in the kidneys and bladder. I have several times been highly pleased with its action on nervous forms of spermatorrhea, and think it will be found of peculiar

service in this malady. And its soothing tonic influence is extended over the uterine organs, rendering it of service in neuralgia, and painful and excessive menstruation.

Dr. T. A. Wells, of Cincinnati, a few years ago informed me that this agent could be relied on to soothe and heal fistula in arousing it freely to drink and as a wash to the part. This information I have since verified a number of times in fistulas of an extremely painful character—some of them very large, in scrofulous patients, and in all respects of a most unpromising character. I used only a strong ointment, prepared of the solid extract triturated with lard; and in every instance had the satisfaction of seeing the pain abate, and granulation advance to a complete cure, with unexampled rapidity. A like success has attended my use of it in several cases of lachrymal fistula; and Prof. J. M. Mead, M. D., of Illinois, reports most excellent results from the use of it as a wash to the cavity of a large abscess in the lumbar region. I have also used it twice, with marked success, in chronic scrofulous ulceration of the nares and pharynx: and am of the opinion that it will be found of much efficacy in scrofulous sores and strumous conditions generally. In fistula, my experience has been so unexpectedly good as to warrant me in urging it warmly upon the notice of the profession in irritable cases; and Dr. Wells assures me that, by combining the free internal with the external use, it will prove equally reliable in absorbing the callosity and effecting a cure in other cases. It may be used as a snuff in catarrh.

Bugle weed is not used in the powdered form, but only as infusion or other pharmaceutical preparation. An ounce of the herb to a pint of water makes the ordinary infusion, of which from one to two fluid ounces may be employed every four or two hours. Much heat dissipates its soothing properties, on which account great care should be taken not to employ too high a temperature.

Pharmaceutical Preparations: I. *Extract.* This is prepared from a decoction by the usual process of evaporation. The temperature should at no time be raised above 150° F., else the soothing properties will be driven off, and a bitter and not always soothing article will remain. It may be used internally as a pill, in doses of from five to ten grains three times a day; or employed in the formation of an ointment. II. *Fluid Extract.* Macerate one pound of crushed lycopus in a sufficient quantity of forty percent alcohol, for twenty-four hours; transfer to a percolator, and treat with the same strength of alcohol till ten fluid ounces have passed; set this aside, and continue the percolation with water till exhausted; evaporate the latter on a water bath to six fluid ounces, and mix the two products. When thus made, this preparation represents the plant quite well; and may be used in doses of from twenty to forty drops three or four times a day. III. *Ointment.* Moisten two drachms of the solid extract with fifty drops of diluted alcohol, and mix with one ounce of simple cerate, and a sufficient quantity of olive oil to make it as soft as desirable. This makes a suitable ointment for all external appliances.

MAGNESIA

I. *Calcined Magnesia*: This is prepared by putting carbonate of magnesia into an earthen crucible, with a partly open lid, and subjecting it to a dull-red heat till the carbonic acid is expelled, which commonly requires about two hours. The product is a very light and bulky powder, pure white, without taste or smell. It is very sparingly soluble in cold water, and still less so in boiling water. It is mildly alkaline, and combines with the acids without effervescence. The sulphate of magnesia (epsom salts) exists abundantly in some localities, and in many German and some American springs; and is the source from which the various forms of magnesia are mostly prepared.

II. *Carbonate of Magnesia*: Dissolve ten ounces of sulphate of magnesia, and twelve ounces of carbonate of soda, each in a pint of boiling distilled water. Mix the two solutions, and evaporate to perfect dryness on a sand-bath at a heat below the boiling point. Digest the residue in a quart of pure water, wash thoroughly on a muslin filter, and dry at a temperature below the boiling point. This is almost identical with calcined magnesia in appearance and properties, but effervesces when mixed with the acids.

Properties and Uses: These two preparations of magnesia are among the mildest of all the alkalies, neutralizing acidity of the stomach, not proving corrosive if used in excess, and acting as a mild laxative. They are particularly used in heartburn, in rheumatic and gouty persons whose urine is charged with an excess of uric acid, and in renal difficulties where an alkali is indicated. They are far more acceptable to the stomach and bowels than any of the preparations of soda or potassa; but their insolubility renders them less convenient of exhibition. The carbonate, yielding its carbonic acid gas in contact with the acid of the stomach, is liable to occasion flatulence, whence the calcined article is to be preferred; but as this is liable to absorb carbonic acid from the air, and slowly to become a carbonate, it should be freshly prepared. Both varieties are used to neutralize acids in case of poisoning. Dose as a laxative, five to ten grains for infants, and fifteen to thirty grains for adults; as an antacid, five to ten grains. The powder may conveniently be mixed with milk. It is often compounded with rhubarb, and used for the diarrhea of children. The carbonate may be mixed with twice its own weight of cream of tartar, (bitartrate of potassa,) flavored with a little oil of cinnamon, and from five to ten grains given in sirup. It forms an effervescing compound which often allays excessive vomiting; and by repetition every four hours proves laxative. Both forms of this article absorb the essential oils readily, and render them capable of suspension in water by trituration—for which purpose they are much used in the preparation of Medicated Waters.

Citrate of Magnesia is a fashionable laxative at the present time. It is prepared by dissolving 450 grains of citric acid in four ounces of distilled water, and into this dissolving 120 grains of calcined magnesia. This solution is filtered, and poured into a strong twelve-ounce bottle with two fluid ounces of the sirup of citric acid. The bottle is then nearly filled with water, forty grains of bicarbonate of potassa added, and the bottle quickly corked and the cork tied down. It forms an effervescing solution of citrate of magnesia and potassa, the excess of free carbonic acid remaining in the water. From half to the whole of the contents of this bottle are needed as a dose; the cathartic action is brisk and often griping; it is too much like epsom salts to be a commendable purge, and has nothing but its pleasantness to recommend it.

MAGNOLIA GLAUCA

SWEET MAGNOLIA, WHITE BAY, SWAMP SASSAFRAS

Description: Natural Order, Magnoliaceae. The Magnolia family contains some of the most beautiful and fragrant trees of America. The genus is characterized by having the calyx three-sepaled, corolla six to nine-petaled, the receptacle elongated, and the pistils with their ovaries forming a cone-like fruit. When ripe, each carpel opens on the back; and from this fall one or two large, red, berry-like seeds, which hang suspended from one to several inches on extensile threads. The species GLAUCA is a small tree at the North, but quite a large one at the South. Leaves scattered, oblong-oval, thick, yellowish-green above, pale and glaucous beneath, silky-white beneath when young. Flowers large, creamy white, very fragrant, two to three inches broad; stamens numerous. Cone about an inch long. Most common along the sea-coast, but much cultivated in all parts of the country. An evergreen in the South.

MAGNOLIA ACUMINATA, or *cucumber tree*, often attains a height of sixty or ninety feet, with beautiful oval and pointed leaves from six to seven inches long by three or four inches broad. Flowers three inches broad, yellowish cream-colored, not very fragrant. Cone three inches long, and looking like a small cucumber when young. In rich woods of New York, Ohio, and southward.

MAGNOLIA TRIPETALA, or *umbrella tree*, has its leaves crowded at the ends of the flowering branches, where they form an umbrella-like circle. The leaves are sometimes twenty inches long by five inches broad, tapering both ways, and beautifully green. Flowers white, six to eight inches broad. Cone four to five inches long, and light rose-colored. Height twenty to forty feet.

The bark of the trunk of these three species is used in medicine, though that of the glauca is strongest. It has a pleasant, spicy, and balsamic aroma, and yields its properties to water and diluted alcohol.

Properties and Uses: This *root* is a mild tonic, with stimulating and relaxing qualities, and moderately diffusive. A warm infusion acts gently toward the surface, improving the pliancy and outward circulation, but scarcely procuring perspiration. It improves digestion, promotes the action of the kidneys and bowels gently, and sustains the nerves. Mild cases of indigestion, convalescence from typhoid and similar conditions of nervous prostration, and sub-acute rheumatism, are the cases in which it is generally used. Numerous accounts favor the idea that it is valuable as an antiperiodic; but probably it would meet only mild cases of the more nervous character. It is generally well received by the stomach. Dose of the powder, from ten to twenty grains. A tincture may be prepared on thirty percent alcohol. This article is similar to, but stronger and more stimulating than, the *liriodendron*, which is in the same family.

MALVA SYLVESTRIS

COMMON MALLOW, HIGH MALLOW

Description: Natural Order, Malvaceae. This plant has a perennial root, and a juicy, annual stem two to three feet high; sometimes cultivated in gardens, but common by road-sides in the East. Leaves large, broadly heart-shaped, soft, plaited, and slightly seven-lobed. Flowers resembling the well-known holly-hock, but more tubular, an inch in diameter, shiny, light purple, veined, on hairy peduncles in the axils of the leaves.

MALVA ROTUNDIFOLIA, the *low* or *cheese mallows*, is an insignificant and sometimes troublesome plant, growing near dwellings, procumbent, with nearly round and wavy-edged, leaves an inch in diameter; beneath which are concealed the small, white, short-pedunculate flowers.

Properties and Uses: These plants are very demulcent, with slight nervine tonic properties. An infusion may be used freely in irritation of the bowels, kidneys and bladder, and in dysentery and acute nephritic complaints. They make a desirable soothing remedy, and may be used to advantage with agrimony. They are also of much service as an outward application to inflamed surfaces.

MARRUBIUM VULGARE

HOARHOUND

Description: Natural Order, Labiatae. The root of hoarhound is perennial, while the stem is annual, growing in bushy tufts. Stem erect, one to two feet high, four sided, branching, looking gray from a fine woolly pubescence with which it is covered. Leaves round-ovate, wrinkled, crenate-toothed, petiolate, hoary beneath. Flowers numerous, small, white, sessile, crowded in axillary verticils; calyx with ten recurved teeth; corolla tubular, upper lip bifid, lower lip reflected and three-cleft. Common along fences near gardens, in thin soils.

This herb has a peculiar and slightly balsamic smell, and an aromatic and rather bitter taste. Water and diluted alcohol extract the greater portion of its properties, but water acts only to a very limited extent on its bitter principle. Boiling impairs its powers.

Properties and Uses: This herb is stimulating and relaxant, acting rather diffusively, but leaving behind a permanent impression which is somewhat tonic and astringent. The skin and mucous membranes are chiefly affected by it; and it is a longtime family remedy in recent colds and catarrhal coughs. A warm infusion acts moderately toward the surface, secures a slight perspiration, promotes the menses where they have been obstructed by recent exposure, relieves hysterical symptoms, and sometimes acts on the kidneys. A cold infusion creates a warm impression through the lungs, favors the ejection of viscid mucus, and sustains the vocal organs in congestion and hoarseness; but it is not a suitable agent to use in dry and irritable coughs, and patients with a tendency to spasmodic asthma often suffer a sense of suffocation on using it. Large quantities sometimes act on the bowels. The better mode of employing it for recent colds, is by infusing an ounce in a quart of warm water, of which from one to three fluid ounces may be given every hour or two. It enters into combination with various relaxing expectorants to form cough sirups, and is an ingredient of the Compound Sirup of Aralia. A popular candy is made with a decoction in sugar. A fluid extract has been prepared, after the manner of fluid extract of *eupatorium perfoliatum*; but it is seldom used.

**MATRICARIA PARTHENIUM [CHRYSANTHEMUM PARTHENIUM]
FEVERFEW, WILD CAMOMILE**

Description: Natural Order, Compositae. This is the *Pyrethrum parthenium* of Smith, and the *Chrysanthemum parthenium* of Persoon. It is a perennial herb that has been introduced to this country from Europe, and is mostly cultivated in gardens. It commonly grows two feet high, having a smooth stem with corymbs of snowy-looking flowers on the tops of the branches. Leaves alternate, bi- or tri-pinnate; segments ovate. Peduncles long and branching, with terminal flowers arranged nearly like a corymb. Flowers compound; rays either white and pistillate, or wanting; disk florets yellow and perfect, sometimes cultivated so as to enlarge the corollas into ligulate or terete limbs; pappus membranaceous. Receptacle hemispherical, naked. Involucre hemispherical, imbricated and pubescent; scales with membranous margins. Several varieties are cultivated by gardeners. The plant blossoms from September onward.

The whole herb is used for medical purposes, and has long enjoyed a reputation as a popular remedy in various forms of fever. There does not seem to be any difference in the qualities of the several varieties. The species *balsamia* is the English mint of our gardens.

Properties and Uses: This plant is a diffusible relaxant and stimulant, expending its influence upon the skin, uterus, nervous system and kidneys. In warm infusion, it secures a gentle and warm diaphoresis, inviting the blood outward, and relieving the head when there is pressure upon the brain with nervous prostration and excitement. This condition is often found after recent exposures to cold, in some cases of pleurisy, and as a sequence to parturition in some plethoric women where the lochia have been partially suppressed. It is in such cases that the feverfew will be most appropriate, securing a return of the lochia under the latter circumstances, as well as when the menstrual secretion has been choked from exposure; and it is second only to camomile in all such cases. Its combined influence upon the uterus and nervous system fits it for those acute cases of hysteria where the circulation is deranged and the uterus is irritable. For such purposes, it is best when given by warm infusion; but a cold infusion will often relieve mild cases of hysteria connected with flatulency. The action upon the kidneys is secondary—rather following as a consequence of the relief given to nervous excitement, and carrying out water only, than eliminating solids and proving serviceable in dropsies.

It would not be appropriate to use feverfew in cases of pneumonia, inflammation of the uterus, irritation of the spinal column, or inflammation of the brain. Those febrile and nervous excitements which are most common to the fall and winter, and where there is no local inflammation, are the cases to which it is best fitted. It may be used in mild typhoid cases after the system has been well cleansed of morbid materials.

The feverfew has enjoyed a reputation as a fomentation to the bowels in colic, and as a poultice in severe pain in the head, breast, or elsewhere. I can say nothing of these uses from individual experience. It is also said to be useful in those cases of worms where there are pain, swelling, and rumbling in the bowels.

It is used as either a warm or cold infusion. Some of its properties are volatile, and the vessel in which a warm infusion is prepared should be covered. Half an ounce of the dried herb to a quart of nearly boiling water is a convenient formula; and one-fourth of a cupful of this may be given every half hour, or oftener, according to the necessities of the case. The cold infusion is mostly used in female “nervousness” and worms.

MEL - HONEY

Honey is best when allowed to drain from the comb; pressure of the comb obtains a larger quantity, but an inferior quality. At first it is a thin fluid, usually transparent and yellowish; but by age it slowly becomes granular, and finally gets almost like suet. It contains saccharine materials in abundance, united with a peculiar acid principle.

This article is used largely as a table sweet, but is sometimes employed in medicine. It is demulcent, and at the same time moderately stimulant to the respiratory mucous membranes; and also acts upon the bowels, often proving cathartic, and sometimes griping. The principal use made of it is in combination with an infusion of sage or sumac berries or borax, for hoarseness and recent catarrhs. It is also employed with vinegar tincture of lobelia and other expectorants, to make oxymels.

MELISSA OFFICINALIS

BALM, LEMON BALM

Description: Natural Order, Labiatae. Stem in clusters, erect, branching, eighteen inches to two feet high. Leaves broadly ovate, deeply serrate, exhaling an odor much resembling lemons. Calyx bilabiate, upper lip flattened and three-toothed, lower lip two-cleft. Corolla white or cream colored, with a recurved and ascending tube, very sweet. Stamens four, curved, ascending under the upper lip. Flowers in small and one-sided clusters. Flowering in June and July.

Properties and Uses: This herb forms a pleasant and slightly aromatic drink, which may be used without hesitation by all classes of fever patients, in preference to cold water. It slightly favors the flow of sweat and urine, soothes the nerves, and sometimes promotes the menstrual flow moderately. It is a popular family remedy in recent colds, and an adjunct to less pleasant diaphoretics.

MELALEUCA CAJUPUTI
CAJEPUT

Description: Natural Order, Myrtaceae. A small tree, native to the East India Islands, with a crooked stem and numerous drooping branches. Leaves alternate, lanceolate, three to five inches long, dark green, smooth, quite aromatic. Flowers small, white; calyx five-parted, half superior; corolla five-stamened; stamens forty or more, the long filaments united into five bodies.

Properties and Uses: The leaves of this tree yield a small quantity of volatile oil, which is very fluid, transparent, of a beautiful emerald-green color, a strong and persistent odor, and a very pungent taste. If its green color is too deep, the article probably contains some oxide of copper, which may be precipitated with a weak solution of yellow prussiate of potash.

This *oil* is a powerful and very diffusive stimulant and relaxant. The chief use made of it is outwardly in liniments of the highly stimulating grade, designed for rheumatic and gouty patients, and for use in cholera and over the seat of deep inflammations. The better mode of using it is by adding a drachm of it to four ounces of olive oil; though there is no objection to adding it to tincture of lobelia or other relaxant. Its internal use is sometimes commended, especially in chronic rheumatism, cholera, painter's colic, and palsy. Given by the stomach, it is intensely heating, soon causing fullness of the pulse and a strong outward determination of blood; but it is scarcely employed thus, though doses of one or two drops may be given, in extreme cases of prostration, with an ounce of some good mucilage, but not alone nor as an essence. Used alone, or combined with oil of cloves, it may be used in carious aching teeth. When used in liniments, half a drachm to eight ounces of tincture is usually sufficient.

MENISPERMUM CANADENSE

YELLOW PARILLA, SARSAPARILLA, MOONSEED, VINE MAPLE

Description: Natural Order, Menispermaceae. Stem round, climbing, eight to ten feet long. Leaves alternate, peltate near the edge, three to seven angled or lobed, three to five inches long, and about the same breadth, smooth and very dark-green above, paler beneath, palmate-veined, veins often appearing on the upper surface as light lines radiating to the angles. Flowers small, in axillary clusters, dioecious; sepals and petals nearly white, petals smallest; stamens twelve to twenty; pistils in the fertile flowers two to four. Fruit a globular, black drupe, with a bloom, ripe in September, about a third of an inch in diameter, with a single flattened and crescent-shaped seed. Roots several feet long, horizontal a few inches below the surface, tough, round, yellow.

This neat climber is common in open woods where the ground is moist, throughout the Canadas, and as far southward as Tennessee. From being called sarsaparilla, it is often confounded with *aralia nudicaulis* and the smilax. The *aralia* is not climbing, and has a grayish- white and soft root; the smilax climbs, but it has tendrils, its leaves are oval and not peltate, and the roots are brownish.

Properties and Uses: The *root* of this plant is a slowly acting and rather permanent agent, moderately relaxant, but with stimulating properties predominating. It influences the mucous membranes, stomach, gall-ducts, and liver, and makes a distinct alterative-tonic impression upon all the secreting organs, and slightly increases the force of the general circulation. Its stimulating qualities fit it for cases of moderate depression; and it is not a suitable article for irritable and sensitive conditions. In small doses, its action is chiefly manifested upon the respiratory passages, where it increases expectoration and gives a feeling of stimulation to the lungs—an action which sometimes can be taken advantage of in the treatment of chronic and depressed pulmonary affections. The stomach is fairly improved by it, and the hepatic apparatus and smaller bowels distinctly influenced, whence it will lead to a free discharge of bile and to fair evacuations of the bowels. Such qualities fit it for use in biliousness, atonic indigestion with costiveness, agues, dropsy, and skin diseases. Its general glandular action makes it valuable in scrofula, secondary syphilis, mercurial rheumatism, scrofulous and indolent ulcers, and similar low conditions. While acting thus distinctly on the secretions, it sustains the circulation distinctly; and is in all respects a positive and reliable agent. Most commonly it is combined with more relaxing articles, as *rumex*, *fraxinus*, *celastrus*, and *arctium lappa*. It is not used in substance.

Pharmaceutical Preparations: I. *Decoction.* Menispermum, one ounce; seeds of *arctium lappa*, half an ounce. Digest for an hour in a quart of hot water, strain, and evaporate to a pint. Dose, a fluid, ounce three or four times a day. II. *Extract.* This preparation may be made from water; but the root contains properties that water will not fully dissolve, therefore a hydro-alcoholic extract is altogether a better article. It may be used in doses of from three to five grains. It is seldom used alone; but makes a good basis with which to incorporate leptandrin to form pills, when it is desired to maintain a tonic with a laxative action on the hepatic apparatus for some time. The extract used alone in considerable quantities, three times a day, is said to prove quite effective in so purging the liver and bowels as to eradicate ague. III. *Fluid Extract.*

A pound of the crushed roots is to be macerated for two days in a sufficient quantity of 60 percent alcohol; transferred to a percolator and treated with similar alcohol till seven fluid ounces pass, and the steps then completed as in other fluid extracts. This is a strong and valuable preparation, and may be used in doses of thirty drops three times a day, in any suitable alterant sirup. Like other preparations of this root on alcohol, it influences the pharynx and trachea sharply. IV. *Mensipermin*. This article is usually supposed to be a resinoid; but it is simply a refined alcoholic extract, prepared after the manner of cypripedin. It is of fair power, yet does not represent the plant so fully as does the fluid extract. Dose, three to five grains.

Menispermum is an ingredient in the Compound Sirup of Rumex, and in various preparations with the alterants and tonics above named.

MENTHA PIPERITA

PEPPERMINT

Description: Natural Order, Labiatae. Genus MENTHA: Aromatic herbs, with square stems, opposite leaves, small flowers in close axillary clusters, forming capitate whorls which are sometimes almost approximated into terminal spikes. Calyx tubular bell-shaped, five toothed; corolla with a very short tube, and somewhat bell-shaped and four-cleft border. Stamens four, equal and erect. This whole genus is marked by the distinct fragrance of the entire plant. M. PIPERITA: Stem one to two feet high, easily distinguished from others of the genus by its dark-purple color. Leaves ovate-oblong, short-petiolate, acute, smoothish and very dark-green above, paler and sparingly pubescent below. Flowers in crowded whorls toward the top of the stems, forming blunt, interrupted, and leafy spikes; corollas very small and pale purple; calyx and reduced leaves purplish-green. Root perennial.

This plant is common along water courses and wet places in all parts of our country, flowering from July to September. Its fragrance and pleasant taste depend upon a limited quantity of volatile oil, which is most abundant in the leaves. This oil is very powerful and penetrating, with an agreeable and quite warming taste; is pale lemon color when first obtained, but slowly becomes reddish and increases in density and color by oxidation; and is one of the most extensively used of all the volatile oils.

Properties and Uses: This *herb* is a diffusive stimulant and relaxant, acting as an anti-spasmodic and carminative. It is mostly used for flatulence and wind colic; but may be employed for other sudden pains and crampings through the abdomen, and in cardialgia, hysteria, etc. Most stomachs receive it gratefully, and it often allays vomiting; yet some persons greatly dislike it, and its stimulating qualities unfit it for use when the stomach is sensitive. Many suppose its action to be identical with that of spearmint, but it is quite a different article. The largest medical use now made of it, is as an adjuvant in preparations designed for diarrhea, cholera morbus, and cholera, in compounds with rhubarb. The infusion may be drank freely.

The *oil* represents the stimulating qualities of the herb more fully than the relaxing, and on that account is not always so acceptable to the stomach. It is employed for the same general purposes; yet the lack of the diffusive relaxation makes it preferable to employ the herb where it can be done. The oil is often used to advantage as an adjuvant in pills containing unpleasant or strong cathartic agents. A single drop, on sugar, is a fair dose; but it is best given in the form of an essence.

MENTHA VIRIDIS

SPEARMINT

Description: Natural Order, Labiatae. Generic characters as in the mentha piperita. Stems usually in tufts, from one to two and a half feet high, square, green, (not purple, as in peppermint.) Leaves almost sessile, oval lanceolate, incisely serrate, much lighter green than in peppermint. Flowers forming long (not blunt) terminal spicate whorls, slender, loose, and interrupted. Corolla light-purple, nearly white.

This plant, like peppermint, is common in wet places and along water courses. Distillation yields a free quantity of volatile oil, which is at first scarcely tinted yellow, but by age becomes yellowish-green. This oil has some of the aroma peculiar to oil of peppermint, but lacks its penetrating pungency.

Properties and Uses: Spearmint is largely relaxant, of the distinctly antispasmodic order; and though usually supposed to be identical with peppermint, is widely different from that article, and much more soothing and acceptable to the stomach. It is admirable for allaying nausea and vomiting, and relieving the colics of children; but is not so strongly carminative as peppermint, nor of so much use in spasmodic troubles. Its action is quickly diffused throughout the nervous system, especially influencing the nervous peripheries, while it at the same time promotes a free discharge of the watery portions of the urine. These qualities make it an agent of much service in sudden cases of nervousness, and hysteria of a mild form; and it may be used as a common drink in nervous forms of fever, and in recent suppressions of urine. Its whole influence is soothing; and though but transient, is admirable for a large variety of light and acute cases. If the stomach is nauseated, it may be given in quite small quantities of a very weak infusion—as a drachm to a pint, given in doses of a tablespoonful or less every fifteen or ten minutes, which rarely fails to arrest sympathetic vomiting; and is excellent for quieting the stomach after an emetic, and after the acuteness of a cholera morbus has been relieved. Being so largely relaxant, a too strong infusion may prove objectionable to most persons; and occasionally a patient is met who can not endure its taste at all. Two drachms to a pint make an infusion of suitable strength for most cases. When used for hysterical or other nervousness, it may be combined in smaller quantities with ginger.

The *oil* possesses the pleasant relaxing virtues of the herb, and is used for the same general purposes, though not always so agreeable as the infusion. It makes an excellent external application in the form of liniments; and will be found of much service over painful and neuralgic parts, especially over the spine and the large nerves when irritated. Combined with lobelia tincture and oil of rosemary, it forms, an admirable nervine liniment; and may be combined with similar agents in lard to make a nervine ointment. For inward use, it is commonly prepared as an essence, or in medicated water.

MENYANTHES TRIFOLIATA

BUCK-BEAN, BOG-BEAN, WATER SHAMROCK, MARSH TREFOIL

Description: Natural Order, Gentianaceae. An odd member of the Gentian family, found in the swamps of Europe, and from Pennsylvania northward and westward, in America. It is a plant with a perennial, creeping root-stalk, half an inch in diameter, dark reddish-brown, sending off numerous small fibers from its under surface; jointed in appearance, and sheathed with the membranous bases of the long petioles. Leaves on petioles six to twelve inches high, springing from the end of the rhizoma, each bearing at its summit three oval-oblong, obtuse, smooth, green leaflets. Flower-stalks (scapes) also rising from the root, a foot high, naked, round, smooth, bearing a raceme of pale flesh-colored flowers a-top. Calyx five-parted; corolla tubular or short funnel-form, with the margin deeply five-cleft, white below, flesh-red on the margins, white-hairy within; stamens five, with red anthers. Fruit an oval, juicy pod, with two valves, a single cell, and numerous small and shining seeds.

Properties and Uses: The *root* of buck-bean is relaxing and stimulating, of the tonic character—the stimulating property predominating. Its action is allied to that of the gentiana ochroleuca, but is not so intense. Its main influence is expended on the glandular structures, promoting the flow of bile and urine, acting fairly on the bowels and skin, and in large quantities sometimes proving emetic, as boneset does. The principal use made of it is as a tonic in company with alterants for such maladies as dropsy, scrofula, jaundice, and general biliousness. Considerable doses will so effectually purge the liver, gall cyst, and bowels, at the same time sustaining the strength and the outward circulation, that it is a quite popular remedy for intermittents through Michigan and other sections where it abounds, and was formerly in much repute in Europe. The article deserves more attention than has recently been paid to it by the profession. Dose of the powder, as a tonic and gentle hepatic laxative, five to ten grains three times a day. Water and diluted alcohol extract its virtues; and it is probable that a fluid extract would be an excellent preparation. The solid extract in doses of five grains, is still valued highly as an antiperiodic, in Germany.

It seems almost superfluous to put stress upon the use of any agent in ague, for which almost every person has a “sure cure.” The buck-bean, however, is worthy of investigation; for while it is not an antiperiodic in the sense of cinchona, it sustains the liver, spleen, and portal circulation to decided advantage in those cases where bark and its preparations cause too great cerebral excitement.

MITCHELLA REPENS

SQUAW VINE, PARTRIDGE-BERRY, CHECKER-BERRY. ONE-BERRY

Description: Natural Order, Rubiaceae. In the same Family with cleavers, madder, and button bush. Genus MITCHELLA: Small, smooth, evergreen herbs, with opposite leaves and procumbent stems. Flowers two on each double ovary, calyx four-parted ; corolla small, funnel-shaped, hairy within; stamens four, inserted on the corolla. Fruit a red berry about the size of a pea, composed of two united ovaries. M. REPENS: Stem creeping, small. Leaves half an inch long, roundish-ovate, on short petioles, flat, very dark green, tough. Flowers generally but two at the extremity of the stem; corolla white tinged with rose-red, tubular, one-fourth of an inch long, four, five, or even six-parted, very fragrant. Berries at once distinguished by their double structure, bright red, of a pleasant flavor, full of stony seeds, remaining on the stem all winter. Blooming in June.

This lowly evergreen is found throughout the Northern States and Canada, in open woods, prostrate among the fallen leaves and brush, usually growing in tufts. From the similarity of common names, it is generally confounded with the gaultheria procumbens; but gaultheria is not a creeping stem, its red berry is round instead of being two-parted, and its leaves are large and peculiarly fragrant—characters which at once distinguish it from mitchella. As it comes to market dried, it is a peculiarly dark-looking plant; with a not unpleasant yet permanently bitterish taste. Water and diluted alcohol extract its qualities readily.

Properties and Uses: This *herb* is claimed by the Eclectics, simply because they “selected” it after others had taught its use. It was largely employed by the people of New England as a family remedy as early as 1820; and the Thomsonians of that section made much use of it from 1823. Dr. J. Masseker, of New York, used it extensively from 1825 onward, while the Eclectics did not “select” it till 1836. When Dr. J. King says, in his Dispensatory, that this article is not “noticed or used by other practitioners” than the Eclectics, I am sorry to say that he utters what I think *he knew* was wrong; as “other practitioners” taught Eclectics how to use it.

This article is mildly stimulating and slightly relaxing, exerting its influence rather slowly but persistently, and leaving a gentle but desirable tonic impression upon the frame. The greater portion of its power is expended upon the uterus, where its action is tonic and moderately antispasmodic; but it also influences the kidneys, testes, and the entire nervous system as connected with the generative organs. The chief value set upon it by most physicians is for its soothing and strengthening influence upon the uterus in hysteria, leucorrhœa, prolapsus, and rheumatic or neuralgic pains, and chronic painful menstruation. Its action in all these connections is of the most beneficial character; at the same time that it steadily maintains a fair secretion of urine, and relieves aching of the back. It has been commended in dropsy and gravel, but is only secondary in value. Used for several weeks before parturition, it allays the uterine crampings incident to the latter period of gestation, and so strengthens this organ as to make an easy labor much more probable.

The attention of physicians has been so much fixed on the above uses of mitchella, that its influence upon other portions of the system has almost been overlooked. For all forms of

nervous feebleness and irritability of a chronic character, it is an excellent agent; and it exerts a highly favorable influence over spermatorrhea. I have used it largely in the management of this malady, especially in combination with the flowers of althea, celastrus, and uva ursi, and commend it earnestly to the profession. On the mucous membranes it exerts a mild tonic influence, which slowly abates excessive mucous discharges, and has led most writers to pronounce it an astringent; but this action is wholly tonic, and may be used for catarrhal and leucorrhœal discharges, as well as for chronic dysentery.

When used alone, it should be made into a decoction by digesting an ounce of the herb in a quart of boiling water for an hour, straining with pressure, evaporating to half a pint, and giving two fluid ounces three times a day.

Pharmaceutical Preparations: I. *Compound Sirup Mitchella, Mothers Cordial.* Mitchella, one pound; viburnum, (cramp bark,) helonias, and caulophyllum, each four ounces. Crush well, and macerate for three days in a sufficient quantity of diluted alcohol. Transfer to a percolator, treat with diluted alcohol, and reserve the first three pints that pass; then treat with boiling water till exhausted, add two pounds of sugar, evaporate to two pints, and mix with the reserved liquid. Some speak of using brandy instead of diluted alcohol, but this is not now pursued in practice.

This is almost the only form in which mitchella is used at the present time. It was first suggested by Dr. Sweet, of Connecticut, (to whom the entire profession is under obligations for teaching the natural method of reducing all dislocations by the process of “manipulation,”) as early as 1826. He published his formula in the *Botanic Vindicator* and other journals, and it was in common use by the old Thomsonians as early as 1830. Prof. King introduces the formula into the later editions of his *Eclectic Dispensatory*, with his initials appended to it, thus claiming as his own a valuable preparation that was extensively employed in the section where he formerly lived, probably before he was old enough to study medicine. C. Gardner, M. D., now of Lee Center, Illinois, but formerly of Newport, R. I., tells me this preparation was employed extensively in the Thomsonian Infirmary with which he was there connected, prior to 1833. “Honor to whom honor;” and let these Eclectic “selections” be ventilated. The first edition of the *Eclectic Dispensatory* gave the formula without Dr. King’s initials; which shows that his laying claim to it was an afterthought. (See *Hydrastis*.)

This preparation is one of great value in all nervous and uterine difficulties incident to females, including weakness of the back, leucorrhœa, prolapsus, cramps, persistent menstruation. Few compounds in the whole range of Pharmacy are so mild in action, yet at the same time so reliable. The usual dose is a large tablespoonful three times a day, but a larger quantity may be used. I have had the happiest results in treating spermatorrhea by combining one ounce of the fluid extract of celastrus with a pint of this sirup.

MONARDA PUNCTATA

HORSEMINT [BEE BALM]

Description: Natural Order, Labiatae. The genus to which this plant belongs, is characterized by an elongated and striated calyx, and a ringent-tubular corolla, of which the upper lip is linear and has the two stamens ascending under it. The species PUNCTATA has a square stem two to three feet high, obtusely angled, and the whole plant minutely pubescent. Leaves oblong-lanceolate, tapering to a petiole, remotely serrate, nearly two inches long. Flowers in a few dense verticils, subtended by colored bracts which are longer than the verticils; corolla pale-yellow, marked strongly with brown spots. Grows abundantly in somewhat thin soils, from New Jersey westward and southward. In the West it is often four feet high and openly branched. Blooms in August and September. The *mentha canadensis*—a grayish pubescent plant, with a hairy calyx, purple corollas, and no colored bracts below the verticils is often mistaken for this plant, as both are popularly called horsemint. The *monarda fistulosa* is also called horsemint and wild bergamot; and has a purplish and hollow stem, leaves from two to four inches long on petioles half an inch long, and whitish-blue corollas an inch in length. The properties of the three plants are somewhat similar, but the *monarda punctata* is the most valuable.

Properties and Uses: This herb is diffusively stimulating and relaxant, of the distinctly carminative nervine and anti-spasmodic order. It makes a grateful and useful addition to diaphoretic drinks in the treatment of recent colds, catarrhal and typhus fevers, and measles; and sustains the nervous peripheries and outward circulation well. It is used by infusion. By distillation it yields a moderate quantity of a yellow-green oil, which is very fragrant, and forms an excellent ingredient in nervine liniments containing such articles as tincture of lobelia and oil of rosemary. Oil of organum is often substituted for it; but *monarda* possesses a nervine action not found in the more fiery organum.

MUCUNA PRURIENS
COWHAGE, COWITCH

Description: Natural Order, Leguminosae. This plant is most familiarly known by the name *Dolichos pruriens*. It is a native of the West Indies and tropical America, where it climbs about shrubs and trees to a considerable height. “Calyx campanulate, bilabiate, the lower lip trifold with acute segments, the upper lip broader and entire. Corolla very large, pea-bloom shaped, beautiful purplish or red, the wings and keel longest. Stamens diadelphous. Fruit a large legume, about four inches long.” (*DeCandolle*.) Leaves of three pinnae, alternate, about twelve inches apart, and on petioles. Flowers in loose spikes a foot long, hanging from the axils of the leaves, and presenting a brilliant appearance. The pod is covered with brown hairs, rather stiff, sharp, an eighth of an inch or more in length, and which easily separate from the pod on handling. These hairs are the portion used in medicine; and penetrate the flesh on handling, causing sharp itching.

Properties and Uses: The *hairs* or *bristles* of cowhage pods are employed as a vermifuge, and seem to act against the several species of worms, except the tape-worm. They are given in substance, and seem to act by piercing the worm, as no fluid preparation of them is of any worth as a vermifuge. They are most effective in cases where the abdomen is distended, and the bowels are disposed to be too loose, with mucous discharges. Their action then is really excellent, and I have rarely found them to fail; but in cases where the patient is costive and the bowels sensitive, they are not a suitable remedy. The dose for a child may be an even teaspoonful, thoroughly mixed with molasses or other tenacious fluid, and given each morning for three days; and then followed by a cathartic, and afterwards by a suitable tonic.

MYRICA CERIFERA

BAYBERRY, WAX MYRTLE, WAX-BERRY, CANDLE-BERRY

Description: Natural Order, Myricaceae. Genus MYRICA: Shrubs, with dioecious flowers, without calyx or corolla; sterile flowers in oblong and cylindrical catkins, female in ovoid catkins, and both kinds closely imbricated, and with a pair of scale-like bractlets; stamens two to eight, with the filaments often united at their bases. Fruit a small globular nut covered with wax. M. CERIFERA: Branching and bushy shrubs three to eight feet high. Leaves oblong-lanceolate, narrowed at the base, two to three inches long, petiolate, remotely dentate toward the apex, dark green, smooth, shining, with resinous dots on both sides, slightly fragrant. Female flowers (on separate plants) of an ovate ovary and two styles, and with narrow scales. Fruit round, half the size of a pea, in small and sessile bunches, green when young, greenish-white when old, sometimes remaining on the branches for two or three years. The surface is covered with quite an incrustation of greenish-white wax. The flowers appear in May. Both kinds of flowers appear on the sides of last year's branches, and thus below the leaves of the present year.

This pretty and pleasant-smelling shrub is very abundant in some sections of the United States, preferring sandy soils and a position near flowing water. The wax has been sparingly used in medicine for some time. It may be obtained by boiling the berries in water, and skimming the wax off the surface as it cools. The color is grayish-green, it is somewhat more brittle and greasy than beeswax, and has a slight and pleasant odor. The bark of the root is the most valued medicinal portion. The best qualities are gathered in the fall, are grayish-brown without and red within, of a pleasantly-penetrating odor, and of a stimulating and astringing taste. Water extracts most of its virtues; and alcohol or diluted alcohol takes up a larger portion of its stimulating than astringing qualities.

Properties and Uses: Though this *bark* is virtually unknown to the Materia Medica of Allopathy, it is a peculiar and a singularly valuable remedy, and one of great power. To Dr. Samuel Thomson is due the honor of introducing it to medical use. It combines stimulating and astringing powers in about equal proportions, is very decided and persistent in its action, and brings the whole frame under its influence. The entire circulation is slowly but steadily elevated by it, and a good outward flow of blood secured; and it leaves upon all the tissues of the body an astringing tonic impression of peculiar value in a large number of cases. While its astringency is sufficiently felt by all the mucous membranes, and contra-indicates the use of the article in any case where there is a tendency to deficient mucous secretion, it is not so distinctly drying as astringents of less power that do not combine stimulant properties. Indeed, it promotes an increase of mucous secretion in cases where these tissues are lax, and also increases the salivary flow somewhat.

In warm infusion; bayberry favors perspiration, followed by an increase of arterial and capillary firmness and a general tension of the tissues. Combined with relaxing diaphoretics, it may be used to advantage in recent colds and other cases of depression and laxity. A strong infusion, especially in large quantities, is nauseating, and is even quite disgusting to some stomachs, though not creating the same kind of impression as lobelia or other relaxant. Large doses of the

infusion are likely to cause prompt contraction and stimulation of the stomach, with vomiting; and though not used alone for this purpose, it forms a most suitable article to use in the drinks usually given in ordinary lobelia emetics. So prompt may be its effects—the absorbent vessels of the stomach being at the same time closed by its astringent action—that it is highly probable this article may be found serviceable as an emetic in cases of poisoning by a narcotic that is still in the stomach. I used it thus in one case, giving it rapidly, and with good results. A similar infusion may be used in cramping diarrhea, (but not dysentery;) and is of the first value, either alone or in combination with suitable stimulants, in uterine hemorrhage, and hemorrhage from the bowels and lungs. In flooding and excessive lochia, it has no superior, unless it is capsicum; and when combined with a limited portion of the latter agent, its power in arresting such hemorrhages is so great as to be deserving of the word unfailing. And this article unquestionably exerts a direct stimulating influence on the uterus, leading to its firm contraction in cases of labor where the circulation is sluggish and the parts flaccid; whence it is a valuable parturient under such circumstances, and at the same time anticipates flooding.

Used in cold preparations, it can be employed in chronic menorrhagia, and leucorrhea with prolapsus. For such purposes, it is combined with relaxing tonics in excess; and it is noticeable that the bayberry then is scarcely liable to cause constipation, its influence seeming to be spent wholly on the vaginal and uterine membranes. This fact is observed in a more marked degree when bayberry is used in the treatment of degenerate scrofula; for it is an article of great value to combine with an excess of alterants in low forms of that malady, where it imparts stimulation and a solidifying influence that are peculiarly desirable, yet rarely induces costiveness to any material extent. In cachectic conditions of all kinds, and especially in the low forms of secondary syphilis, and in mercurial sores, it is an admirable agent. In chronic diarrhea and dysentery, in colliquative discharges under all circumstances, and even in colliquative perspiration, it is valuable; and may be used to fine effect in the exhaustive discharges and hemorrhage from the bowels which occasionally set in during the latter stages of a typhus fever. It is a powerful agent in most compounds for cholera. Dr. J. W. Martin, of Peoria, Illinois, informed me that he had used this article with the happiest results in several cases of goiter, the thyroid enlargement in every instance steadily giving way before its influence, and in two cases disappearing entirely. He gave ten grains of the powder three times a day; and if any costiveness resulted, (which was rare,) he corrected it by a suitable nightly dose of leptandrin.

As an external application, this article may be used as a gargle in aphthous sores, diphtheria, and mercurial ptyalism; in which cases it is usually combined with hydrastis, or capsicum, or both, but of itself exhibits a peculiar power of securing healthy action and arresting a putrefactive tendency. The term “canker” is commonly applied to the degenerate ulcerations of aphthae; and as this condition not uncommonly extends through the entire alvine canal, and may exist in the stomach and bowels quite independently of sores in the mouth, the bayberry becomes valuable in all cases where such a state of the mucous membranes exists. On this account, as well as its astringent tonic action, it is an admirable injection in foul leucorrhea, and chronic or semi-malignant ulceration of the cervix uteri. I have found great benefit in applying it in the powdered form to Hunterian and phagedrenic chancres—combining it with a half portion of lobelia and a modicum of cayenne, if it proved too drying to the sore. As a wash to fungous ulcers, and spongy or bleeding gums, and in scurvy, and an ingredient in poultices or carbuncles, open buboes, and similar low and gangrenous sores, it can be employed reliably. With

hydrastis in excess, it forms a good snuff in catarrh; but may have a small portion of bitter root associated with it, if the discharge is viscid or the bayberry prove too drying. Combined with a small portion of sanguinaria, it has proven of service in the soft forms of nasal polypus.

This is somewhat extended praise to bestow on a single remedy, but this article fully deserves all here said of it. Its action can not fairly be judged of by comparing it to other stimulating astringents, as is commonly done; for it exerts a peculiar tonic influence throughout the frame, and has an especial use in the scrofulous and cachectic affections where it is customary to employ alterants alone. Yet there are many cases where bayberry should not be used, as for instance in typhoid fever, pneumonia, and similar acute maladies in their first and second stages, where it would be inadmissible to shut up the emunctories and to dry the respiratory mucous membranes; in acute dysentery, vaginitis, irritable forms of leucorrhea, acute or chronic gastritis, irritable ulcers, dry sores of any grade, and similar conditions. Even in giving emetics, where bayberry is of great value in aiding prompt contractions, and securing the loosening and ejection of viscid phlegm, it is an improper article to give when the stomach is afflicted with burning sensations.

The powdered bark may be given in doses of from five to ten grains, and repeated every six, four, or two hours, according to circumstances. Some writers speak of thirty-grain doses, which would probably be rejected by most persons; though it is less nauseating to a healthy than to an unhealthy stomach. Most commonly it is given as infusion, in combination with other agents to suit the case in hand; and then twenty grains of bayberry would be a sufficient proportion for a pint of water in ordinary cases. In compound sirups or other similar preparation, from four to six ounces of bayberry is usually sufficient for each gallon. As with other astringents, no iron vessel should be used in treating it.

Bayberry *wax* has been commended as a soothing agent in sub-acute dysentery and diarrhea, in doses of half a drachm three times a day; and though an agent of some service, is seldom employed thus at present. Some accuse it of possessing narcotic powers, but there is no ground for believing that to be the case. Its best use is as an outward application, where it forms a good ointment for ringworm, tetter, tinea capitis, and other dry and excoriated sores.

Pharmaceutical Preparations: I. *Tincture*. Macerate four ounces of the bark in diluted alcohol for three days; transfer to a porcelain percolator, and treat with diluted alcohol till a quart of tincture is obtained. Alcohol seems to dissolve more of the stimulating than the astringing principle; whence this preparation is of service in gargles for mercurial ptyalism, diphtheria and scarlatina, where the stimulant and antiseptic qualities of the article are desirable. If prepared on forty percent alcohol, so as to make it miscible with water without turbidity, it may be used as an addendum to alterative sirups in cachectic and scrofulous cases. It is seldom employed. Dose, from half a teaspoonful to two teaspoonsful. II. *Fluid Extract*. Treat one pound of crushed bark with 60 percent alcohol for two days; transfer to a porcelain percolator, and use the same alcohol till ten fluid ounces pass; exhaust the drug with hot water, evaporate to six fluid ounces, and mix the liquids. This is quite a concentrated and powerful article, mainly stimulating, but distinctly and permanently tonic-astringent. It is oftenest employed, for its convenience, in those cases of tardy labor to which bayberry is applicable, uterine and intestinal hemorrhage, bleeding from the stomach, cholera, and similar urgent cases. Dose, five to ten drops, in sirup or some warm

infusion, as often as circumstances demand. III. *Myricin*. This was formerly supposed to be a resinoid, and a limited quantity of an inferior article was obtained by reducing a saturated tincture, and precipitating with water, as in podophyllin. Dr. H. H. Hill, of Cincinnati, was the first to point out the falsity of this procedure; inasmuch as the product thus obtained was not a resinoid, but an extractive only moderately soluble in water. The course now followed, is that of making a tincture on absolute alcohol, (90 percent will do,) evaporating this to the consistence of a thin sirup, pouring this (while hot) into four times its own bulk of water, and collecting the separated myricin on a filter. This is then carefully dried and powdered. It is a preparation of the same class as cypripedin; and represents the stimulating qualities of the bark fully, and the astringent only moderately. It is used in doses of from one to three grains in chronic diarrhea, and scrofulous (or scorbutic) diarrhea, cholera, hemorrhage from the stomach or bowels, and similar cases.

IV. *Composition Powder*. Under this head, Dr. S. Thomson employed the following mixture: Bark of myrica, two pounds; inner bark of hemlock, and roots of ginger, each, one pound; capsicum and cloves, each, two ounces. An infusion of this—was by him used in giving emetics, in recent colds, colic, diarrhea, tardy parturition, flooding, the incipient stage of fevers, fainting, and all similar cases. It is a powerful stimulating and astringing preparation, and one of great value in prostrated cases of the classes named. There is in it, however, a great excess of astringency; which is not suitable to a large number of cases, and which would be a disadvantage in many others. In large doses, it is often quite unpleasant to the stomach; and most patients object to its continued use, on this ground. The quantity of capsicum and cloves makes it more intensely exciting than is desirable in many instances. While the compound is one of unquestioned power in the lower conditions of the frame, it often has to be laid aside on the grounds above named. Physicians have thus been led to adopt a great variety of formulas; and to suggest numerous compounds as substitutes for this one of Dr. Thomson. Among the most successful of these, is that offered by my colleague in the Physio-Medical Institute, Prof. S. E. Carey, as follows: Myrica, two pounds; zingiber and asclepias tuberosa, each one pound; capsicum, one ounce. To this might be added two ounces of hydrastis, when it was desirable to increase the tonic action of the article, and especially when such a tonic influence is needed on mucous membranes. But even here, though asclepias is substituted for hemlock and the cloves omitted, the value of the preparation is lowered, in many cases, from the excess of astringency. This led me to suggest a still different preparation, with reference to combining relaxation, stimulation, and astringency, in nearly equal force; and yet so to harmonize them that a moderate addition of either one would so change it as to suit especial requirements. In this way, it was designed to form a compound that would meet the largest possible range of acute cases. My formula is as follows; and as it has received the sanction of the great majority of the large number of old practitioners to whom it has been submitted, it is now fairly to be considered as the officinal composition:

Officinal Composition: Myrica bark, asclepias tuberosa, and zingiber, each one pound; bark of xanthoxylum fraxineum, four ounces; capsicum, half an ounce. Mix the powders intimately. Half an ounce of the compound is usually sufficient for a quart of boiling water, in preparing an infusion; and from a half to three fluid ounces may be given at such intervals as may be desirable. It is more diaphoretic and more softening to the pulse than Dr. Thomson's formula; but is used for the same general purposes. The taste is pleasant, and the stomach usually receives

it quite well. If greater astringency is desired, a suitable amount of bayberry may be added; or a proper additional amount of capsicum, if greater stimulation is needed. Combined with two ounces of hydrastis, it forms an admirable warm drink in dropsy, the dropsical or other sequelae of scarlet fever, and similar states of enfeebled action; though it is not suitable even there, if the respiratory mucous membranes are disposed to be dry. The same combination, used cold, is an excellent tonic for languid stomachs. Three parts of this composition with one part of caulophyllum, make the most effective parturient that can well be devised for all cases except such as present a distinct tendency to dryness of the vagina and rigidity of the os tinea; and the same combination rarely fails to secure the early expulsion of the placenta, arrest hemorrhage, maintain the lochia in due quantity, and anticipate all tendency to prolapsus; and is also excellent for painful or profuse menstruation.

V. *Compound Sirup of Myrica*, Dr. Thomson's "No. 5." Mix, one pound each of crushed myrica and bark of populus tremuloides. Macerate for twenty-four hours in two quarts of thirty percent alcohol; transfer to a porcelain percolator, and add water till three pints pass, which set aside. Continue the percolation with hot water till exhausted; add five pounds of sugar, and evaporate to five pints. Mix the two products. Previously tincture, for seven days, four ounces of crushed peachmeats in a quart of brandy; now filter this through muslin, with suitable pressure, and add to the sirup so soon as the latter is cold. This formula was introduced to the profession by Dr. Samuel Thomson. It is an admirable tonic, of soothing and astringing action, of great value in debility of the stomach and bowels with a tendency to diarrhea. Different processes are followed in preparing the formula; but I. have found the above the most economical and satisfactory. Dose, half to a whole fluid ounce, three times a day.

VI. *Compound Ointment of Myrica*. Take half a pound each of bayberry tallow and sweet gum; spermaceti and lard, each six ounces; olive oil, two ounces. Melt the spermaceti and lard first, then add the other ingredients, strain through thin muslin when thoroughly melted, and stir constantly till cold. Care should be taken not to raise the heat too high. This is a very valuable ointment for ringworm, tetter, porrigo, tinea capitis, acne, and other irritable and dry forms of cutaneous disease. The quantity of olive oil may be increased or diminished, according to the temperature of the season and the dryness of the sweet-gum used.

This bark is an ingredient in the Compound Wine of Columbo.

MYRISTICA MOSCHATA

NUTMEG, MACE

Description: Natural Order, Myristicaceae. The nutmeg is a native of Sumatra, Java, and other islands and districts of the East Indies; and is now cultivated to a limited extent in the West Indies and tropical America. It is a tree from twenty to thirty feet high, with numerous branches, bright- green leaves, and small dioecious flowers. It may be grown from the seed, usually begins to bear flowers and fruit about the eighth year, and then continues annually productive for a long time. The fruit is oval, about the size of a medium peach, smooth, and yellowish when ripe. The outer covering is thick and fleshy, and becomes leathery and dry as it ripens. Inside of this is a reddish or orange aril, thin, smooth, and variously split, which is known in commerce as *mace*. Within the mace, and closely covered by a thin shell, is the seed of the fruit, which is the *nutmeg* of commerce.

Both mace and nutmeg are very fragrant, and are among the most valued of the spices for culinary use. Nutmegs yield a notable quantity of volatile oil by distillation, and by pressure a smaller quantity of an oily substance which becomes solid on cooling. This latter substance is yellowish or orange colored, and of a greasy feel. The round nutmegs are the best. Alcohol and ether dissolve their oils effectually. Mace contains a little volatile, and two fixed oils, with a large quantity of gummy material. The pale and brittle varieties are least valuable. Alcohol and ether extract most of their properties. The two articles are nearly the same in qualities, but the nutmeg is the more agreeable.

Properties and Uses: Nutmegs and mace are warming spices, diffusive, and moderately stimulating. They are principally used to cover the taste of disagreeable medicines, and their flavor is among the most agreeable of all agents of this class. They are accused, however, of possessing decidedly narcotic powers; and the U. S. Dispensatory says “in the quantity of two or three drachms, it has been known to produce stupor and delirium.” This fact was probably not known to Prof. A. Curtis, when he recommended it in doses of ten grains once an hour in typhoid fever. Although an ingredient in such preparations as Compound Spirit of Lavender and Aromatic Sirup of Rhubarb, and no doubt very mild in its narcotic action, it is nevertheless an article that can not fairly be commended.

MYROSPERMUM PERUIFERUM

BALSAM PERU

Description: Natural Order, Leguminosae. This is a large tree native to the forests of South America, and especially to Peru. Leaves alternate, with five pairs of leaflets. Flowers white, on long and woolly racemes in the axils of the leaves. Incisions in the bark are followed by a balsamic exudation, which is caught upon rags; and then purified by boiling the rags in water, and skimming off the balsam as it rises. This balsam is of the consistence of very thick molasses, of a reddish-brown color, and a peculiar and penetrating odor that is very agreeable. Alcohol dissolves the larger portion of it; and it may be mixed with water by trituration with mucilages, as in emulsions. A variety, said to be obtained from the fruit, is pale-yellow; and may be so dried as to be reducible to powder.

MYROSPERMUM TOLUIFERUM, *Balsam of tolu*. This is obtained from another species of the same genus as the above balsam of Peru. It is of a reddish or orange-yellow color; at first thin, but subsequently becoming firm, and finally almost brittle; and with a fragrance and other properties closely allied to the Peru balsam.

Properties and Uses: These two balsams are so nearly alike in character, that they may be considered together. They are pleasant but pungent to the taste; exert a marked stimulating influence on the respiratory mucous membranes; and promote expectoration, at the same time giving a warming impression throughout the lungs. They are wholly improper to use in irritable or inflamed conditions, being suitable only to states of debility or lingering congestion. At present, they are rarely employed alone; but are added to relaxing expectorant sirups, both to sustain the action of the latter, and to impart a pleasant flavor. The balsam of tolu is the pleasanter article. From one to two drachms of the tincture is sufficient to flavor a quart of ordinary sirup, as of lobelia. When a small portion of either is burned, it fills a room with an agreeable aroma, and promotes expectoration; and a milder fragrance is given to the atmosphere by adding a few grains to a quart of boiling water. The tincture is prepared by dissolving three ounces of the balsam in a quart of diluted alcohol, and then filtering. The sirup is made by intimately mixing a fluid ounce and a half of the tincture with two and a half pounds of sugar, evaporating all the alcohol at a low heat, and dissolving the impregnated sugar in a pint of water. When thus prepared, it has a milky appearance. Mr. Finley proposes the following method, by which the milkiness is avoided: Rub two fluid ounces of tolu tincture with two drachms of carbonate of magnesia and two ounces of powdered sugar; gradually add twelve fluid ounces of water by trituration, and filter; add to this twenty-two ounces of sugar, and dissolve at a low heat in a covered vessel. This may be added to cough sirups without occasioning turbidity.

MYRTUS PIMENTA

PIMENTO, ALLSPICE, JAMAICA PEPPER

Description: Natural Order, Myrtaceae. Pimento is a beautiful evergreen tree, native to the West Indies, Mexico, and tropical America. Trunk twenty to thirty feet, covered with a smooth gray bark, much branched above, dense with deep-green and shining leaves three or four inches long. Flowers quite small, and in terminal panicles. Fruit a hemispherical berry about the size of a pea, nearly smooth, dark brown, with a very pleasant flavor resembling a mixture of cloves, nutmeg, and cinnamon. They yield a small portion of light volatile oil by distillation; and a green and pungent fixed oil by pressure. Water extracts a large portion of their virtues, and diluted alcohol acts on them almost completely.

Properties and Uses: This *berry* is much used as a condiment, and is one of the lightest and pleasantest of the spices. It is diffusively stimulating, leaving behind a mild astringent impression, and usually proving very acceptable to the stomach often allaying vomiting. The chief use made of it, is as an aromatic to disguise the taste of very bitter articles and relieve the griping of cathartics. An infusion is a popular remedy in colic, infantile diarrhea, cholera infantum, bleeding from the lungs, and even excessive and painful menstruation. It is a good agent in such connections, and deserves consideration; especially from the pleasantness of its action, and the promptness with which it distributes the circulation outwardly and sustains the nervous extremities. A drachm of the crushed berries may be digested in a pint of hot (not boiling) water, and given freely.

NARTHEX ASAFOETIDA

ASAFOETIDA

Description: Natural Order, Umbelliferae. The *Ferula asafoetida* of some writers. This plant is a native of Persia, Afghanistan, and contiguous Asiatic provinces. The following **description** is abridged from Willdenow: Stem herbaceous, six to nine feet high, erect, smooth, without branches, two inches in diameter below, terminating in a very large head of compact umbels. Leaves radical, numerous, nearly two feet long, three-parted, spreading, leathery, light-green above; segments oblong-lanceolate, bipinnatifid; the stem rising in the midst of this leafy mass. Flowers small, pale-yellow. Root perennial, fleshy, tapering, about three inches at the top.

The roots of this plant abound in a thick, milky juice, which has a peculiar and intense odor, rather of a garlic fetor. This juice, when collected and dried, constitutes the part used in medicine. It is gathered as the leaves begin to fade. The leaves and stem are twisted off, a slice cut transversely from the top of the root, and the leaves thrown over it to shield it as effectually as possible from the sun. In a few days, the exuded juice (which has partially dried) is scraped off; a new slice cut from the root; and thus the process continued for about six weeks, or so long as any juice exudes. Old plants yield most abundantly. This dried juice comes to market in mottled yellowish-red masses, rather soft, breaking with an irregular fracture, somewhat whitish within, but all exposed parts steadily changing to a yellowish-brown. It can scarcely be dried so as to become pulverizable; but softens at even a moderate heat, though it does not melt. It will burn with a clear flame; and tenaciously retains its peculiar fetor, which is diffusive and very penetrating.

This dried exudation consists of about 65 percent of a resinous substance, 20 percent of a gum, 4 percent of a volatile oil, (on which its odor seems to depend,) and small quantities of other substances. The oil contains considerable portions of sulphur. It forms a clear tincture with alcohol, to which menstruum it yields probably all its virtues; and the addition of water at once makes this tincture milky. Triturated with water, it parts with a considerable portion of its properties, and makes a pinkish-white emulsion.

Properties and Uses: This *gum* (gum-resin) is diffusively stimulating in its action, with a fair portion of relaxing property. Its chief influence is expended upon the nervous peripheries, which it affects rather promptly; and it also influences the capillary and smaller arterial circulation somewhat, and expends a portion of its influence upon mucous membranes, especially those of the lungs—being classed among the prompt stimulating expectorants and mild laxatives. It is chiefly valued for its influence upon the nervous tissues, being a peculiar but valuable antispasmodic. It is of great efficacy in all forms of nervousness, restlessness, nervous irritability, hysteria, and hypochondriasis, when associated with fatigue and loss of acting power; but is not suitable in any of these or other cases, when there is inflammation, febrile excitement, or erethism. In spasms and cramps in the bowels, and in neuralgic pains through the womb, it is also excellent; and though hysteria is looked upon as a reproach by many, and asafoetida is hence often considered to be a rather disgraceful remedy to use, it is nevertheless among the most serviceable agents for the large class of purely nervous functional disturbances above named.

As an expectorant, it is at present but little used; but may be combined advantageously with such relaxant and demulcent articles as convallaria, aralia, liriiodendron, and eupatorium, and used in old coughs, catarrhal affections, hooping-cough, and similar pectoral affections where there is no local inflammation, but a lack of nervous energy. It promotes menstruation quite decidedly, especially if combined with myrrh and caulophyllum in atonic cases; and with relaxing evacuants it exerts a distinct impression upon the bowels. Given by injection, it affects the ganglionic system promptly; and is of signal efficacy in relieving the bowels of large accumulations of flatus.

The unpleasant odor of this article, is an objection to its common use; but it is not often disagreeable to the stomach, and most persons soon become partial to its smell. Its volatile oil is in part absorbed. From five to ten grains may be given; at a dose, and repeated at intervals of twenty-four, twelve, six, or four hours. A drachm or more may be given by injection, when formed into an emulsion with warm water.

Pharmaceutical Preparations: I. *Milk of Asafoetida*. This mixture (emulsion) is formed by rubbing two drachms of the gum with half a pint of warm water. It is most suitable for purposes of injection; but may also be given by the stomach in doses of a fluid ounce or more, when its intense smell in this form is not objectionable. II. *Tincture*. Four ounces of asafoetida macerated for two weeks in a quart of alcohol, and then filtered, forms the officinal tincture. It is sometimes used by the stomach in urgent cases, when a very quick action is needed; but is oftener employed by enema. Dose, a fluid drachm or more. III. *Wine Tincture*. Rub half an ounce of asafoetida with ten fluid drachms of white wine. Each drachm of this mixture contains fifteen grains of asafoetida. This is mostly used in preparing the aqueous mixture, as it saves much time in trituration. IV. *Sirup*. Mr. Peltz, in the *American Journal of Pharmacy*, proposes a sirup of asafoetida by rubbing an ounce of the gum resin in enough boiling water to form a soft paste, then gradually adding enough boiling water to make a pint in all, straining, and dissolving in it two pounds of sugar. This is one of the pleasantest of the fluid preparations, to be used the same as the mixture. V. *Pills*. An ounce and a half of asafoetida and half an ounce of soap are to be beaten with a little water, so as to form a uniform pill mass; and then divided into two hundred and forty pills. (*U. S. P.*) Each pill contains three grains of the medicine, and from one to three may be used at a time. The pill form is the best for concealing the taste and smell of the drug.

VI. *Compound Pills*. Asafoetida, one ounce; valerian, two drachms; capsicum, twenty grains. Beat thoroughly together in a warm mortar; or add a small quantity of essence of peppermint, and beat in a cold mortar. Form into four-grain pills. Roll these in powdered ulmus; and when dry, dip quickly into strong essence of peppermint, and again roll in ulmus. By this means, a very excellent disguising coat is made to the gum. I greatly prize these pills for nervine and antispasmodic purposes, and would urge them upon the attention of the profession. One or two may be given as a dose, and repeated as needed. VI. *Suppositories*. For the past few years, I have occasionally employed this agent in the form of suppositories, made with white wax, and sweet oil in quantities just sufficient to make properly soft. These melted articles, before getting cold, are beaten with the asafoetida, and formed into conical suppositories—each containing five grains of the drug. One of these may be inserted into the rectum every twenty-four or twelve hours; and will exert a very desirable influence in lingering hysterical and nervous

atony requiring a gentle but persistent action of this kind. They are applicable to but a few cases; but for these cases are far preferable to any enema of this article.

NECTANDRA RODIEI

BEBEERU

Description: Natural Order, Lauraceae. This is a very large forest tree, native to the northern provinces of South America. Leaves four to six inches long, smooth, leathery. Flowers whitish, small. Fruit a very large, hard and brittle pericarp, with a single very large and fleshy seed.

The bark of this tree is ash-gray, compact, smooth, dense, and brittle; and comes to market in flat pieces two to four lines in thickness, and several inches broad. The bark and the fruit are both intensely bitter, and quite astringent. "They contain two alkaloid principles, named respectively *bebeerin* and *sipeerin*. These are extracted together, in the form of sulphates, by a process similar to that for preparing sulphate of quinia. The preparation is of a dark color, and has the appearance of an extract. Messrs. Madagan & Tilley obtain pure *bebeerin* by the following process: The impure sulphate is dissolved in water and precipitated by ammonia. The precipitate, mixed with an equal weight of recently precipitated oxide of lead, and dried, is treated with absolute alcohol, which, being [poured off and] evaporated, leaves the two alkalies in the form of a translucent resinoid mass. The bebeerin is separated by means of ether, which yields it by evaporation. It is pale-yellow, of a resinous appearance, uncrystallizable, very soluble in alcohol, and very slightly soluble in water. It softens and melts with heat." *U. S. Dispensatory*.

Properties and Uses: Bebeerin, and also the sulphate of bebeerin, as above prepared, are quite strong tonics, promoting digestion, sustaining the circulation, and mildly stimulating the nervous system. Many persons compare it to quinine; but it is not such an intense nerve stimulant as that article, and is more distinctly favorable to digestion, and to the improvement of the general tone of the system. Of late years it has been used in agues, and deserves more consideration than some physicians are willing to give it; for though not such a powerful antiperiodic as quinine, it is yet a good one, and is not so liable to cause retention of the secretions and ringing in the ears. In cases where the nervous system is sensitive, and quinine is likely to cause excitement, bebeerin is a preferable agent. As a tonic in periodical neuralgia, atonic prolapsus and dyspepsia, and low forms of periodical hysteria, it can be used to much advantage. It relieves passive menorrhagia; and I have employed it to advantage in some cases of exhaustive discharges, as colliquative diarrhea, and hectic from excessive suppuration.

Dose, as a tonic, one to two grains every six hours; as an antiperiodic, five to ten grains, repeated twice at suitable intervals before the chill. It may be mixed with mucilage, or formed into pills.

NEPETA CATARIA

CATNIP

Description: Natural Order, Labiatae. Genus NEPETA: Perennial herbs, whose stems are annual. Calyx tubular, obliquely five-toothed. Corolla two-lipped, dilated in the throat; upper lip erect and notched, lower lip spreading and three-cleft. Stamens four, ascending under the upper lip, the lower pair shorter. N. CATARIA :Stems erect, square, two to three feet high, branching, downy. Leaves oblong-heartshaped, deeply crenate, light-green above, whitish-downy beneath, those by the flowers becoming small and bract-like. Flowers in dense clusters, forming interrupted spikes; corolla white, dotted with purple. July and September.

Catnip is a common herb on rich soils near cultivated places throughout America and Europe. The whole plant has a gray look, and a mild and rather pleasant odor peculiar to itself. Its best qualities are volatile; but it also contains a bitterish extractive which is not dissipated by heat. Camphor has been obtained from it according to repute, but this is more than doubtful.

Properties and Uses: This *herb* is a diffusive relaxant, mildly diaphoretic, slightly emmenagogue, but especially antispasmodic. The principal use made of it is as a carminative infusion for the colic and restlessness of children; and it is extremely soothing to the nervous system, and deservedly popular. An infusion is an admirable drink, used without limit, in typhus and nervous fever, measles, and all similar cases; or it may be combined with more positive diaphoretics for its valuable soothing impression on the nervous peripheries. The profession generally overlook its virtues in such connections, but it is a diffusive nervine and antispasmodic of much service. It promotes menstruation moderately in acute cases, relieves dysmenorrhea, and increases the flow of urine; and may relieve nervous headache and hysteria of a mild form. A strong infusion, prepared with boiling water and used cold, is unpleasantly bitter and somewhat astringent, and it is said to be an available emmenagogue. The leaves make a superior fomentation in painful swellings, sprains, etc.

Catnip infusion is best made by digesting half an ounce of the herb for ten minutes in a pint of water much below the boiling heat, and then straining with pressure. The most desirable properties of the article are wasted by the usual plan of pouring boiling water on the herb, and then steeping it on a hot stove. A bitter infusion remains, which is unpalatable, and possesses no carminative nor antispasmodic virtues. The infusion may be given freely; though mothers often use it so largely as to cause their babes pain by the amount of fluid given. By cutting up the fresh herb, putting it under moderate pressure, and adding a small quantity of thirty percent alcohol for a day, and then bringing it under powerful pressure, a valuable juice is obtained. A teaspoonful of this rarely fails to cut short the nervous convulsions of children; and larger doses are powerful in relieving painful menstruation and promoting the catamenial flow in cases of recent obstruction. Combined with equal quantities of essence of anise and fluid extract of valerian, it makes a nervine and antispasmodic preparation of the highest value.

NEPETA GLECHOMA

GROUND IVY

Description: Natural Order, Labiatae. The generic characters are the same as in catnip. This is a creeping plant, the stems radiating from the root, and extending from six to eighteen inches, which habit of growth has gotten it the old popular name of *Gill-run-over-the-ground*. Leaves round kidney-shaped, crenate along the edges, dark-green, smooth, half an inch or more broad. Flowers usually in clusters of three in the axils of the leaves; calyx an eighth of an inch long, curved; corolla twice as long as the calyx, purplish-blue. May to October. Common on shady hill-sides and in grassy places.

Properties and Uses: This *herb* is a popular family remedy, and is sometimes used by the profession; though the marvelous repute it once enjoyed in England, has very properly faded away. Water extracts from it a mild bitter quality, slightly stimulating, and associated with a very little mucilage. The lungs are chiefly influenced by it, and expectoration gently promoted, a fair tonic impression being left behind. Such an action fits it for use in sub-acute coughs, with debility, and it will be found of service in such cases. The kidneys receive a portion of its influence, and it will relieve aching and catarrhal discharges of the bladder. Old Dr. Culpepper, of England, used to state that it would cure jaundice, asthma, hypochondria, and even mania; but this reputation is too fabulous to be entertained, though it points to the fact that this article will mildly open the gall-ducts, and allay irritability and impart tone to the nervous system. It is rarely used for any thing but coughs of the milder class. An infusion of an ounce to a quart of hot water, well pressed and strained, may be sweetened (with honey, if desirable) and given in doses of two fluid ounces every second hour; or a sirup may be made of it at the rate of two and a half pounds to the gallon.

NYMPHEA ODORATA

WATER-LILY, WHITE POND-LILY, SWEET POND-LILY

Description: Natural Order, Nymphaeaceae. This family of plants grows only in the water; and is noted by their large and floating leaves, and very large flowers. Root (stem) two to four inches in diameter, rather fleshy, dull-yellow, horizontal in beds of mud in ponds. Leaves four to seven inches in diameter, borne on petioles from one to ten feet in length, (according to the depth of the water,) nearly round, cleft at the base one-third their diameter, to the point where the petiole is inserted on the under side, very dark green, smooth and shining above, reddish and strongly veined beneath, floating on the water so that only their upper surface is seen. Flowers solitary, floating; sepals four, large, green outside, whitish or rose-blush within; petals numerous, two inches long, narrow, inserted in several rows all over the surface of the ovary, pure white, (occasionally rose-colored,) fragrant, not unfrequently becoming stamens; stamens numerous, often with their filaments like petals. These flowers are very large and beautiful, often three inches in diameter. Fruit a large, somewhat globular pod, depressed, ripening under water, crowned with the radiate stigmas and covered with the bases of the decayed petals, with fifteen to twenty cells, partially closing in the afternoon; seeds numerous, enveloped by a sort of aril, attached to the sides and back of the cells. Flowering from June to the last of August.

The large root (really the trunk) of these plants is sometimes farinaceous; becomes light and somewhat spongy by drying, and contains a fair amount of mucilage with tannic acid, a little resin, and a moderately bitter extractive. It comes to market cut in thin horizontal slices, which have a mild and sweetish odor, and yield a light and slightly yellowish powder.

NUPHAR ADVENA, known as *Spatterdock*, *Frog-lily*, and *Yellow Pond-lily*, is another genus in the same family with the above. Its habits of growth are the same, though it prefers stagnant water. Leaves eight to twelve inches long, somewhat oval. Sepals six, three outer yellow within, three inner wholly yellow. Petals numerous, small, yellow, inserted on an enlargement of the receptacle under the ovary, along with the numerous small stamens. Fruit ovoid, naked; seeds without arils. Flowers two Indies broad, not fragrant. The roots possess nearly identical qualities with those of the nymphaea.

Properties and Uses: These *roots* are mildly and very pleasantly astringent, slightly stimulating, leaving behind a tonic impression, and with just enough mucilage to make their action rather soothing. The yellow is rather more stimulating than the white. Their influence is expended upon mucous membranes, excessive discharges from which are lessened by them; while tenacious discharges are loosened, ulcerative conditions healed, and the tone of the structures improved. Their action is quite gentle, but persistent; and they never leave behind that dry condition incident to the use of geranium and astringents of that class. Sub-acute dysentery and diarrhea are the maladies for which they have been most used, and they are truly excellent in such cases; but they may be employed with equal, if not greater, advantage in all mild forms of leucorrhoea and prolapsus, with a tendency to ulceration of the cervix. I would especially commend them to the attention of the profession in these cases, both by the stomach and as a vaginal injection. Also in catarrh of the bladder, lingering congestion and aching of that organ, and chronic irritation of the prostate gland with gummy discharges, they are valuable. I

have also used their decoction in gonorrhoea, as an injection; and in gleet; and think well of it, especially for females. Sub-acute and chronic ophthalmia, of the milder forms, and aphthous ulcerations, will also find a useful remedy in these roots. Like the *geum virginianum*, they influence the assimilative organs; and may be employed to great advantage in those forms of scrofula which present weakness of the bowels and a tendency to curdy diarrhoea. Prof. Rafinesque, who spoke very favorably of the *nymphaea*, classed it as anodyne in action; and this has led many practitioners to reject it for inward use. This idea is erroneous; for while it is soothing in its impressions, the relief given is not that of narcotism, but of sustaining enfeebled and congested structures. The article deserves much more attention than is usually given to it, its very mildness being greatly in its favor. Externally, it is an agent of great value on weak and scrofulous ulcers, and those with an irritable surface and foul discharge; though not stimulating enough to meet indolent and phagedenic ulcers. I have used it to excellent advantage, in powder, upon irritable chancres, and excoriations of the prepuce and vulva; or even upon hunterian chancres, in company with a trifle of *capsicum*.

The form of infusion is the best for internal administration, in most cases; made by pouring a pint of boiling water on two drachms of the root, of which one or two fluid ounces may be given every two hours. An advantage is gained, when using it for diarrhoea and scrofulous laxity of the bowels, by boiling it for a few minutes in milk. When employed for leucorrhoea, it may be formed into a sirup; or combined with such agents as *liriodendron* and *mitchella*, either in sirup or wine tincture. No iron implement should be used while preparing it. I think the white is preferable for internal use, and the yellow for outward applications.

OLEA FIXA

FIXED OILS, FAT OILS, EXPRESSED OILS

Oils of this class are obtained mainly from vegetables, and usually by the process of pressure—between either cold iron plates, or plates moderately heated to cause greater liquidity and a freer flow to the oil. But such oils possess many properties common to the animal oils; and a few of those of vegetable origin may, like the animal fats, be obtained by rendering with either boiling water or steam; whence the two classes are generally considered together under the general term of fixed or fat oils.

The fixed oils of vegetable origin are obtained mainly from the seeds of the plants; a few from the fleshy pulp surrounding the seeds, as the olive; and a limited number from the kernels, roots, and bark. The usual procedure is, to crush the seeds well in a suitable mill, put the meal in canvas sacks, and then subject them to very strong pressure between iron plates, by means of a hydraulic press. The best quality is first obtained by using the plates cold; but an additional amount, usually somewhat turbid and of an inferior quality, is afterwards obtained by heating the plates to the temperature of 200° F., and subjecting the meal to a second pressure. Usually the cake from the first pressure is broken up and heated before being put under pressure the second time. Hot-pressed oils are more likely to become rancid than cold-pressed ones.

The fat oils, when first expressed without heat, taste merely unctuous on the tongue, and exhale the odor of their respective plants. Their fluidity is very various, some being solid at ordinary temperatures, as cocoa-nut oil; some congealing at about the freezing point, as olive oil; and some not congealing at less than four degrees below zero, F., as linseed oil. They are nearly all transparent when fluid, and have a yellowish tinge, but may be made quite colorless by treatment with animal charcoal. They are lighter than water, and vary but little in specific gravity, ranging from .892 (cocoa butter) to .968 (palm oil.) They can not be distilled; but burn at a temperature of about 600° F., and give a more or less brilliant flame—with or without smoke, according as their combustive decomposition yields a large or small excess of carbon. In close vessels, out of contact of air, they may be preserved fresh for a very long time; but the presence of air changes most of them. Some will slowly thicken into yellowish, transparent, flexible, and dry substances; and when these are spread thickly upon a surface, they constitute the *drying oils* of the arts. Others do not thus grow dry, though they become thickened by age; and such are liable sooner or later to become rancid, and present some degree of acid reaction. These changes seem due to the absorption of oxygen from the atmosphere. When oils—especially animal oils—are added to wool or hemp, so as to expose a large surface to the air, they may absorb oxygen so rapidly as to generate enough heat to cause spontaneous combustion.

The fat oils are not soluble in nor miscible with water; but if shaken with the latter, will soon separate and rise to the top. If first incorporated with any thick mucilage, they can then be made miscible with water in the form of emulsion. Castor oil dissolves to a fair extent in cold absolute alcohol; but all the others are not acted on by this fluid, except it be hot. Ether, on the contrary, is an excellent solvent of the fixed oils; whence this menstruum is employed to separate such oils from other bodies, after which the oil may be obtained by evaporating the ether. The stronger acids decompose most of them, producing various results. They combine with the

salifiable bases, including the alkalies and oxide of lead, the substance called glycerin being separated, and the other constituents of the oils forming a series of compounds of the soapy character. With the potassa and soda alkalies, the soap is soluble; with lime, insoluble; and with ammonia, fluid and milky, known as *volatile liniment*. The volatile oils, resin, and some other organic principles of plants, are soluble to a large extent in the fixed oils.

All fixed oils contain two distinct principles, one of which is fluid at ordinary temperatures, and the other concrete; some having a large excess of the former and others of the latter principle. The fluid quality is called *olein*; the solid principle is *stearin* or *margarin*. These principles are supposed to be of the nature of acids, whence they combine with the alkalies, setting free the glycerin which formerly acted the part of a base toward them. The acid principles are thus named *oleic acid*, and *stearic* or *margaric acid*. By cooling the fat down to a low point, and then subjecting it to pressure in linen bags, or between folds of blotting paper, the olein may be separated, while the stearin remains; or the olein may be dissolved in boiling alcohol, which leaves the stearin unaffected. The animal oils are variously treated in manufactories for the separation of these principles, which are applied to different purposes.

OLEA VOLATILIA

VOLATILE OILS, ESSENTIAL OILS, DISTILLED OILS

These are odoriferous oils, obtained from strongly fragrant plants; sometimes pervading all parts of the plant, but in many instances existing only in limited portions, as the petals of flowers, the bark of sassafras, the seeds of anise, and the rind of lemon. They are all more or less rapidly dissipated by heat; and those of petals disappear in most instances as the flowers dry, while the majority of plants lose only a moderate portion in drying. In most instances, these oils are obtained by distillation from water, as detailed in the department of Pharmacy. A few oils of this class are procured by pressure, as the oils of lemon, bergamot, and that from orange peel. The petals of flowers can not be treated by either of these processes to good advantage, when the following method is employed: Alternate layers are formed of the fresh flowers, and thin cotton fleece or woolen cloth-wadding previously saturated with some perfectly pure and inodorous fixed oil—as of olives or almonds, or, latterly, glycerin. They are allowed to stand in a pile thus formed till the petals have given out all their odor, which is absorbed by the fixed oil in the cotton. The old flowers are then replaced by other fresh ones, and thus, by repetitions, the fixed oil becomes thoroughly charged with the fragrance. The volatile oil may then be dissolved out by alcohol, or distilled over water in the usual way.

Most essential oils are yellow, some are reddish, a few have a distinct green tint, and a few—as of camomile, arnica, and yarrow—are blue. They have a powerful smell, resembling the plant from which they are obtained, but not so pleasant. The majority of them are quite fluid at even low temperatures; but lemon oil concretes at 4° below zero, F.; fennel congeals at 14°; anise forms into lamellar crystals at 50°; while the oil of elder flowers is as solid as butter. They are not unctuous to the touch, but rather roughen the skin; and they are all more or less acridly stimulating to the taste, and quite diffusive when diluted and used inwardly. The greater number are lighter than water; but a few, as sassafras, cassia, cinnamon, and cloves, are heavier than water. When exposed to the air, they slowly change color, absorbing oxygen and becoming darker. They at the same time become thicker and more of a resinous character, and lose a portion of their intensity. Light hastens these changes; and hence it is advisable to keep these oils in dark rooms in thoroughly stoppered bottles.

Volatile oils are little soluble in water; yet enough so to impart to it, by agitation, a little of their smell and taste. A water which distills with any of these oils, is in general a saturated solution of it; and is used in medicine under the name of *distilled water*. By being first thoroughly rubbed with magnesia, carbonate of magnesia, or sugar, they may then be dissolved in water by careful trituration; and are used in medicine as *medicated waters*. They are very soluble in alcohol, the solubility increasing as the strength of the spirit increases. Such solutions are *essences*. They all dissolve the fixed oils, resins, and animal oils.

The essential oils are frequently adulterated with fat oils or resin. This fraud may be detected by putting a drop of the oil on paper, and exposing it to heat. A pure essential oil evaporates without leaving any residuum; whilst if any fat or fixed oil be mixed with it, a translucent stain will be left on the paper. Or if any terebinthinate fatty substance be present, it will remain undissolved on adding the specimen of essential oil to three times its own volume of

eighty-three percent alcohol. Resin may be detected by distilling the specimen in an open test-tube, when the resin will remain after the oil has evaporated.

The facts in this article, as well as those on Fixed Oils, are condensed from Ure's Dictionary of Manufactures, published in New York by D. Appleton & Co.

OLEUM MORRHUE

COD LIVER OIL

This oil is obtained from the liver of the common codfish *Gadus morrhea*. The best qualities are usually obtained by putting fresh livers into an iron pot, applying a heat that should scarcely rise above 150°, and stirring them till they get into a pulp. It is then to be put into a canvas bag, when the oil will slowly drain out. After settling for a day or two, it is filtered through fine muslin, or paper. The article thus produced is of a light yellow, and but slightly disagreeable in taste and smell. The greater quantity, however, is not prepared with such care; but the fishermen let the livers lie in open barrels till they get their cargo of fish, and the mass can then scarcely fail to be half putrefactive by the time the boat reaches shore. The contents of these barrels are put into tin vessels, and heated by steam conducted through them; after which the oil is strained, and subsequently filtered. Sometimes the mass is put into large tanks to “clarify” by repose, and then pumped up, filtered, and put upon the market. The latter product is reddish-brown, and so disgusting in smell and taste as to be little used at the present time; though it is asserted that large dealers treat it with animal charcoal to decolorize it and remove a portion of its odor.

Properties and Uses: This oil is the present fashionable remedy with some classes of physicians for all maladies of a scrofulous origin, including scrofulous swellings, rickets, strumous diseases of the joints and bones, and consumption. Also for chronic rheumatism, gout, constipation, worms, and many other maladies, it is highly commended. The praise bestowed upon it in consumption, is somewhat marvelous; but no beneficial effects are said to be expected from it under four or six weeks, and by that time it will have so overtaxed the stomach and assimilative organs as to lead to emaciation. The idea of curing maladies dependent on enfeebled assimilation, by using an article which will presently over-tax the assimilative organs for its digestion, is a truly Homeopathic idea. I have no hesitancy in expressing my conviction that the use of this article is a huge deception to the consumptive; and the more so as no man has yet satisfactorily explained the manner of its action, and as emaciation, extreme dryness of the skin, and even chronic congestion of the lungs, frequently follow its use. For a time, the appetite, flesh, and pulmonary symptoms may improve; but this is only temporarily, and will take place to even better advantage on the use of any bland oil, as goose grease, olive oil, or good butter. The dose of cod-liver oil ranges from one to four teaspoonsful, as the stomach can bear, three times a day.

OLEUM OLIVAE

OLIVE OIL

This oil is obtained from the fruit of the *Olea Europea*, or olive tree now common to the shores of the Mediterranean. This tree is usually from fifteen to twenty feet high; with evergreen, lanceolate leaves two to three inches long, and small white flowers in axillary clusters. The fruit is a small oval drupe, of a peculiar greenish (olive) color, three-fourths of an inch long, and with a fleshy pericarp. This pericarp abounds in a fixed oil, which is obtained by pressure. The finest kind is obtained by lightly crushing the fruit that is gathered before it is perfectly ripe, and letting the oil separate spontaneously. Only a moderate quantity is thus obtained, and is mostly used in Europe. Afterwards, the olives are beaten to a paste in a mill, allowed to stand for two or three days, and then subjected to only a moderate pressure. This is called *virgin oil*, and has a greenish tinge. For the ordinary oil of commerce, the olives are gathered when fully ripe, (and the marc left after the virgin oil is obtained, is also used,) crushed and mixed with boiling water, and then submitted to moderate pressure, the oil being removed from the surface after a few hours. This process yields a quality only a little inferior to the virgin oil. The coarser products, to be used in the manufacture of soaps and similar purposes, are obtained by breaking up the latter marc, adding water and allowing it to ferment for a few days, and then subjecting the mass to very strong pressure.

Olive oil is of a pale-yellowish, sometimes greenish, tinge, a bland and slightly sweet taste, and is nearly odorless, or else of a faint milky flavor. At a temperature of 38° F., it begins to congeal; and at the freezing point separates into a whitish concrete mass below and a limpid fluid above. This fact gives a convenient method for testing the purity of a sample; as it will not separate thus, at the freezing point, if adulterated with oil of poppies. Other oils, and especially lard, congeal considerably above the freezing point; and a mixture of poppy oil and lard does the same—the lard always becoming much solidier than the congealed portion of olive oil. About one-third of the olive oil, or a little less, is concrete. Only a very small percentage is soluble in alcohol; but if congealed, as above, the liquid olein is readily soluble in alcohol. It is not a drying oil, but becomes thicker and rancid by exposure. This oil is refined for the watchmakers by immersing in a vial of it a strip of sheet-lead and placing the vial in the sun. The oil by degrees gets covered with a curdy mass, which after some time settles to the bottom, while the oil becomes limpid and colorless, and is then decanted into another vial.

Properties and Uses: This oil is pleasant and bland, somewhat nutritious, and mildly laxative. For infants it is especially serviceable as a cathartic, being easily taken and of mild action. It is suitable also for adults in irritated or inflamed conditions of the bowel or stomach, and may be given after acrid poisons. Externally, it is lubricant, and is valuable for shielding irritated surfaces, relax contracted tendons, and promote healing. For these purposes, it is either made the basis in which to incorporate medicaments, or is compounded with dense fatty or resinous substances to give them pliancy in the formation of ointments, cerates, or plasters. Sometimes it is used in laxative enemata. Dose as a laxative, one to two fluid ounces; for a child one year old, two teaspoonfuls or less.

OLEUM RICINI

CASTOR OIL

This oil is obtained from the seeds of the plant *RICINUS COMMUNIS*, a member of the Natural Order Euphorbiaceae. This plant is a native of the East Indies and Africa, where it is a perennial and attains a height of thirty feet or more. As cultivated in more temperate latitudes, it is an annual, with a height of from six to ten feet, according to the soil, season, and amount of cultivation. Stem round, an inch and a half in diameter, smooth, hollow, purplish above. Leaves alternate, on long and strong petioles which are inserted on their under surface about one-third the diameter of the leaf from the base, palmately veined, with from seven to nine acute lobes, slightly purplish-green, ten to fifteen inches long by three-fourths as broad. Flowers monoecious, in terminal racemes several inches long, the whole having a pyramidal shape, the male flowers being below and the female flowers above. No corollas. Calyx of the male flowers of five oval and purplish segments; of the female flowers, three to five linear segments. Stamens numerous, fasciated at the base. Fruit a three-celled and somewhat three-sided capsule, smooth, with projecting spines, half an inch long, each cell containing a single large seed.

The seeds of this plant are compressed, oval, nearly the size of a small bean, grayish, mottled with reddish spots, shining. The oil is contained in the kernel, along with peculiar principles which seem to act as a ferment and speedily cause the oily portions to become rancid. The seeds themselves, when swallowed, act as a harsh purgative and emetic, and are considered dangerous. Their violent powers reside in the husk of the seed.

The oil may be obtained either by boiling or expression, or by the agency of alcohol. (See *Olea Fixa*.) The usual method is that by expression. "The seeds are conveyed into a shallow iron reservoir, where they are submitted to a gentle heat. The seeds are then introduced into a powerful screw press. A whitish oily liquid is thus obtained, which is transferred to clean iron boilers with a considerable quantity of water. The mixture is boiled for some time, the impurities being skimmed off, and a clear oil is at length left on the top of the water—the mucilage and starch having been dissolved, and the albumen coagulated by the heat. The clear oil is now carefully removed, and the process completed by boiling it with a minute proportion of water till vapor ceases to arise, and till a small portion of the liquid, taken out in a vial, continues perfectly transparent when it cools. This last operation clarifies the oil, and drives off the acrid volatile matter. If not carefully prepared, it is apt to deposit a sediment upon standing; and the apothecary may find it necessary to filter it through coarse paper." (*U. S. Dispensatory*.) Most of the oil in this country is from seeds raised in Southern Illinois. Sometimes it is merely expressed, and allowed to stand and clarify in barrels; but when thus treated, it deposits a white precipitate in cold weather, and dissolves it again on getting warmer. Fifteen bushels of the seeds may be made to yield forty gallons of the oil.

Good castor oil is viscid, transparent, almost without smell, and of a mild nauseous taste. The mass of that in market is ill-made, and has a quite unpleasant and decided smell, and is often tinged yellowish. Absolute alcohol dissolves it readily, diluted alcohol sparingly, and it is also soluble in ether. It very slowly dries by exposure, without changing color; and coarser qualities

have been used in the arts. The alkalies saponify it, and exposure renders it rancid. When acrid, it may be rendered mild by boiling it with a little water.

Properties and Uses: Castor oil, when of a good quality, is a prompt and efficient cathartic, evacuating the bowels effectually and slightly promoting their mucous secretions, but not influencing the hepatic apparatus. A full dose usually acts in three hours, and secures the thorough ejection of alvine accumulations, such as hardened feces or any solids that may have been swallowed. A common article usually causes much griping, and some nausea, and is indeed very offensive to most stomachs; but a fresh and pure article is not often offensive, and causes very little griping, though some persons have an unconquerable aversion to its taste. It is used largely for children, and pregnant and puerperal women, for the earlier stages of dysentery and diarrhea to dislodge fecal accumulations, and in alvine irritation and costiveness due to the presence of offending substances.

Dose for an infant, one to three fluid drachms; for an adult, a fluid ounce. A young child seems, relatively, to require a larger dose than an adult. It is rarely given alone, but in some form to disguise its taste and smell. A good method is to mix it with some hot sweetened coffee, and add a little essence of peppermint, cinnamon, or other aromatic. Or it may be poured upon warm milk, and an aromatic added. A desirable method with this (or any other) ill-tasting article, is first to take into the mouth some aromatic, so as to get the nerves of taste fully occupied, and then take the medicine, by which method the taste of the oil will probably not be noticed. Or the oil may be made into an emulsion with the yolk of an egg, sugar, and a little water, or with gum and sugar in the usual way. This oil is sometimes used as an evacuating enema, especially in bilious and flatulent colic, for which purposes a fluid ounce may be given in a suitable quantity of tepid demulcent solution.

The leaves of ricinus, wilted in warm water and laid on the breasts, are said to promote the secretion of milk quite actively. The fresh leaves are better than the dried, though both are used.

On the other hand, some physicians assert that they will decidedly diminish this secretion. Admixture with lard is said to diminish its tendency to become rancid. It may be used in cerates in place of olive oil, when mild stimulation is desired.

ONOSMODIUM VIRGINIANUM

GRAVEL-WEED, WILD JOB'S TEARS, FALSE GROMWELL

Description: Natural Order, Boraginaceae. This is the *Lithospermum Virginicum* of Linnaeus. This genus is made up of perennial herbs, coarse and bristly. Stems one to two feet high, slender. Calyx five-parted, the divisions linear and erect. Corolla tubular, three lines long, yellowish-white, of fine acute and somewhat awl-shaped lobes, naked in the throat, lobes bearded with long bristles on the outside. Stamens five, all included, with very short filaments; anthers arrow-shaped, in the throat of the corolla. Flowers in terminal and leafy racemes. Leaves one to two inches long, narrow, tapering at the base, sessile, strongly veined. Fruit a smooth, shining, grayish, ovoid nutlet, (achenia,) small. Common on banks and hill-sides. June to August.

Properties and Uses: The *root* of this plant is demulcent, tough, and sweetish; brownish without, yellowish-white within, and flexible when dried. An infusion or decoction acts quite decidedly upon the kidneys, proving relaxant and mildly tonic, promoting a free flow of water, and relieving sub-acute and chronic irritation of the kidneys and bladder. The people in some sections ascribe to it almost miraculous powers in the treatment of gravel and dropsy. Of its soothing and moderately strengthening influence on the renal apparatus, I am well satisfied ; but its solvent properties on the stone may well be doubted, though it will usually give relief to the irritation of the bladder in such cases. A too free use of the decoction is liable to exhaust the kidneys.

OPHELIA CHIRATA

CHIRETTA

Description: Natural Order, Gentianaceae. In the same family with the gentians, sabbatia, and fraseria. A native of the mountains in Northern Hindostan, and for a long time classed as *Gentiana chirata*. Plant annual, with numerous fibrous roots. Stem two to three feet, round, smooth, pale brown, branched. Leaves opposite, amplexicaul, cordate-ovate, very acute, entire, five to seven-ribbed. Flowers in small, umbelled cymes; calyx four-parted, persistent, with narrow segments; corolla yellow, four-parted, rotate, withering; stamens four, on the throat of the corolla; stigmas two, short. (*Wallich.*)

Properties and Uses: The whole plant, roots and stem, are intensely bitter, and come to our market together. Its action is very nearly the same as that of *gentiana ochroleuca*, though somewhat more stomachic. It develops appetite, favors laxity of the gall-ducts and bowels, and promotes digestion. The stomach usually receives it well; and it is a very fashionable tonic with the profession at the present time, though in no way superior to our native gentians. Some attribute to it excellent antiperiodic qualities, and class it as the equal of quinine; but this is unquestionably a mistake, for while its hepatic- tonic power would be good for the intermediate treatment of agues, it is not an antiperiodic in the same sense with cinchona. Dose, in powder, from ten to fifteen grains. An *infusion* is made by digesting five drachms in a pint of warm (not boiling) water for half an hour, and using from one to two fluid ounces as a dose. A *tincture* is prepared by macerating two ounces and a half of chiretta in a sufficient quantity of diluted alcohol for two days, then treating by percolation and pressure so as to obtain one pint of tincture. The addition of two drachms of orange peel would make it more pleasant, and 30 percent alcohol is strong enough. Dose, half a fluid drachm to two fluid drachms three times a day.

ORIGANUM VULGARE

ORIGANUM, WILD MARJORAM

Description: Natural Order, Labiatae. The origanum has a perennial root, and an annual stem which is from one to two feet high, erect, purplish, four-sided, hairy, and corymbose-branched above. Leaves opposite, broad-ovate, slightly serrate, hairy, yellowish-green, dotted. Flowers in oblong and crowded spikes, subtended by broad-ovate and purplish bracts; calyx ovate bell-shaped, five-toothed, striate; corolla tubular funnel-form, purplish rose-colored, slightly two-lipped, upper lip erect and notched, lower lip of three nearly equal and spreading lobes. June to October.

This plant grows in great abundance in Europe, and is found in moderate quantities by the road sides in light soils in some parts of America. It is allied to the sweet marjoram of our gardens. Distillation obtains from it a considerable quantity of a fluid and transparent volatile oil, which, at first, is yellowish, but becomes reddish by age. It is of a pleasant and penetrating smell, and quite pungent taste. The greater portion of that on the market is imported from Europe; and much of this is in reality manufactured from the common thyme, and adulterated with spirits of turpentine.

Properties and Uses: This plant is rarely used internally; but is a diaphoretic stimulant quite similar to monarda. The principal use made of it is as an external stimulant and rubefacient, for which purposes its oil is one of the most desirable of all the essential oils. It is much more stimulating than spearmint, more so than hemlock, but not so much so as cloves or cajeput. The Stimulating Liniment and Opodeldoc contain it as an important ingredient; and it is similarly combined with other volatile oils in liniments of all grades of stimulation.

OROBANCHE VIRGINIANA
BEECH-DROPS, CANCER ROOT

Description: Natural Order, Orobanchaceae. This is the Linnaean name of this plant, which is now usually classed in the genus *Epiphegus*. The family to which it belongs are all parasites growing upon the roots of trees, have no green foliage whatever; but are low and fleshy herbs, quite pale and nearly colorless, with scales instead of leaves. The genus *EPIPHEGUS* (orobanche) have slender, succulent, and much branched stems, six to ten inches high, lurid-brownish in color, and almost invariably growing on the exposed roots of beech trees. Flowers scattered on spicate-racemes, terminal on the branches; upper ones sterile, tubular, half an inch long, four-toothed, whitish purple, with long filaments and style; lower ones with a very short corolla which seldom opens, but is forced off from the base by the growth of the pod; stamens and style very short. The article described under this head is not the beech-drops, but (in part) the *conopholis americana*, which grows in clusters among the leaves of oak woods. Both genera are probably the same in qualities.

Properties and Uses: This singular herb has a popular reputation in the treatment of cancer, being used locally as well as internally. This repute is not sustained by experience; but the plant is a stimulating astringent, has a good influence in arousing indolent ulcers and arresting gangrene, whence it may be employed to some little advantage in scirrhus difficulties. It may be used as a wash for aphthous sores of a low grade, and probably putrid sore throat; also in leucorrhœa. An infusion used inwardly acts slowly on the capillary circulation, and usually arrests passive menorrhagia and other hemorrhages.

OSMORHIZA LONGISTYLIS

SWEET CICELY

Description: Natural Order, Umbelliferae. This pretty member of the parsnip tribe has a thick perennial root, and an annual stem from two to three feet high. Leaves large, compound, the leaflets pinnatifid, short-pointed, cut-toothed, slightly pubescent when young, light yellowish-green, lower ones on long petioles, upper ones sessile. Flowers in small axillary and terminal umbels, each four to seven-flowered; calyx teeth obsolete; corolla of fine small, oblong, white petals; styles long and slender. “Fruit about an inch long, very narrow, tapering downward into a stalk-like base, contracted at the sides, crowned with the styles; the carpels with sharp upwardly-bristly ribs.” (*Gray.*) May and June. Found in rich woods northward. A small species has downy-hairy leaves and shorter styles.

Properties and Uses: This *root* is of a sweetish taste, and a flavor somewhat like anise, easily impaired by heat. It is a mild stimulant and relaxant, of the nervine and antispasmodic order, promoting mucous flow, and leaving a gentle tonic impression. The chief use made of it is in feeble coughs, for which it may be compounded with such agents as aralia and prunus. It is gently warming to the stomach, and may be used in mild dyspepsia and in flatulent colic. Few practitioners use it, and these commonly render it worthless by treating it with hot water; but if treated with thirty percent alcohol, and the tincture added to other preparations, it will be found an excellent adjuvant as well as a useful component in the above maladies. Dose of this tincture, from half a drachm to two fluid drachms.

OSTRYA VIRGINICA

IRON-WOOD, LEVER-WOOD, HOP-HORNBEAM

Description: Natural Order, Cupuliferae. In the same family with oak, beech, and chestnut. Slender trees, with very dense and tough wood, twenty to thirty feet high, in rich woods, with a brownish and finely furrowed bark, much like the carpinus, (blue beech.) Flowers dioecious; sterile in drooping aments, of about twelve stamens in the axil of a scale-like bract, filaments somewhat united; fertile numerous in a short terminal catkin, with small deciduous bracts, the involucre enlarging so as to form a sort of bladderly sac inclosing the fruit, and a number of these forming a cone-like strobile much resembling the strobile of the hop. Leaves oblong-ovate, tapering, doubly serrated, downy upon the under surface. Blooming in April and May, and ripening its peculiar fruit in August. The carpinus, a smaller tree with smooth gray bark and nearly white wood is also called horn-beam, but is not of similar properties with ostrya.

Properties and Uses: The *bark* and the inner or *heart-wood* of this tree are used in medicine. They are stimulating and moderately astringing, slow and permanent in action, and quite bitter. Their action is of the alterative tonic order. Among the people, this tree is in considerable repute as an antiperiodic, and is accredited with powers of an excellent order in the treatment of intermittents. This reputation is partly confirmed by several physicians; and Prof. J. E. Roop tells me he has several times used the heart-wood to good advantage in lingering cases, where more of a tonic than a nervine stimulant action was needed. The stomach receives it well, and it is not so exciting to the nerve centers as cinchona and its salts. It may also be used in periodic neuralgia; and as a tonic in dyspepsia and scrofula of a low grade. The powder makes a good application to indolent chancres and other degenerate sores, especially if combined with ginger; and, like other tonics of an astringent tendency, makes a good injection in foul leucorrhoea. The most common mode of using it is in strong sirup, or in a decoction made by boiling one ounce in a pint of water, so as to obtain six fluid ounces, of which one ounce may be given every six hours, or at intervals of two hours when used for antiperiodic purposes. A good preparation may be formed by carefully drying the extract and reducing it to a powder, of which from five to ten grains, with half a grain or more of capsicum, may be given every three hours as an antiperiodic.

OXALIS ACETOSELLA

WOOD SORREL

Description: Natural Order, Oxalidaceae. These plants are low herbs, growing in shady woods, with slender and weak stems about six inches high, on the summit of which are three leaflets of an ob-cordate shape, with broad and rounded lobes. The flowers grow on slender scapes a little longer than the leaf-stalks, a single nodding flower to each; sepals five, persistent; petals five, white, delicately vined with purple, and a yellowish base; stamens sixteen and monodelphous; styles five and separate, blooming in June. The species STRICTA is much more common than the acetosella. The stem in it is somewhat branched; leaves numerous, and often folding up in the heat of the day; flowers small, chrome yellow, and borne in small umbels, blooming the whole summer. Both species have an agreeable acid taste; and from the fact that oxalic acid can be obtained from them, the technical name oxalis has been given to them. But this acid does not exist in the plant in its natural state, and can not be obtained except as the herb is caused to undergo fermentation, or decomposed with potassa solution, when binoxalate of potassa is obtained; or else treated with nitric acid, as in the manufacture of oxalic acid from sugar, starch, and similar organic substances. (See section 32, Therapeutics; and *Amygdalus communis*.)

Properties and Uses: This herb, freshly gathered, is well bruised in a mortar, and then subjected to strong pressure. The juice thus obtained is put in shallow earthen dishes, and evaporated in the sun. A soft extract is thus obtained without any fermentation whatever; whence this extract in no sense resembles oxalic acid, as Newton and some others have asserted. This extract makes a powerful application in the treatment of cancer; and many reliable reports have from time to time been made in which scirrhus was eradicated quite effectually by plasters of this article. The application of it causes much suffering, which may be mollified by admixture with extract of taraxacum; but it unquestionably has a decided power in causing the ejection of the cancerous deposits, (“roots,”) and promoting the healing of such degenerate sores. Mixed with cerate or other unguent, it is equally powerful in arousing old and truly indolent ulcers into vital action. The usual procedure in all these cases, is to apply once a day a plaster of the extract, as free from mollifying combination as the case will admit, and continue it as long as the patient can well endure; and then to remove it, and apply some simple emollient salve. Rumex acetosella is used for the same purposes, and possesses properties nearly identical with this oxalis; and the extract of these plants constitutes the basis of probably three-fourths of the marvelous “cancer-cures” with which such a large portion of mankind is steadily humbugged, and some preparation of arsenic makes up the remaining one-fourth.

PAEONIA OFFICINALIS

PEONY

Description: Natural Order, Ranunculaceae. This is the showy peony of our gardens, with its perennial and fleshy roots, and large gaudy flowers.

Properties and Uses: The *root* of this plant is possessed of mildly relaxing properties of the antispasmodic order. An infusion made of an ounce of the roots to a pint of warm water may be given freely in the spasms and colics of children, and will frequently remove flatus. Formerly a fabulous reputation was connected with it for the treatment of epilepsy, chorea, and other convulsions; but its powers are too mild to be of any service in such cases.

PANAX QUINQUEFOLIUM

GINSENG

Description: Natural Order, Araliaceae. In the same Family with *aralia racemosa*. Plants with perennial, fusiform, fleshy roots, and an annual herbaceous stem. Stem simple, round, one foot to eighteen inches high; dividing at the top into three petiolate leaves; each leaf in turn dividing into five unequal, petiolated, ob-oval, serrate lobes. Flowers dioeciously polygamous, in a solitary and simple umbel rising on an erect peduncle from the apex of the stem, and between the petioles of the three compound leaves; small, yellowish, the calyx adherent to the ovary in the perfect flowers. Fruit a berry, in a compact cluster, bright scarlet, each the size of a very small pea. Blooming usually in June, and ripening in August.

Properties and Uses: The *root* of ginseng (often supposed to be the same with gentian) is a very mild tonic, somewhat aromatic and diffusive, principally relaxant, and making its chief impression upon nervous structures. As a soothing and nervine tonic, it answers a fair purpose in simple forms of dyspepsia, nervousness, hysteria, and similar cases of nervous sensitiveness with debility. Its powers are altogether too light to be of service in depressed cases. As its qualities are easily dissipated by heat, it should be used in substance or as a wine tincture. Dose of the powder, from a scruple to a drachm. Many prefer to chew the crude root.

PARTHENIUM INTEGRIFOLIUM

CUTTING ALMOND, NEPHRITIC PLANT

Description: Natural Order, Compositae. A perennial plant, from one to four feet high, with erect and pubescent stems, with corymbose branches, bearing the flower-heads terminally. Leaves alternate, at considerable distances apart, three to six inches long by one-third as wide, tapering, crenate toothed, the lower ones often cut-lobed below the middle; those low down on the stem on petioles often six to ten inches long, which are gradually reduced till the upper leaves are small and sessile. Flower-heads numerous, inconspicuously radiate, many whitish flowers in each; involucre hemispherical, of two rows of short, ovate or roundish scales; ray florets five, with short and broad obcordate ligules not projecting beyond the woolly disk, fertile; disk florets tubular, staminate, with imperfect styles, sterile. Receptacles conical and chaffy. Five somewhat compressed achenes in each head, with the ray corolla persistent, and the pappus of two small chaffy scales. July to September.

This plant is found on dry soils in the Middle and Western States. The root is two or more fusiform bodies, nearly horizontal in position, with a number of long fibers; black-brown without and bluish-gray within.

Properties and Uses: The *root* of this plant is relaxant and very moderately stimulant, and expends its chief power upon the kidneys. By its use, the amount of watery discharge in the urine is greatly increased; and at the same time a soothing impression made upon the mucous membranes of the renal apparatus. This action fits it for use in suppressed (but not retained) urine, with scalding, pain, or difficulty in its voidance; for which conditions its influence is prompt and vigorous. Some physicians speak well of it in gonorrhoea. Like other agents of the same energetic character, as the apium, it can easily be overused, and thus exhaust the kidneys. The best method of employing it, is by macerating half an ounce of the root in eight ounces of lukewarm water; of which a fluid ounce may be given every hour or oftener till its impression is obtained. Heat impairs its strength.

PHYTOLACCA DECANDRA

POKE, SCORE, GARGET, COAKUM, PIGEON-BERRY

Description: Natural Order, Phytolaccaceae. This Family is represented in our country by the single genus PHYTOLACCA. Root perennial, very large, branched, coarse, spongy, whitish, succulent and sweetish when young. Stem annual, five to eight feet high, very smooth, green when young, red-purple when old, an inch or more in diameter, very juicy, hollow, with interrupted half-circular shelves of pith. Leaves alternate, petiolate, oblong, entire, six inches by three, smooth, thick, juicy. Flowers in racemes four to six inches long, twenty or more on each raceme; racemes lateral and opposite the leaves, drooping. Calyx of five rounded and whitish sepals; corolla wanting; stamens (in this species) and styles ten, short; ovary flat, furrowed, green. Fruit a flattened berry, ten-furrowed, ten-celled, ten-seeded, very dark purple, filled with a rich lake-colored juice in autumn, hanging on the pendent racemes late in the fall.

This stately, large-leaved, and unbranched plant grows in nearly every section of America, in pastures and other open and grassy places. The young leaves are used as “greens” in the spring, and are the best of articles for that purpose; but the older leaves are too acrid to use thus. The sweetish taste of the young roots sometimes leads children to eat them; and they provoke very persistent vomiting, heat and dryness of the throat, burning at the stomach, diarrhea, very great prostration, and subsequently coma. Some children have died in convulsions from eating them. The older and dried roots retain the same aero-narcotic properties, and this part of the plant is rejected from Physio-Medical practice as a dangerous poison. Their ashes, according to Rafinesque, yield an unusually large percentage of potassa. The berries yield a rich, yet evanescent, dyeing material. Birds are fond of them.

Properties and Uses: The *berries* of this plant are relaxant, with a peculiar and not very unpleasant taste, and a slow action. Their chief power is expended on the glandular structures, mildly but persistently securing a better flow of saliva, urine, and perspiration, and freer action of the bowels. They make a valuable agent in scrofulous maladies, especially those connected with a chaffy skin and costiveness; but their relaxing quality is so great, that it is usually best to combine them with a moderate quantity of such stimulants as menispermum or stillingia. So general is their glandular influence, that they may be used as a common relaxant alterant, particularly in salt rheum and similar affections of the skin. In chronic and sub-acute rheumatism, few agents exert so peculiar and so valuable a power; and their action in such cases is very reliable, rarely failing to give relief to this obstinate malady. Those forms of rheumatism which attack the synovial and ligamentous membranes, the muscular sheaths, and other serous tissues, seem to be most benefitted by their use. Generally the profession has overlooked this article, or used it only in chronic cases; and many look upon the berries as being poisonous, because the roots are. But they are not poisonous, and may be used in subacute cases quite as well as in chronic ones. The best method of employing them, is to crush the ripe berries, and add thirty percent alcohol to preserve the mass, filtering off a sufficient quantity as required to be dispensed. Or a half pint of rectified whisky may be added to each pint of the crushed berries. The dose may range from one to two fluid ounces three times a day. This saturated tincture is usually combined with a moderate quantity of fluid extract of macrotys or of xanthoxylum, according to the conditions of the case; or, in sub-acute cases, the latter articles may be used by

infusion at short intervals, while the phytolacca is used by itself three or four times a day. Some strongly commend the use of one ounce each of the fluid extracts of jeffersonia and macrotys to eight ounces of the above phytolacca tincture, in chronic cases; with the use of such vapor baths and liniments as are desired.

PICRAENA EXCELSA

QUASSIA, BITTER-WOOD, BITTER-ASH

Description: Natural Order, Simarubaceae. This is the *Quassia excelsa* of Linnaeus, though the genuine plant is the *Quassia amara*. The species *amara* is a large shrub, or low tree, inhabiting Surinam; while the *excelsa* is a lofty tree with a very large trunk, and is found in Jamaica and other portions of the West Indies. The latter is now the article almost exclusively found in market. “Leaves alternate, unequally pinnate; leaflets opposite, oblong, acuminate. Flowers polygamous; sepals five, minute; petals five, pale; stamens five. Racemes axillary toward the ends of the branches, very compound, panicled, many-flowered. Fruit of three black, shining drupes the size of a pea, only one of which comes to perfection.” (*Lindley.*)

Sections from the branches are generally the parts used. They frequently come to market in pieces from three to five feet long, and from two to ten inches in diameter; covered by a smooth and ash-gray bark. As dispensed, it is either rasped or chipped. The wood is whitish or yellowish white, without smell, but of the most intense and permanent bitter taste. Water, diluted alcohol, and alcohol, extract its virtues; and weak alkaline solutions act on it well. Its active constituent is supposed to reside in a neutral principle called *quassin*.

Properties and Uses: The *wood* and *bark* are both medicinal, though the former is most used. It is an intense bitter, less relaxing than stimulating, expending its influence mainly upon the digestive organs, but scarcely affecting the circulation. As an appetizer and improver of digestion, it is scarcely surpassed; and is useful in most forms of chronic dyspepsia, and in convalescence from various acute maladies. A negro of Surinam, named Quassi, is credited with having brought it into notice by the success with which he used it in malignant intermittents; but it is of no value as an antiperiodic. Some persons use it by chewing twenty or more grains after a meal, but few persons can endure its intense bitterness in this form. The more common method of employment is by making an infusion with two drachms of the rasped wood, macerated for twelve hours in a pint of cold water; of which preparation two fluid ounces may be given three or four times a day. Recently, small cups of this wood have been introduced; and these are filled with water at one meal hour, and this mild infusion drank at the next meal. A *tincture* is made by digesting an ounce of the quassia chips for fourteen days in a pint of diluted alcohol, and filtering; and this is either added to milder tonic infusions, or used in doses of one or two fluid drachms. The Edinburgh Pharmacopoeia gives the following formula for a *compound tincture*:

Cardamon seeds and cochineal, bruised, each, half an ounce; cinnamon and quassia, each, six drachms; raisins, seven ounces; diluted alcohol, two pints. Digest for seven days, strain, express the residue strongly, and filter. Dose, one to two fluid drachms.

This article is actively poisonous to flies, though this is not proof that it is anywise poisonous to man. (§67.) A strong decoction, thoroughly sweetened with molasses or sugar, and spread in dishes, effectually destroys flies that eat of it.

PIMPINELLA ANISUM

ANISE

Description: Natural Order, Umbelliferae. A native of Egypt and Western Asia; but now much cultivated in Spain and Southern Germany. Annual. Stem about one foot high, erect, smooth, slightly branched. Leaves very various, lower ones cordate and cuneate-lobed, middle ones pinnate-lobed, upper ones trifid. Umbels without involucre, long-stalked. Flowers small, white. Fruit about a line in length, compressed, oval, striate with five ridges, with a few scattered hairs of a peculiar greenish tint.

The seeds are fragrant, with a pleasant odor peculiar to themselves, and which is owing to the presence of a volatile oil. Warm water acts on them but moderately, but alcohol completely. They are mostly valued for their oil, which is obtained by distillation from the bruised fruit. It is transparent, colorless or sparingly yellow in tint, with the odor of anise seed strongly marked, of a sweetish warming taste, and possessing the unusual property of concreting into a lardaceous-looking body at a temperature of 50° F. Spermaceti is sometimes used to adulterate this oil, in imitation of this concreting property; but pure oil is soluble in all proportions in cold absolute alcohol, while spermaceti is not, whence the adulteration may be detected readily.

ILLISIUM ANISATUM (*star anise*) is a shrub about eight feet high, of the Natural Order Magnoliaceae, native to China and Japan, from the seeds of which the greater portion of the anise oil of commerce is now obtained. "Leaves evergreen, obovate, obtuse, entire, smooth, dotted. Flowers solitary, stalked, sepals six, petaloid; petals numerous, yellow; stamens numerous. Fruit of eight or more carpels coherent by their inner edge, and arranged in a star-like manner; seeds one in each carpel, ovate, compressed, reddish brown." (*Nees.*) The distilled oil of this fruit can not be distinguished from that of the pimpinella, though it more commonly has a faint yellowish tint. Some consider it superior to the true anise.

Properties and Uses: The *oil* is one of the most pleasant and sweet of the aromatics, nearly a pure relaxant, and valued for its carminative and nervine influence in flatulent colic, both of children and adults. Few carminatives are so reliable; and it is equally excellent to prevent the griping of stimulating cathartics, and to cover the taste of bitter and nauseating medicines. The stomach receives it gratefully; and, if suitably diluted, it not unfrequently allays nausea and vomiting. One or two drops may be given on sugar; or, for children, it may be rubbed well with a small lump of sugar, and two tablespoonfuls of water added a little at a time, with trituration. This is a ready way of forming a sweet medicated water, which infants take readily. To relieve vomiting, some add it with sugar to camphor water. The officinal *essence* is made by dissolving a fluid ounce of the oil in fifteen fluid ounces of seventy-five percent alcohol. A drachm of the *seeds* may be made into a pint of infusion; but water acts on them so insufficiently that the oil is now generally preferred. It enters into preparations named under lobelia, valerian, and angelica.

PIPER CUBEBA

CUBEBS

Description: Natural Order, Piperaceae. This plant is a native of Java and other East India islands. Stem perennial, smooth, climbing, jointed. Leaves petiolate, ovate-oblong, acuminate, entire, leathery, smooth, nerved. Flowers without calyx or corolla, dioecious, in long and cylindrical spikes, two stamens to each flower on sterile plants, and three pistils on the fertile. Fruit a round, grayish-brown berry, about the size of a small pea, wrinkled, hard, one-seeded.

The berry of this plant is the portion used in medicine. It is pleasantly aromatic, and of a warming but not disagreeable taste, slightly bitter and camphorous. Considerable quantities of a transparent and greenish-yellow volatile oil are obtained from it; and also resin, and a white, odorless, and nearly tasteless crystallizable substance called *cubebin*. Age impairs the berries through loss of the volatile oil, and their powder deteriorates rapidly.

Properties and Uses: These *berries* are promptly and diffusibly stimulant, especially influencing the kidneys and bladder; but also acting upon mucous membranes in general, and moderately upon the circulation. Formerly they were used as a spice, but are no longer employed in this way. They are principally employed in gleet and sub-acute gonorrhoea; but should never be used in the inflammatory stage of these or any other maladies. From their warming action, they have been used in atonic dyspepsia, but mostly as a stomachic with true tonics; and their use in gonorrhoea is as valuable for covering the disagreeable taste of copaiva, as for their action on the kidneys. Large doses are said to produce headache and dizziness, probably from the augmented cerebral circulation. Their continued use is not advisable; and from having been praised inordinately, they have fallen into comparative neglect. M. Debout (*Bulletin de Therapeutique*, 1862,) claims their action and uses to be as follows: *First*, locally stimulant on gastric mucous membranes, increasing the gastric secretion; hence useful in flatulent dyspepsia arising from atony. *Second*, in small doses sedative (?) to the cerebro-spinal system; hence useful in dizziness and weakness of memory, and in congestion and chronic inflammation of the neck of the bladder and the urethra. Dose, in dyspepsia, five to ten grains three times a day; in gonorrhoea, twenty grains or more. The *oil* is used for the same general purposes, in doses ranging from three to ten drops, in sugar or mucilage; but now is mostly employed as an aromatic adjuvant to copaiva emulsion.

A *tincture* of cubebs may be prepared by macerating (or percolating) four ounces of the berries with a quart of diluted alcohol, of which half a fluid drachm or more may be used as a dose. A *fluid extract* is sometimes prepared by treating a pound of cubeb powder in a close percolator with ether till a quart has passed, distilling off a pint and a half of the ether, and spontaneously evaporating the remainder. A brownish or greenish oleo-resin remains, of which from five to fifteen drops may be given on sugar.

PIPER NIGRUM
BLACK PEPPER

Description: Natural Order, Piperaceae. This is a perennial and climbing plant, native to Cochin China, but now cultivated in all the East India Islands, especially Java, Sumatra, and Borneo. “Stem round, smooth, woody, articulated, swelling near the joints, branched, and from eight to twelve feet or more in length. Leaves entire, broad-ovate, acuminate, seven-nerved, coriaceous, very smooth, and of a dark green color, and attached by strong sheath-like foot-stalks to the joints of the branches. Flowers small, whitish, sessile, covering thickly a cylindrical spadix, and succeeded by globular berries, which are red when ripe.” (*U. S. D.*) These berries, so well known in commerce, are gathered and dried before they are fully ripened. When macerated and deprived of their outer skin by friction, they appear in market as *white pepper*.

This well-known spice contains a concrete and a volatile oil, a soft greenish resin, and a crystalline principle called piperin. It is partly soluble in water, and wholly soluble in strong alcohol and ether. Various articles are mixed with or substituted for it. Of these the PIPER LONGUM, or *long pepper*, (its fruit being a cylinder an inch or more in length,) most nearly resembles the black pepper in action, and yields much of the piperin now in market; yet is but little employed. The PIPER AFZELII, (*Guinea pepper*, or *African black pepper*,) is a smaller and much milder spice, and also contains piperin.

Properties and Uses: This article is mainly used as a condiment; but has been employed as a remedy from an early period, and at one time was in much repute in intermittents. It excites local and general circulation, and is usable in atonic conditions of the stomach, and locally in gangrene. As its oils are considerably acrid, it can not be employed to any such advantage as capsicum; yet may be applied to some advantage in the above cases; and though now ignored for intermittents, is of use combined with antiperiodics to sustain the circulation.

At present the chief use made of it is for the procurement of *piperin*. “This is obtained by treating pepper with alcohol, evaporating the tincture to the consistence of an extract, submitting the extract to the action of an alkaline solution, washing the undissolved portion with cold water, separating the liquid by nitration, treating the matter, left on the filter with alcohol, and evaporating.” (*U. S. D.*) Piperin falls as soft, white, odorless, resinous-feeling crystals, with a trace of bitterness and pungency, insoluble in water. This article may be used in doses of from one to five grains, combined with quinine, salicine, or hydrastine, for antiperiodic purposes; and is of much service in such cases. Small doses have been used every six hours in the second and subsequent stages of typhus, though not to much advantage; and five or more grains have been used every hour in cholera collapse. It is best given by trituration with sugar. The residue left after preparing piperin by the above method, contains much of the oils of this article, and appears in market as *oil of black pepper*. By treating the berries with ether, proceeding as in the method for fluid extract of cubebs, and separating the piperin by expression in a fine cloth, a fluid of a greenish hue is obtained, which is an oleo-resin, and is called a *fluid extract*. It is extremely acrid, and is rarely used, a single drop, in emulsion, making a dose. *Confection* of black pepper is made by mixing two ounces of pepper and three ounces of caraway in fifteen ounces of honey. If regularly employed three times a day for months, it exerts a gentle stimulating

influence during its passage through the lower bowels that sometimes cures indolent fistula and bleeding piles. Dose, a drachm or more four times a day.

PLANTAGO MAJOR

PLANTAIN

Description: Natural Order, Plantaginaceae. This is the common plantain so abundant in grassy yards near dwellings, and is to be distinguished from other articles bearing the same common name. Root perennial. Leaves large, broad oval, spring from the root, five to seven strong-nerved ribs, abruptly narrowed into a channeled petiole. Flowers on a spike rising from the midst of the leaves, densely crowded, four-parted, very small; stamens with long capillary filaments. Pod with seven to sixteen seeds. The size of the leaves and length of the spike vary much according to soil, the spike being from four to twenty inches long, elastic and tough.

Properties and Uses: The *roots* and *leaves* are diffusively relaxant and stimulant, leaving behind a gentle tonic impression. They are not of strong power, and a concentrated decoction (or fluid extract) is required for internal use. The kidneys and mucous membranes receive their principal influence, and other glandular organs are moderately acted on. The principal use made of them is in scrofula and light cases of secondary syphilis, for which maladies, when of the irritable form, they answer a good purpose; but they may be also used to advantage in subacute and chronic difficulties of the kidneys and bladder, such as aching back, cystic catarrh, and scanty and scalding urine. Generally their use in this direction is overlooked, but they serve an excellent purpose, and possess a power which deserves investigation, especially as they are rather toning than forcing to the kidneys. In bloody urine arising from chronic renal congestion, they are good; and their toning influence on mucous membranes is of some service in leucorrhoea and diarrhoea of the sub-acute character. A strong decoction, associated with a free outward use of the wilted or bruised leaves, has a wide popular reputation for the bites of snakes, spiders, and other poisoned wounds. R. H. Homer, M. D., of Indiana, tells me the green leaves, applied to the surface and changed often, give great relief in the burning of acute or chronic erysipelas; and a wash of them has been much commended in the same malady, salt rheum, and ophthalmia.

PLANTAGO CORDATE, called *water plantain* and *rib-grass*, grows by the sides of rivulets, with large, early heart-shaped and very smooth leaves, and the stems with scattering flowers toward the top. The *root* is reputed a valuable nervine and antispasmodic of the soothing and gently toning class; and has been spoken of warmly in hysteria, sympathetic vomiting, cholera morbus, and even in cholera. Outwardly, it is commended for indolent and congested swellings and low scrofulous ulcers. It should not be confounded with *alisma plantago*.

PLANTAGO VIRGINICA, with oblong and obscurely-veined leaves, dioeciously polygamous flowers, and hoary scapes four to nine inches high, is common on sandy soils. The leaves are reputed of superior efficacy on poisoned wounds and boils, and give promise of being a valuable nervine. All of these plants are too much overlooked by the profession; and though I have used only the first one, and that in a limited way, there is abundant reason to believe that these humble articles, literally growing at our doors, are of valuable remedial powers.

PODOPHYLLUM PELTATUM

MANDRAKE, MAY-APPLE

Description: Natural Order, Berberidaceae. In the same Family with caulophyllum and jeffersonia. Perennial roots, with annual stems. Roots smooth, jointed at intervals of four to seven inches, umber-brown without, grayish-white within, creeping a few inches below the surface, several feet long, one-fourth of an inch thick, with a number of rootlets from the joints. Stem single, simple, round; yellowish-green, smooth, pithy-succulent, eight to twelve inches high, dividing at the top into two round leaf-stalks. Leaves two and opposite on flowering stems; only one on flowerless stems, and more distinctly peltate in the latter than the former; yellowish-green and smooth above, slightly pubescent beneath, palmate-veined, deeply lobed five to nine times, very large. Flower solitary, rising on a peduncle two inches long in the fork of the long petioles, the bud enveloped by three thin green bractlets, which are caducous; sepals six, fugacious; petals six to nine, white, obovate, spreading, a little concave, an inch long, scarcely fragrant; stamens twice as many as the petals; stigma thick, sessile. Fruit a fleshy berry, ovoid, one to two inches long, pale yellow when ripe, white and pithy within, of a mawkish-sweet taste. Blooming in May and ripening in July.

This plant is common in nearly all parts of the United States, growing in woods on rich soils, and sending up its large leaves in masses early in spring. The root is used in medicine; contains a large amount of extractive matter and a considerable portion of resin; forms a dense and grayish-white powder; and has at first a sweetish-bitter, and afterwards an unpleasantly acrid taste. Water extracts a considerable portion of its virtues; but alcohol acts much more fully upon it.

Properties and Uses: The *root* of podophyllum, when fresh, is an acrid and excoriating poison, producing nausea, severe vomiting, burning at the praecordia, and violent catharsis, with tormina and watery (sometimes bloody) stools. These symptoms are liable to continue for eight or twelve hours; and to be followed by swelling, redness, dryness and tenderness of the lips and whole mouth, tenderness and heat throughout the bowels, extreme prostration, with perhaps bloating of the face and other parts of the body. These feelings sometimes are not recovered from for several days, and the gastric tenderness may last a number of weeks. Age slowly lessens this acridness; and roots two years old are much less irritating than those which have been dried but a few weeks.

When slowly and thoroughly dried, this root is a stimulant of very concentrated powers, acting slowly and persistently, influencing the salivary glands, mucous membranes, gall-ducts, liver, and even the kidneys. The whole round of the secretions are thus distinctly stimulated by it; yet the gall-ducts, and the mucous and fibrous structures of the bowels, are the parts most prominently acted on; and it is more valuable for securing a discharge than a secretion of bile. (§174.) Full-sized doses, as fifteen grains, usually secure catharsis in from six to eight hours, the stools being moderately thin, often frothy, and ejected with some force. Not uncommonly its influence continues for twelve or more hours; and large doses cause griping, distress, liquid stools, and much weariness or even exhaustion. Not unfrequently, a large dose will excite persistent retching with much prostration. Following its full cathartic use is, in most persons, a sense of weight and uneasiness in the bowels, with a tendency to costiveness, and that peculiar

heavy and bloated feeling which the patient is quite sure to construe into an indication of the need of another dose of physic. By stimulating the lower bowels, it commonly excites the uterus, ovaries, and bladder; whence a discharge of the catamenia, the expulsion of the placenta, and an evacuation of urine, may at times follow its use. Small doses, influencing the secretory organs gradually, lead to the classification of this agent as alterant.

From the great positiveness and reliability of its action, mandrake has come into extensive use as a common cathartic, and has been called a “substitute for calomel” which is a questionable form of praise; and it has been employed with as little discrimination as any article in the *Materia Medica*. The intensity and persistency of its stimulating power, at once forbid its use in any case where there is either irritability or inflammation of the stomach, liver, bowels, uterus or bladder. Only in sluggish and apathetic conditions of the abdominal viscera, is it desirable to employ it; and even moderate sensitiveness is by it soon converted into irritability and congestion. The best places for employing it are, costiveness arising from hepatic and intestinal atony, with a similar condition of the stomach; in such forms of biliousness, jaundice, and dropsy as arise from tilled condition of the hepatic organs; and to a limited extent in uterine and ovarian atony. This agent *never* leaves behind a tonic impression, no matter how satisfying may be the sense of relief enjoyed by the thorough evacuation of the liver and bowels; but it invariably leaves a sense of tiredness on the organs. When the stomach is weak and sensitive, the liver engorged and tender, and the bowels congested and tender, I can not, from years of extensive experience in its use, assent to the opinion that it is a suitable physic. Though highly praised without reference to the presence of these conditions, and even pronounced valuable in these very conditions, my large acquaintance with it justifies me in pronouncing it an unadvisable and exhaustive article under all such circumstances. By its repetition there, digestion is made worse, the liver becomes more tender, and the mass of intestines feels puffed and dragging. Also if the bladder, prostate gland, or uterine organs are sensitive, it should not be used as a physic. These discriminations materially curtail the field of usefulness which the agent is generally made to occupy; but I am thoroughly convinced that the truth fully justifies this curtailment, and that the extravagant laudations bestowed upon mandrake belong only to that kind of practice which makes violent purgation the acme of professional wisdom, and seeks active catharsis without any regard to the laws of Physiology.

When used in typhoid fever, or in any malady tending to congestion and putrescence, (as scarlatina or erysipelas,) this article is almost at once followed by dryness, darkness, and fissures of the tongue; increasing tenderness of the bowels; and a much greater liability to intestinal ulceration than is common in these maladies. If used in the later stages of these affections, dryness and glassiness of the tongue, and ulceration of the bowels, are almost inevitable, even when but small doses are given. Such has been my invariable experience with it; while I have rarely met ulceration or hemorrhage, since abandoning the use of podophyllum in such maladies; and my experience has been abundantly confirmed by many active physicians, especially by a communication from I. J. Sperry, M. D., of Hartford, Conn. In the Western States, these results are even more uniform than in the Eastern States; and it is no uncommon observation to find a case of ordinary bilious fever speedily present typhoid symptoms when podophyllum is used—even in quite small quantities, and in combination with much milder agents. When used as an alterant, and added in very small proportions to alterative sirups, tenderness and redness of the gums and fauces many times follow in a few days, with an

offensive form of ptyalism; and this especially in scrofulous and mercurial subjects, where the state of the frame is generally made the scape-goat for the action of the podophyllum. The powder, applied upon chancres or other indolent ulcers, removes the hard base by a sort of escharotic action; but, as careful observation will always show, leaves a smooth and not a granulating surface. The moist powder will blister the skin. Mr. W. S. Merrill tells me that, when pulverizing the roots in his mills, the workmen soon suffer an erysipelatous inflammation of the scrotum and eyes from the lodgment of the powder; and it is a well-known fact that a concentrated tincture will excite pain, burning, and somewhat phlegmonous erysipelas, on the skin of most healthy people. The late Dr. F. D. Hill, of this city, told me he could scarcely prepare podophyllin without danger of erysipelas; and twice he suffered severely in the face, and nearly ruined his sight, by this tincture. These facts, with the well-known exhaustive character of the catharsis it induces, certainly casts a strong suspicion upon the sanativeness of this agent, to say nothing more. As a physic, it certainly is not admissible to such a large variety of conditions as many suppose; and it is not good practice to cover it up with good articles to “neutralize” its harsh effects. While this opinion is widely at variance with that commonly received, it has not been reached hastily, nor on any trifling acquaintance with the agent. Formerly I employed it in every imaginable form, and in every variety of case where a cathartic was desirable, and that for several years; and, while its use may be appropriate in the atonic conditions above named, I have done far better without it in the last twelve years of my practice, than ever I could do with it. This experience is also confirmed by a number of elderly and skillful practitioners.

The cathartic dose of the powder varies from ten to twenty grains. A dose should not be repeated in less than six hours if the first one should fail to act; and it is generally best to wait eight or ten hours. The practice of repeating a medium dose every three or four hours, is liable to cause such an accumulation of the drug as will be followed by diarrheal action of a prostrating nature for twelve or more hours. From the intensity of its stimulation, it is best to associate it with some relaxant in excess, as leptandra. Caulophyllum seems peculiarly effective in obviating the tormina it is liable to occasion. At the present time it is rarely employed in any other form than that of its resinoid, podophyllin.

Pharmaceutical Preparations: I. *Tincture.* Macerate three ounces of the crushed root for fourteen days in a pint of diluted alcohol; express and filter. Or treat by percolation in the usual way. From twenty to forty drops are a dose; but it is even more wearisome to the bowels than the root is.

II. *Podophyllin.* Macerate a sufficient quantity of well-crushed root in absolute alcohol for three days. Place in a percolator, and exhaust with absolute alcohol. The common practice is to employ a very close apparatus and use hot alcohol. Distill off the alcohol from this tincture till the residue becomes almost sirupy; and then slowly pour this into three volumes of cold water, with constant stirring. A copious yellowish-white precipitate at once forms, most of which falls in from twenty-four to thirty-six hours; and a small quantity of diluted muriatic acid will speedily cause the precipitation of the remainder. This precipitate is caught on a filter, and well washed; and afterwards dried at a moderate temperature. A pound of good roots yields from an ounce to an ounce and three drachms. If not dried at too high a heat, its powder is a light yellow; but heat causes it to become brownish. Alcohol dissolves it nearly all, and ether dissolves the remainder; but it is not acted on by water or diluted alkalies. It is a very excellent representative

of the plant, probably better than any other resinoid; yet the dregs that have been exhausted by alcohol, will yield to water a quality that acts on the kidneys, much as in the case of jalap. (Some persons assert that the joints are diuretic, and their internodes cathartic; but this seems only speculative.) Podophyllin has almost entirely superseded the root; and is a most efficient cholagogue cathartic of the stimulating class, usable for the same purposes as the root, and almost as objectionable in sensitive conditions. It is certainly the most positive of all cathartics in its own limited field; but, like the root, when lauded and magnified in dysentery, typhoid fever, puerperal fever, after parturition, in phrenitis, irritable prostate, etc., the praise is most unwisely bestowed. The cathartic dose is from one to two grains. Large doses excite persistent and severe vomiting. The better mode of using it, is by thorough trituration with five or more times its own weight of sugar, with a little ginger or caulophyllin. By far the best combination of it is with three parts of leptandrin and one of caulophyllin, either triturated with sugar, or made into pills with a suitable extract.

III. *Fluid Extract.* This is prepared by treating the crushed root with seventy-five percent alcohol, and proceeding as in the fluid extract of leptandrin. By the use of alcohol of this strength, the qualities of the drug are most fully extracted, yet the resinoid is liable to fall to some extent on adding the watery concentration to the alcoholic product. On this account, most manufacturers now consider it preferable to use fifty percent alcohol; and to reserve the first eight fluid ounces which pass. It is a strong preparation, not often advisable. Dose, ten to twenty drops.

IV. *Bunnel's Pills.* Root of podophyllum, four ounces; hydrastis, blood root, and lobelia seeds, each, two ounces. Make into four-grain pills with softened extract of juglans. Dose, three to five. The original recipe of Dr. Bunnel directed gamboge instead of hydrastis, and used molasses instead of extract. The formula here given is less harsh and more tonic; and is much valued by many physicians as an efficient stimulating and relaxing hepatic.

Compound leptandrin pills, (often called compound podophyllin pills,) are mentioned among the pharmaceutical preparations of leptandra.

POLEMONIUM REPTANS

GREEK VALERIAN, BLUE-BELLS, JACOB'S LADDER

Description: Natural Order, Polemoniaceae. In the same Family with wild and garden phlox. Perennial roots; with small, weak, annual stems, six to ten inches high, diffusely branched. Leaves alternate, pinnate; pinnae seven to eleven, ovate-lanceolate, acute, sessile, an inch and a quarter long, thin and smooth, with entire edges. Flowers in small terminal corymbs, regularly five-parted; calyx bell-shaped, five-cleft; corolla bell-shaped, five-cleft, bright blue, convolute in bud, slightly nodding; stamens of five long filaments, equally inserted at the summit of the very short corolla tube, declined, hairy appendaged at the base. (*Gray.*) Fruit a three-celled capsule, each cell usually three seeded. May. A pretty little herb, common in good soils by shaded banks and through open woods. The roots are a mass of slender fibers four to six inches long, springing from a small collum, grayish-white, of a mild aromatic smell, and a warming and slightly bitter taste. Water and diluted alcohol extract their virtues.

Properties and Uses: The *roots* of polemonium are diffusibly stimulating and relaxing, leaving a gentle tonic impression. Their influence is expended with moderate promptness toward the surface and throughout the nervous system, a warm infusion securing a rather free perspiration and a fuller circulation in the capillaries. For this effect they are used in recent colds, pleurisy, the tardy appearance of measles or small-pox, and in typhoid and similar conditions; being among the most efficient of the mildly stimulating diaphoretics, and at the same time sustaining the nervous peripheries. They have a wide repute for ejecting the virus of snakes. In lingering parturition, with fatigue of the nervous system, they are quite serviceable. They exert a distinct influence on mucous membranes, elevating their circulation, promoting the discharge of tenacious accumulations, arid toning (but not astringing) them. This action makes them of use in sub-acute and chronic bronchitis, to which they have an excellent adaptation; also in tardy and painful menstruation. As diffusives to the nervous system, they are moderately antispasmodic, being of service to allay the restlessness of typhoid. The usual method of employment is by warm infusion, an ounce to a quart of water; of which from one to two fluid ounces may be given every two hours or hour. They are usually combined with an excess of asclepias, or similar agent.

POLYGALA SENEGA

SENEGA, SENECA SNAKE-ROOT

Description: Natural Order, Polygalaceae. This Family is represented in this country by the single genus polygala, which contains not less than thirteen species. Roots perennial, with a short and knotty caudex, and numerous short fibers. Stem annual, several from the same root, unbranched, six to twelve inches high, brownish-red below. Leaves alternate, sometimes scattered, oblong-lanceolate, dark green above, palish beneath, rough margined, nearly sessile, from one to three inches long. Flowers small, somewhat papilionaceous, in cylindrical spikes, which are terminal, and from two to three inches long; calyx of five persistent sepals, the upper and two lower of which are small, and the two lateral often of the color of the petals; petals three, white, connected with each other and with the stamen tube; shorter than the sepal wings; stamens six or eight, the filaments uniting below. Fruit a two-celled, flattened pod, inclosed in the persistent calyx, with a single seed in each cell; seeds with a long caruncle at the hilum. May and June.

This unattractive plant, with the calyx nearly concealing the corolla, is common on woody and rocky hillsides throughout the Middle and Southern States. The root is the medical part, and receives a portion of its name from the Seneca Indians, with whom it was in high repute as a remedy against snake bites. It is tapering, branched, crooked, wrinkled, yellowish-brown, with a white and woody center. The fresh roots have a strong and not always agreeable smell, which is less distinct in the dried roots. Its taste is at first sweetish, but afterward pungent, bitter, and rather acrid. Boiling water acts effectively upon the root, whose chief virtues reside in the corticle; warm water (105°) is most suitable for making infusions; but the best solvent is diluted alcohol. Heat impairs it somewhat. Examination shows it to contain a volatile principle, supposed to be of an acid character; and a peculiar principle called *polygalic acid*, or *senegin*. It is obtained by treating the root with alcohol, removing a trace of fatty matter with ether, and then repeatedly washing with alcohol and water a precipitate that forms. When pure, it is a white and inodorous powder, and extremely irritating to the fauces. It is not an article of commerce.

Properties and Uses: Senega *root* is a distinct and persistent stimulant, chiefly influencing the respiratory membranes, but extending its influence to other mucous membranes, to all the secretory organs, the uterus, and the circulation. It promotes a flow of saliva, stimulates expectoration, causes a peculiar irritating sensation in the fauces, and proves nauseating (or even emetic and cathartic) in large doses. The principal use made of it, is as an expectorant in old coughs, asthma, and respiratory debility; but it is entirely too stimulating to use in recent cases, with inflammation or irritability of the respiratory passages, and is generally best employed when combined with a large excess of relaxing and demulcent expectorants, as comfrey. Some practitioners commend it as an ingredient in stimulating gargles, for putrid sore throat; and it enjoys some repute as a systemic stimulant in the treatment of secondary syphilis, mercurial cachexy, atonic amenorrhea, dropsy, and chronic rheumatism. Used in weak and warm infusion, it promotes perspiration and diuresis. The title "snake root," has been given to it from the reputed power of the warm infusion in casting out the virus of serpents; and certainly its stimulating action is sufficiently great to warrant the belief that its best use would be in those and other cases where it is necessary to sustain the circulation actively against the encroachment of

animal poison— whether from serpents, or in the form of infiltrated pus or advancing mortification. I have twice employed the warm infusion to advantage in receding small-pox with its failing pulse. The agent is too commonly misapplied; and is used many times as if it were a relaxant expectorant, whereas it is one of the most positive and persistent of all stimulants to mucous membranes. Unless proper discrimination is made in using it, there is a strong liability of inducing painful irritation of the lungs, uterus, and kidneys. The polygalic acid, above mentioned, is said to have killed dogs when given in very large doses; and post-mortem examination revealed congestion of various mucous membranes.

Dose of the powder, from five to ten grains every three or four hours. Most commonly it is used as an ingredient with such articles as symphytum, glycyrrhiza, convallaria or althea, and made into an infusion. A *decoction* is prepared by adding a pint and a half of water to an ounce of senega and an ounce of licorice root, boiling down to a pint, and straining. One to two fluid ounces of this are used as an expectorant three or four times a day. A sirup is prepared by boiling four ounces of the root in a quart of water till the strength is obtained, straining with pressure, adding a pound of refined sugar, and evaporating so as to obtain a pint. Dose, one to two fluid drachms.

POLYGONUM AVICULARE

KNOT-GRASS, GOOSE-GRASS, DOOR-WEED

Description: Natural Order, Polygonaceae. This is a well-known but humble plant, often growing in door-yards upon sandy soils, where its procumbent stems form soft and even masses of pale green. Stems slender, light purplish-red, with several slender branches, all procumbent and spreading. Leaves alternate, small, oblong lanceolate, sessile, sheathed at the joints. Flowers axillary, two or three together, greenish-white tinged with pale purplish-red, small, almost sessile; calyx petaloid and five-parted; stamens eight or nine; styles three. Blooming all the season.

Properties and Uses: This insignificant herb, a member of the smartweed Family, is usually overlooked by physicians, but possesses qualities deserving of attention. It is a mild and quite diffusive relaxant and stimulant, antispasmodic in action, and of decided usefulness in flatulent colic and painful menstruation. A warm infusion, of an ounce to a pint, may be used freely; and its efficacy is usually increased by the addition of a little ginger. It acts rather efficiently upon the kidneys, relieving sudden suppression, with aching through the back and bladder; and the cold infusion not unfrequently relieves tickling coughs.

POLYGONUM HYDROPIPER

SMART-WEED, WATER-PEPPER

Description: Natural Order, Polygonaceae. This very common Tribe of plants is familiar to all, and is characterized by their jointed stems, and partially sheathing alternate leaves. There are several species, closely resembling each other, and most readily distinguished by their spikes of flowers being either rose-red, light-rose, white, or greenish-white. Although they possess similar properties, the hydropiper is far the most powerful, next to which are the punctatum, (acre,) and hydro-piperoides, (mite.) The whole Family (which includes the buck-wheat, the yellow dock, and the rhubarbs) has no corollas, but a colored calyx which resembles a corolla. P.

HYDROPIPER: Annual roots. Stem smooth, one to two feet high. Leaves lanceolate, with fringed sheaths, two to four inches long, crowded with pellucid dots. Flowers in short, slender spikes, drooping, and somewhat loosely-flowered; calyx sepals five-parted, green-ish-white; stamens mostly six; styles two to three-parted. Fruit an obtusely triangular achenium, somewhat flattened, shining brown, minutely striate. Common in moist grounds, blooming from August to October.

The species **PUNCTATUM** closely resembles the hydropiper, but has whitish flesh-colored flowers on erect and close spikes, and the calyx (as well as the leaves) is marked with pellucid glands. This species is most common southward, and constitutes a large portion of the polygonum that comes to market. The **HYDRO-PIPEROIDES** has very narrow leaves, which taper at both ends and are a little roughish; and short spikes of rose-colored flowers, whose calyces are not dotted. It is much milder than either of the above. The **PERSICARIA** has dense spikes of greenish-white flowers, very shining seeds, and roughish leaves which are marked by a triangular, or somewhat oval, dark spot near the center. By some, this is considered the true medicinal smart-weed; but it is quite mild compared to the hydropiper, though usually gathered because of its greater commonness. All these species yield their properties to water and alcohol; and are impaired by age and by heat.

Properties and Uses: This *herb* is very acrid, and possibly vesicant, when green. The dried article is a sharp, diffusive, and not disagreeable stimulant, with a moderate portion of relaxing powers. A warm infusion readily enlarges outward capillary action, securing a free and warm perspiration, an increase of expectoration, and a decided increase of the catamenia when this flow has been checked by exposure. An increased flow of urine sometimes follows, but cold preparations act most upon the kidneys. The warm infusion is of service in recent colds, the later stages of pulmonary congestion, in low typhoid, and other cases where there is distinct capillary congestion and a tendency to putrescence. On account of the pungency of its action, the true hydropiper is usually combined with asclepias; but the punctatum may be used alone, and both are valuable arresters of gangrenous tendencies in diphtheria, carbuncle, frost-bites, etc. This infusion may also be used in painful and tardy menstruation, for which it is decidedly valuable; in flagging labor pains, with fatigue, it is a prompt and serviceable article; and in uterine or pulmonary hemorrhage, it may be combined with a suitable astringent, and used to much advantage to secure an outward determination of blood. It has been much commended in the pain and cramps of cholera; and is by no means an insignificant remedy—used internally and applied externally as a fomentation—in all crampings, neuralgic pains, and congestion of the

abdominal and pelvic viscera. Indeed as a fomentation in all acute forms of internal suffering, it is one of the truly valuable remedies; and exerts an antispasmodic power, of the more stimulating grade, that is of much benefit for most cases of hysterical neuralgia, when used internally either alone or associated with cypridium or valerian. Cold preparations are useful in the same classes of cases; and the agent may be used as a general and moderately diffusible stimulant with other articles for a large variety of purposes, as with camomile, cimicifuga, or caulophyllum in tardy menstruation and uterine pains, with convallaria or aralia in pulmonary debility, with tonics and hepatics in dropsy and general debility, and with alterants in low forms of scrofula and mercurial cachexy. Owing to the impairing influences of age, the agent as procured from druggists is often nearly inert; but when recently gathered and carefully cured, it will be found a remedy of very decided powers—the hydropiper being most stimulating, and the punctatum and other species most antispasmodic.

The usual mode of employment is by infusion, prepared by digesting half an ounce of the dry herb in a quart of water not above a temperature of 150°; of which from one to three fluid ounces may be given at intervals of three hours, two hours, or one hour, according to requirements. A tingling sensation throughout the frame is usually felt soon after beginning its use. A concentrated *tincture* is prepared by macerating a pound in a suitable quantity of diluted alcohol, transferring to a percolator, adding diluted alcohol till ten fluid ounces have passed, and then subjecting the dregs to strong pressure. A pint of fluid is thus usually obtained, or enough diluted alcohol may be added to make a pint. I prefer this tincture to the *fluid extract*, (which may be prepared as the fluid extract of boneset,) as the heat used in evaporating causes a decided loss of the properties of the drug. As an internal remedy in faintness, collapse, cholera, and similar extreme depressions, it may be used in doses ranging from twenty drops to a teaspoonful, at intervals of half an hour or more; or it may be added in suitable proportions to other agents, in any of the cases previously named.

Used as an outward application, it is generally dipped in warm water and vinegar, laid over the part, and covered with a piece of warm flannel. The fresh herb is better than the dried for outward uses. The infusion makes a good wash for indolent ulcers, semi-putrescent sores, and aphthous ulcers.

POLYPODIUM VULGARE

ROCK POLYPODY, BRAKE ROOT, FEMALE FERN

Description: Natural Order, Filices; sub-order, Polypodineae. Fronds six to ten inches long, simply and deeply pinnatifid, ever-green, glabrous; divisions alternate, linear-oblong, obtuse, minutely and obscurely toothed. Fruit dots large, round, irregularly scattered on the backs of the frond, at the ends of the veins. Common in shady and rocky situations throughout the United States. The root is medicinal; is several inches long, one-fourth of an inch in diameter, covered with thin brown scales.

Properties and Uses: The root of this plant is demulcent and somewhat tonic, acting upon both the lungs and the bowels. An infusion or sirup is used as an expectorant tonic and mild laxative, but requires to be used very freely to make much impression. It is reported anthelmintic, and an oil is said to be obtained from it after the manner employed for procuring oil of aspidium; but its power of removing worms has been much overrated.

POLYTRICHUM JUNIPERUM

HAIR-CAP MOSS, ROBIN'S RYE, BEAR'S BED

Description: Natural Order, Musci. These are among the tallest of this entire sub-order of mosses, growing in compact beds on thin soils, in the edges of dry woods, where their size and brilliant green color distinguish them from all other tribes of moss. Stem four to seven inches high, sometimes divided, reddish or dark purple, shining, triangular, almost woody, growing from an erect and well-rooted rhizoma. Leaves linear, awn-pointed, somewhat sheathing below, spreading above, margins inflexed and entire. Florescence dioecious, with the male flower cup-shaped. The seed (spore) vessel, or capsule, terminates a naked prolongation of the stem (pedicel), usually four inches above the leaves, and is oblong, four-sided, and with nearly acute angles. The membranous calyptra covering the capsule is white, densely hairy, and finally splits on one side so as to form a sort of hood. The lid (operculum) of the capsule is shortly rostrate from a convex base; and the mouth of the open capsule presents a peristome of sixty-four persistent teeth, in a single row.

Properties and Uses: This plant was first brought into notice by Dr. Wm. Wood, of Connecticut, and was subsequently spoken of by Dr. A. Hunter, of Vermont, both Allopathic physicians; and to them is due the honor of its introduction, though Dr. King, with customary skill in "selecting," claims it for the Eclectics. (See *Am. Jour. Med. Sciences*, vol. xxvii; and *N. J. Med. and Surg. Reporter*, vol. ix.) It is a very prompt relaxant to the kidneys, securing an abundant flow of water without any especial elimination of solids. The usual mode of employment is by infusion, made by digesting half an ounce of the herb in a quart of water; of which from one to three fluid ounces may be given every two to four hours. Possessing but little taste, it is usually taken readily; but it is easily abused, and may cause rapid exhaustion of the kidneys. Combined with the use of tonics, it may be used to good advantage in dropsy; and may be given alone in ordinary renal suppressions, and aching of the kidneys and bladder.

POPULUS BALSAMIFERA

BALSAM POPLAR

Description: Natural Order, Salicaceae. This is a tall and handsome tree, found in the New England and Northern States, and Canada, mostly on the borders of swamps and streams.

Generic characters as in *P. tremuloides*. *P. BALSAMIFERA*: Trunk fifteen to eighteen inches in diameter. "Leaves ovate, gradually tapering and pointed, finely serrate, smooth on both sides, whitish and reticulately veined beneath. Scales [of the bud] dilated, slightly hairy. Stamens very numerous. Buds large, [an inch or two long,] varnished with a fragrant resinous matter." (*Gray*.) Often classed as the *P. radicans*.

POPULUS RADICANS, a small tree, much cultivated for the agreeable fragrance of its buds in the spring, is popularly called *balm of gilead*. It has broader leaves than the above species, which are also on long petioles, sub-heart-shaped, serrate, whitish and reticulate-veined beneath.

Properties and Uses: The *buds* of these two trees are of almost identical properties, and usually appear together in market under the one common name of balm-of-gilead buds. They should be gathered in the spring, before they begin to expand; and are valued for their resinous varnish, which is sometimes collected and put upon the market as identical with The buds are of the terebinthinate balsamic character, stimulating to the mucous membranes and kidneys, slightly influencing the circulation, and acting chiefly on the respiratory passages. They promote expectoration actively, and give a tingling sensation in the bronchi and through the lungs; whence they should never be employed in recent or irritable coughs, or in any inflamed condition of the organs of respiration; but make an excellent stimulating addition to more relaxing expectorants and tonics for old coughs, and dry asthma, with pulmonic debility. For their action on the kidneys, some have spoken highly of them, but they are suited only to cases of much torpor, and then should be combined with relaxant diuretics. In purely chronic forms of rheumatism, they form a fair stimulating addition to such articles as *cimicifuga* and *phytolacca*. Heated in lard or other fat, they form a stimulating ointment, which is of good service in congested wounds and bruises, indolent sores, and *rupia*; and *Rafinesque* commends it as a local application in chronic rheumatism. A *tincture* is made by macerating two ounces of the buds in a quart of seventy percent alcohol; of which from twenty to sixty drops may be given in any suitable sirup every second hour or oftener, for pectoral difficulties.

POPULUS TREMULOIDES

WHITE POPLAR, ASPEN POPLAR, AMERICAN ASPEN, QUAKING ASPEN

Description: Natural Order, Salicaceae. In the same Family with the willows. Genus POPULUS: Trees, with broad-ovate leaves, and dioecious flowers in scaly aments without calyx or corolla. Aments of sterile flowers long and drooping; fertile flowers under the scales of terminal aments called buds, the scales being imbricated and covered with a resinous varnish; flowers appearing before the leaves. P. TREMULOIDES: Leaves roundish heart-shaped, sharp-pointed, with small and regular teeth, very smooth, light green, three nerved, two inches or more in length; petioles two to three inches long, slender, compressed at the sides, on account of which the drooping leaves have an almost unceasing motion even on the most trifling movements of the air. Aments about two inches long, drooping; scales cut into three or four linear divisions, fringed with long hairs; appearing in April, and but slightly resinous.

This is a small tree, with a smooth grayish-green bark when young, but a greenish-brown and somewhat roughened bark on the trunks of old trees. It is very common throughout the United States, preferring moist soils, and in some sections forming small groves. The bark is the medicinal part, and yields its properties to water and alcohol.

Properties and Uses: The *inner bark* is an efficient and pleasant tonic, with a modicum of astringency. From its common name, it is usually confounded, in medicine, with the liriodendron, to which it bears no resemblance, except in being soothing in its action. Dr. S. Thomson early appreciated its good qualities, and was one of the first (if not the very first) to describe its true character. It promotes appetite and digestion in all lax conditions of the stomach; and is one of the best tonics in sub-acute and chronic diarrhea, scrofulous looseness of the bowels, and that form of diarrhea which arises from laxity of the stomach with indigestion. For these cases, Dr. Thomson combined it into his preparation called No. 5, described under myrica. For a similar tonic action on mucous and sub-mucous membranes, it is of much advantage in leucorrhea, both inwardly and by injection; and is of peculiar value in all female difficulties connected with laxity, as it soothes while it tones, and is not liable to confine the bowels. Among both profession and people, it is a much-praised remedy for worms; but is of value only as a tonic in laxity of the abdomen. It acts gently on the kidneys, and is of service in chronic scantiness of urine and aching of the back; and it is highly commended in dropsy, but is there useful as a tonic, (if combined with stronger tonics,) and not because of its diuretic action, though it always gives tone to the kidneys. An infusion, or three grains of the extract dissolved in an ounce of water, is a good wash for chronic and purulent ophthalmia; and a weaker preparation is excellent in sub-acute gonorrhoea, etc. Combined with uva ursi or epigea repens, it is one of the best of tonics for catarrh of the bladder and similar renal difficulties. The medium power of its tonic action commends it, and makes it readily acceptable to many stomachs that would reject stronger articles. Dose of the powdered bark, half a drachm or more three times a day.

The late Dr. W. T. Craig, of Shelbyville, Illinois, told me that he had repeatedly used the bark of POPULUS HETEROPHYLLA (*cotton tree, downy-leaved poplar*) with the most gratifying success in intermittents. He especially commended it for those intermittents where quinine or salacin proves too exciting to the nervous centers, and a pure and reliable tonic (with hepatics) is

particularly needed. Dr. Craig's reliable character makes his commendation worthy of attention by the profession, and his experience has been confirmed by the partial observations of others, especially of B. A. Line, M. D., of Antioch, Indiana. This species of poplar is a tall tree, forty to sixty feet high, with large, blunt, and roundish heart-shaped leaves, which are quite downy when young, but nearly smooth when old.

Pharmaceutical Preparations: I. *Fluid Extract.* This is made with fifty percent alcohol, first setting aside eight fluid ounces of the tincture from a pound of crushed bark; then exhausting with water, evaporating to eight fluid ounces, and mixing the liquids. It is a pleasant and excellent preparation, chiefly used in company with more stimulating tonics for indigestion. Dose, from half to a whole fluid drachm.

II. *Populin.* This is a crystalline principle, "obtained by precipitating a saturated decoction of the bark with solution of sub-acetate of lead, filtering, precipitating the excess of lead by sulphuric acid, again filtering, evaporating, adding animal charcoal toward the end of the evaporation, and filtering the liquid while hot. Salicin gradually separates, upon the cooling of the liquor. If, when this principle has ceased to crystallize, the excess of sulphuric acid in the liquid be saturated by a concentrated solution of carbonate of potassa, the populin will be precipitated. If this be pressed between folds of blotting paper, and redissolved in boiling water, it will be deposited upon the cooling of the liquid, in the crystalline state. It is soft, purely white, and of a bitter sweetish taste analogous to that of licorice." (*U. S. D.*) This principle has not been presented in commerce, but seems to promise well as an efficient representative of the nervine-tonic quality of the plant. The leaves are said to yield it in even larger proportion than the bark.

III. *Spiced Bitters.* *Number 4.* Under these terms, Dr. S. Thomson employed the following combination: Barks of populus and berberis vulgaris, and leaves of chelone glabra, in equal quantities; powder and mix. This is a peculiarly efficient tonic and hepatic, and suitable for all sluggish conditions of the stomach with biliousness and torpid bowels. Few similar preparations equal it for atonic states of the digestive and hepatic organs. Dr. Thomson's directions were, "One ounce of the powder to a pint of hot water, and [when cold] half a pint of proof spirit. Dose, half a wineglass full." When a more stimulating action was required, he directed the addition of ten or more grains of capsicum to this pint and a half of tincture. From the increasing scarcity of the barberry, (not bayberry,) this formula gradually passed into disuse; and various substitutes were offered. The following is now received and recognized as the *Official Spiced Bitters*: Populus, eight ounces; hydrastis, zingiber, xanthoxylum bark, and cinnamon, each, two ounces; herb of chelone glabra, an ounce and a half; capsicum, one drachm. Mix in the powdered state. Cloves have been used instead of cinnamon, but are not so grateful to the stomach; and a larger quantity of capsicum is commonly directed, but materially limits the range of cases in which the preparation is usable. It is employed for the entire range of cases for which a stimulating tonic is desirable, and may be made somewhat more laxative by the addition of two ounces of apocynum, for cases requiring it. Dose, ten to twenty grains three or four times a day. Usually it is triturated with seven parts of sugar, and given in the powdered form; but may be exhibited by in fusion, or made into a wine tincture.

IV. *Female Restorative*: Poplar bark, eight ounces; hydrastis, helonias, and euonymus, each, two ounces; xanthoxylum bark, one ounce. Crush the articles, macerate in a close vessel for three days with a sufficient quantity of Madeira wine; transfer to a percolator, and add the same wine till (in all) five pints have been used; express the dregs strongly, filter, and add two pounds of sugar. This makes an elegant and superior preparation for indigestion, atony of the stomach, excessive menstruation, and degenerate forms of leucorrhœa and prolapsus; but is not suitable for irritable stomach or uterus, or deficient menstruation. Dose, a fluid ounce, or less, three times a day. If wine is objectionable, the articles may be used in a powdered form, or made into a decoction or sirup.

POTASSIUM COMPOUNDS

Potassium is a bluish-gray metal, soft, with such a strong affinity for oxygen that it must be preserved under naphtha, and capable of decomposing water with such avidity as to inflame the liberated hydrogen by the heat evolved. It is generally prepared by first calcining crude tartar, (tartrate of potassa,) mixing this with one-tenth its weight of charcoal in small pieces, and then distilling over the potassium, at a red heat, from a retort of hammered iron with an escape tube dipping into a receiver partly filled with naphtha and surrounded by ice. The metal is not used alone, nor often procured for the purpose of making compounds with it, as the majority of its compounds are obtained, by various processes, from the refined carbonate of potassa (pearl-ash) procured from the leaching of wood ashes.

CARBONATE OF POTASSA. $\text{KO}, \text{CO}_2 + 2\text{HO}$. This salt is a prominent constituent of all inland plants, as a corresponding salt of soda is of marine plants. It is prepared by evaporating the lye of wood ashes, calcining the coarse product to drive off organic matter, dissolving the remaining saleratus with its own weight of cold water, filtering, and again evaporating to dryness. It comes on the medical market as a snow-white, pearly, granular powder, which slowly absorbs moisture and becomes deliquescent, and is many times filled in orders for the more costly bicarbonate. It is a strong alkali, not often suited to inward use.

BICARBONATE OF POTASSA. $\text{KO}, 2(\text{CO}_2) + \text{HO}$. This is prepared by passing a stream of carbonic acid gas through a cold solution of the above carbonate. The gas is rapidly absorbed to the extent of an additional equivalent, and a white crystalline compound falls. This is dissolved in three times its own weight of warm water; and, on cooling, the purified bicarbonate forms large, colorless, nearly transparent, rhomboidal crystals, whose size and hue distinguish them from the small and white crystals of carbonate. The bicarbonate does not deliquesce, is less soluble than the carbonate, and is a much milder alkali. Heat and boiling drive off the second equivalent of carbonic acid and leave the simple carbonate of potassa. The bicarbonate is far preferable to the carbonate for medical use, an equal weight of it will neutralize more acidity than will the bicarbonate of soda, and it is usually more acceptable to the stomach than most of the alkalies. The chief use made of it, is to relieve acidity of the stomach, especially in the form of Neutralizing Cordial; but it is also employed as the alkaline basis in various effervescing powders and draughts, and some have commended it in rheumatism (to little real advantage.) Like other alkalies, it may be used so freely as to neutralize the gastric juice as well as the morbid acidity of the stomach; whence three or four grains are usually a sufficient dose, though ten or more grains may be used on occasion.

POTASSA CAUSTICA, *Hydrate of Potassa, Caustic Potash*. KO, HO . Dissolve one part of carbonate of potassa in ten parts of distilled water, bring to the boiling point, add small portions of milk of lime at intervals of a few minutes, (boiling for two minutes after each such addition, and carefully replacing the water lost by evaporation.) The lime removes the carbonic acid from the potassa, and falls as a fine carbonate of lime, the clear liquor potassa remaining. This liquor is then to be drawn off carefully with a syphon, and rapidly evaporated to a solid consistence. This is then purified by being dissolved in alcohol, which takes out the pure hydrate, and leaves undissolved any carbonate of lime or potassa. The alcohol is then to be quickly evaporated, and the liquid poured into small cylindrical molds as it nears the solid consistence. It comes to

market in small grayish-white sticks, four or five inches long, is intensely caustic, and has such an avidity for water as to soften into a dense liquid unless kept in very tight bottles. At present, it is seldom applied as a caustic, partly on account of the pain it often causes as it destroys both living and half-dead structures, and partly from its tendency to soften and spread beyond the parts where it is needed.

POTASSA CUM CALCE, *Potassa with Lime, Milder Common Caustic*. Equal quantities of caustic potash and unslaked lime are rubbed together, and kept in well-stoppered bottles. Or the potash may be heated to fusion in an iron spoon, the lime added in successive portions with stirring, and the mass poured into leaden molds. It is a milder caustic than the preceding, yet a potent one; and is not deliquescent, nor very liable to spread. The powder is moistened with alcohol, and is often called *Vienna paste*. A strip of adhesive plaster around the part to be cauterized, will keep it from spreading.

CHLORATE OF POTASSA. KO, C10. The common method of preparing this salt, is that of passing a stream of washed chlorine over a damp mixture of seven parts carbonate of potassa and sixteen parts slacked lime, with continuous stirring. Boiling water dissolves out the chloride of potassium and chlorate of potassa thus formed, leaving the carbonate of lime; and by evaporation, the chlorate crystallizes while the chloride remains in solution. It forms thin, white, tabular crystals, of a slightly saline taste. Used internally, it has acquired much celebrity in the treatment of diphtheria, scarlatina, and other cynancheal affections; but I am fully convinced that it is a feeble article in such maladies, and much less antiseptic than the chloride of sodium, (common salt.) It is also commended highly, by Allopathists, as a cure for salivation; and probably they are prepared to judge on this matter. Some are of the opinion that it is a poison; but there seems to be no good ground for this belief, beyond the fact that even innocuous mineral compounds are not well received in large quantities. From ten to even thirty grains have been given, at intervals of three or four hours. Gum water is the best medium for its exhibition, using enough to dissolve the salt.

BITARTRATE OF POTASSA, *Cream of Tartar*. The tart wines slowly deposit a whitish crystalline substance, during the slow fermentation they undergo after having been racked off and stored in casks. This is called *crude tartar*, or *argol*. This is purified by melting in as little boiling water as will dissolve it, allowed to cool and crystallize, and redissolved and crystallized. The second crystals are bleached to pure whiteness on linen stretchers, and then pulverized. It is white, somewhat gritty, of a rather pleasant and quite mild acid taste, insoluble in alcohol, soluble in eighteen parts of boiling and nearly two hundred parts of cold water. It is classed among the cooling diuretics and cathartics, in large doses procuring rather watery stools. Dissolved in cold water, and sweetened, it is used as a grateful drink in fevers, and to promote the action of the kidneys. Combined with senna, jalap, podophyllum, and some other physics, it seems to increase their activity. To move the bowels, a drachm or more may be given, in water. Ten to fifteen grains may be dissolved in a tumblerfull of water, the desired quantity of sugar added, and a tablespoonful or more allowed at intervals. To the Physio-Medicalist, it is not an attractive remedy.

SULPHURET OF POTASSIUM, *Hepar Sulphuris, Liver of Sulphur*. KS. This is prepared by mixing intimately one ounce of fine sulphur with two ounces of carbonate of potassa, and slowly

bringing them into fusion in a covered crucible. The resultant mass is really a bisulphide of potassium. It is a dense, brittle, greenish mass, with a nauseous and alkaline taste, and a filthy smell not unlike rotten eggs. It must not be confounded with the white salt, sulphate of potassa. During the reign of the first Napoleon, this article came into great repute as a specific for croup, owing to an essay on it having received a prize offered by the Emperor—another instance of the folly of heeding titled “authority” in preference to obeying Nature. The only medical use it is fit for, is as a wash for itch; and there it is a specific. A good method of employing it, is first to wash the patient thoroughly with soap and water, then with half an ounce of this sulphuret dissolved in twelve ounces of water and four ounces of rose water. Entirely fresh clothing should then be put on; and if the wash have been made to penetrate the sores, one application is usually sufficient.

Most of the other compounds of potassium, as well as some of the above, are more or less poisonous, though many of them are in use by Allopathic and Eclectic physicians. Among these may be enumerated: Nitrate of potassa, or saltpeter; acetate of potassa; cyanuret of potassium; and iodide of potassium. However highly these may be praised, they came into use only as agents capable of “producing another disease,” (§66,) and the testimony as to their destructive powers is ample.

POTENTILLA CANADENSIS

FIVE-FINGER, CINQUE-FOIL

Description: Natural Order, Rosaceae. This is a small plant, with a hairy and procumbent stem running upon the ground two or more feet, sometimes ascending, giving off runners after the manner of the strawberry, to which genus (*fragaria*) it is closely allied in appearance and habit. Leaves compound, palmately five-parted, leaflets oblong or obovate-wedge-form, cut dentate toward the apex. Flowers solitary, on long axillary peduncles; calyx five-cleft, with five long and alternate bractlets which look like additional sepals; petals five, spreading, obcordate, yellow; stamens many. June to August. Other species are much smaller than this one; and some are erect, two to four feet high, and even shrubby.

POTENTILLA TORMENTIL, (*tormentil*, *septfoil*,) is a small perennial plant common in Europe, with woody roots, and slender stems rising nearly erect to the height of six or eight inches.

Properties and Uses: The *herb* five-finger was at one time in high repute as a medicine, and was accredited with almost miraculous powers; but it is only a mild astringent with tonic powers, nearly resembling the leaf of the raspberry, and usable for the same purposes. The common mode of exhibition is by infusion. The *tormentil roots* are quite purely and actively astringent; and though much employed in some sections of Europe, are scarcely known or used in this country.

PRINOS VERTICILLATOS

BLACK ALDER, WINTER-BERRY, FEVER BUSH

Description: Natural Order, Aquifoliaceae. In the Family with the holly, and now classed by Gray as *Ilex verticillata*. From similarity of common names, it is often confounded with alnus. Small shrubs, common to low grounds. Stem six to eight feet high, with a bluish-gray bark. Leaves irregularly alternate, obovate or wedge lanceolate, pointed, acute at the base, serrate, smooth and olive-green above, downy on the veins beneath. Flowers dioecious, fertile Bowers solitary or few in the axils, sterile flowers in axillary clusters; calyx minute, six-parted; corolla six-parted, united at base, small, whitish; all short-peduncled. Fruit a bright scarlet berry, about as large as a pea, containing six nut-like seeds. Blooming in July, and ripening the fruit in autumn. The bark is mostly used in medicine, and is distinguished from the alnus by coming in slender and somewhat rolled pieces, and being of an ashy-green color internally.

Properties and Uses: The *bark* is stimulating and relaxing, mild in action, and chiefly influencing the secernent organs. It is properly a tonic alterant of a mild grade; and though by some classed as an astringent, it is rather laxative, though leaving behind that slightly consolidated condition common to stimulating tonics. It improves the action of the bowels and gall ducts, for which it is used in jaundice, dropsy, and herpetic eruptions; and some have commended it highly in ague, for its hepatic-tonic influence. Outwardly, it is an article of medium power in weak and scrofulous ulcers; and has been spoken of in phagedrenic and mortifying sores, though its action is too light for such cases. The *berries* are reputed anthelmintic and somewhat actively cathartic; and a strong decoction of either bark or berries, used in considerable quantities, is likely to induce vomiting and catharsis.

PRUNUS VIRGINIANA

WILD CHERRY

Description: Natural Order, Rosaceae; sub-order, Drupaceae. This is the lofty black cherry tree of the American forests, the dark-red wood of which receives an excellent polish, and is valued by cabinet makers. Gray applies this name to the small choke-cherry, and calls the black cherry by the technical name *Prunus seratina*. Bark thick, reddish, fragrant, with a rough dark corticle separating in narrow layers. Leaves oblong-lanceolate, tapering, serrate with short and incurved teeth, thick, smooth, dark green, shining, three to four inches long. Flowers small, white, rosaceous, many stamened, in long racemes. Fruit a small, round, black cherry, with a round and smooth drupe, pleasantly vinous, yet leaving a slightly bitter taste. Blooming in May, ripening its fruit in August and September.

The inner bark of this tree has long been a popular remedy. Like the leaves of peach and the kernels of almonds, (both of which are in the same Family with the cherry,) it is accused of containing prussic acid; but, like them, it contains no such poison in its natural state, nor can any be obtained from it till a process of fermentation has changed the original constitution of its elements. This fact has already been explained in the articles on *amygdalus*. This bark has a flavor similar to peach leaves, and a pleasant and very mildly bitter taste. Cold water, warm water, and diluted alcohol, extract its virtues readily; but its better qualities are volatile, and are readily dissipated by heat.

Properties and Uses: This *bark* is a mild and soothing tonic, slightly astringent. It is chiefly valued for the soothing influence which accompanies its tonic action; for while it gently improves appetite, digestion, and the general strength, it quiets nervous irritability and arterial excitement. This soothing power is attributed to the prussic acid it is said to contain, and marvelous accounts are given of its many times reducing the pulse to fifty or less; but, as above shown, it contains no prussic acid, and there is no ground for believing that it ever reduces the pulse below the normal standard. For chronic gastritis with indigestion, convalescence from typhoid and other low conditions, the irritable nervousness of hectic, and similar cases, it is not surpassed by any tonic; and will be received by the stomach when most other tonics are objectionable, and improve the strength without inducing feverishness. The lungs are much acted on by it; and it is a superior article for irritable coughs, whether acute or chronic. Depressed and sluggish conditions of the system never call for its use. The astringent impression it exerts is scarcely noticeable; yet is fairly marked if the bark is boiled, when the soothing and volatile qualities will be almost entirely driven off, and an unpleasant astringent quality be left behind. Outwardly, it makes a soothing and cleansing application to irritable and weak sores, especially those of a scrofulous character; and I have employed it to most admirable advantage in painful ulcers following medium burns, and in inflamed and painful chancres, especially in combination with nymphaea.

The simplest and best method of using it for tonic purposes, is to macerate half an ounce of the well-crushed bark in half a pint of cold water for four hours; of which a fluid ounce may be given every four or three hours. The U. S. Pharmacopoeia directs half an ounce of the bark to a pint of cold water, and maceration for twenty-four hours; but such length of treatment is

certainly inconvenient, and (in warm weather) would assuredly develop prussic acid, and then the infusion would indeed be sedative to brain and pulse. By percolation, the strength of the bark may be obtained sufficiently well in an hour, and may also be made stronger than by maceration. Boiling or hot water should never be used on this bark.

Pharmaceutical Preparation: *Sirup.* Moisten five ounces of coarsely powdered prunus with cold water, and let it stand twelve hours, (or six hours in warm weather;) transfer to a percolator, and gradually add water till a pint of liquid has been obtained; to this add two pounds of refined sugar, in a bottle, and shake occasionally till the sugar is dissolved. This is the process of the U. S. Pharmacopoeia, except a reduction of the time of maceration from twenty-four hours. It is an elegant preparation, but requires to be kept in a very cool place. Used chiefly in coughs and other pectoral difficulties. Dose, two fluid drachms or more, generally in company with other expectorants. Prunus is frequently combined with the stimulating tonics, as cinchona and quassia.

PTELEA TRIFOLIATA

WAFER ASH, WING SEED, SHRUBBY TREFOIL, HOP TREE

Description: Natural Order, Rutaceae. In the same Family with prickly ash and ailanthus. This is a tall shrub, six to twelve feet high, with a thin, roughish, and dark gray bark. Leaves compound in threes; leaflets ovate, pointed, obscurely serrate, with pellucid dots, downy when young. Flowers polygamous, in compound terminal cymes, small, greenish-white, three to five sepals and petals, numerous stamens, of a disagreeable odor. Fruit a two-celled and two-seeded samara, a little larger than a flattened pea, bordered by a broad and thin wing all around, making the samara about three-fourths of an inch in diameter, and with the appearance of a large membranous-white wafer. This fruit is a little bitterish, and was used as a substitute for hops by the early settlers.

Properties and Uses: The *bark of the root* is used in medicine. It contains a large quantity of a peculiar, pungent, and sickening oil, on which the greater portion of its action depends. It acts as a stimulant and relaxant, slowly exciting the stomach and circulation, and expending a considerable portion of its power on the lungs. It is classed as a stimulating tonic, exerting a mild laxative influence, and employed with much praise in bilious intermittents; but it often proves very disagreeable to the stomach, and can not be used in any considerable quantities without creating a burning sensation, disgust, and a stinging erysipelatous eruption on the surface. Within a few years past, it has been commended in the highest terms for asthma. My own experience scarcely justifies much hope from it in this direction; but it is quite stimulating to the lungs, and may be used, in combination with milder and more agreeable agents, in old and debilitated coughs. Dose of the powder, ten to fifteen grains three times a day. Water does not act well on it; but diluted alcohol forms a tincture of considerable power, of which a fluid drachm may be used three times a day. Not uncommonly a portion of the oil separates and floats atop, on adding this tincture to water or sirup. The oil (oleo-resin) is sometimes obtained by making a saturated tincture with absolute alcohol, adding this to water, and distilling on" the alcohol. The oil remains floating on the water, from which it can easily be removed. It has been called *ptelein*; and is a yellowish- brown oil, nearly as thick as molasses, of a very disagreeable odor and taste, and acting powerfully on the fauces and lungs. Dose, on sugar, one or two drops.

PTEROCARPUS MARSUPIUM

KINO

Description: Natural Order, Leguminosae. The article used under the name of Kino is a product from a variety of plants, of which the one here named is the principal one; and is a lofty tree in the high grounds of Hindostan; but other genera and species evidently yield almost identically the same product. It is obtained by making incisions in the bark, catching the red sap, and drying it in the sun. It comes to market in small, angular, brittle and shining pieces, of a very dark brownish-red color, in the mass appearing reddish-black, without smell, and of a strong astringent and not unpleasant taste. Water dissolves it almost perfectly, showing it not to be a resin; alcohol also acts freely on it, and the tincture does not cause a precipitate on the addition of water, facts which show it to be neither a resin nor a gum. When dissolved in boiling water, it deposits a blood-red substance on cooling; and a cold filtered solution does the same after long exposure to the air. Alkalies increase its solubility, but destroy its astringency. From these data, the present opinion is that this so-called gum consists mainly of tannic and kinic acids, with extractive and a red coloring matter, and a trace of resinous material. Other qualities, obtained from the West Indies and South America, are slightly different in tint, but of qualities so nearly similar as to make distinctions of little moment.

Properties and Uses: This article is a very pure and powerful astringent, not intensely drying; and soothing and somewhat antiseptic in character. The principal use made of it, is in excessive mucous discharges not attended with inflammation, as in sub-acute dysentery, diarrhea, and leucorrhœa; and in these stages of bowel complaints, and cases of a rather passive character, it is an agent of much service, especially combined with chalk or magnesia. Without causing that extreme dryness of mucous surfaces which follows the use of many astringents, it yet checks these discharges with much positiveness, and at the same time affords considerable relief to the uneasiness and tormina. Prof. Z. Hussey first called my attention to the soothing action of this agent; and prescribed its whisky tincture in my own person for swelling of the sublingual glands, with an offensively-glutinous discharge (as of burning saliva) and extreme pain, with the most prompt and happy effects. I have several times found it give much relief in aching gums and teeth arising from exposure. As a local application, it dries exhaustive discharges, arrests hemorrhage, and may be used in leucorrhœa and epistaxis; and has enjoyed a good reputation for internal use for bleeding gums, and also in uterine and pulmonary hemorrhage, for which it should be combined with stimulants. Many times it is abused by being prescribed for acute dysentery. Dose of the powder, from five to fifteen or more grains, every six, four, or three hours. The most common method of exhibition is by making an infusion with two drachms of kino and eight fluid ounces of boiling water, and straining when cold; of which the dose may be from a fluid drachm to a fluid ounce. The addition of half a drachm of myrica bark and ten grains of capsicum to this, makes a powerful preparation for uterine hemorrhage; or pimento and cinnamon may be employed with kino for mild hemorrhages and painful diarrhea. The most serviceable, though not the officinal, *tincture* is made with two drachms of kino and eight fluid ounces of rye or bourbon whisky. The officinal tincture mixes six drachms of kino with an equal bulk of sand, and passes eight fluid ounces of diluted alcohol by percolation. The latter preparation slowly gelatinizes and loses its astringency, through changes not understood.

PTEROCARPUS SANTALINUS, *red sounders* or *red sandal*, is another species of the Kino genus, growing in Ceylon and the adjacent continent. The wood is a beautiful red, and usually comes to market as chips. It is much used in dyeing; and though formerly in much repute as a remedy for dysentery and menstrual derangements, is now known to be of little worth as a medicine, and is scarcely put to any use beyond employing its tincture on diluted alcohol to color liniments, lavender compound, and some other preparations.

PTEROSPORA ANDROMEDEA [CORALLORHIZA]

CRAWLEY, FEVER ROOT, PINE DROPS, ALBANY BEECH-DROPS, DRAGON'S CLAW [CORAL ROOT]

Description: Natural Order, Ericaceae. Allied to chimaphila. A clammy-pubescent herb one to two feet high, with an erect, unbranched, and wand-like stem, leafless, but toward the base furnished with scattered and lanceolate leaves. Flowers nodding, and borne at the top of the stem in a long, bracted raceme. Calyx five-pointed; corolla ovate, urn-shaped, five-toothed, persistent, white; stamens ten, included; style short, with a five-lobed stigma. Fruit a small, globose, five-celled pod; with numerous small seeds, the tops of which are expanded into a large wing.

This peculiar and rare plant is somewhat parasitic on the roots of pines, on hard dry soils, from Vermont westward and northward. The root is medicinal. It is of medium size, grayish yellow or yellowish brown, wrinkled transversely, yellowish white within, and of a peculiar odor when fresh, but almost without smell when dried. Water and diluted alcohol extract its properties readily; and heat and age impair it greatly.

Properties and Uses: This *root* is a pleasant-tasting and nearly pure relaxant, with only a modicum of stimulating action, and a little demulcent property. Very diffusive in action, and perhaps unsurpassed for the promptness with which it secures a profuse perspiration. As a diaphoretic, it is of the first value in all febrile cases—relieving arterial excitement and abating nervous irritability. It is of equal service in erysipelas, measles, pneumonia, pleurisy, phrenitis, and other acute inflammations; soothing the patient and restoring the capillary circulation without depressing the system. The uterine organs feel its action promptly; and it promotes the catamenia and lochia, relieves painful menstruation, acts to fine effect in acute ovarian and uterine inflammation, and is of value in after-pains and puerperal fever. Dose, ten to twenty grains every two hours or oftener; usually given in warm water, but not often made in infusion because of the great loss of strength occasioned by heat. The great scarcity of the plant prevents that general introduction which the article so richly deserves.

PUNICA GRANATUM

POMEGRANATE

Description: Natural Order, Myrtaceae. “The pomegranate is a small shrubby tree, with a very unequal trunk, and shrubby branches which sometimes bear thorns. The leaves are opposite, entire, oblong or lance-shaped, pointed at each end, smooth, shining, of a bright green color. The flowers are large, of a rich scarlet color. The fruit is a globular berry, about the size of an orange, crowned with the calyx, covered with a reddish-yellow, thick, coriaceous rind, and divided internally into many cells, which contain an acidulous pulp, and numerous oblong seeds.” (*U. S. D.*) This tree is a native of Arabia, Persia, all central and southern Asia, and the southern shore of the Mediterranean. It is cultivated (in the West Indies as well as the Eastern Continent) for its orange-like fruit; and in high latitudes is a hot-house ornament. The bark of the root (*granati radice cortex*) is most valued in medicine; and comes to market in short and narrow quills, dense, with a short fracture, ash-gray without and yellowish within. Water, diluted alcohol, and alcohol extract its virtues. The central portion of the root is woody and inert.

Properties and Uses: The *root bark* has been used as a vermifuge from the earliest dates of this era, among the Arabian and other Asiatic physicians; but has not been known among European and American physicians till a recent period. The results from its use are quite uniform in the ordinary stomach and bowel worms; and are many times successful against the tape worm, for which it is especially prized in Asia. The bark may be administered in powder or decoction, but the latter form is usually preferred. The decoction is prepared by macerating two ounces of the bruised bark in two pints of water for twenty- four hours, and then boiling to a pint. Of this a wineglass full may be given every half hour, hour, or two hours, until the whole is taken. It often nauseates and vomits, and usually purges. It is recommended to give a dose of castor oil, and to diet the patient strictly on the day preceding the administration of the remedy; and, if it should not operate on the bowels, to follow it by castor oil or an enema. If not successful on the first trial, it should be repeated daily for three or four days, until the worm is discharged." (*U. S. D.*) Mr. Stubbs, Hospital Stewart of the U. S. Barracks at Key West, recommends the following method as being the most uniformly successful: Obtain the strength of two ounces of the bark by treating it with a pint of ninety percent alcohol, in the percolator; and evaporate this tincture to three ounces. Take a moderate purge in the afternoon, eat no supper, and no breakfast on the following morning; and during the forenoon take the whole of the preparation—an ounce in some mucilage, or in milk, every two hours. If it should not pass from the bowels before midnight, give a prompt purge.

The *rind of the fruit* is a rather strong astringent, but not at all anthelmintic. The *flowers* are also astringent. Besides the ordinary uses to which astringents are put, they are reputed valuable in night sweats. Dose of the powder, ten to thirty grains; or an ounce of the rind to a pint of water may be given in doses of a fluid ounce.

PYROLA ROTUNDIFOLIA

ROUNDLEAF, FALSE WINTERGREEN, CONSUMPTION WEED, CANKER LETTUCE

Description: Natural Order, Ericaceae: in the same sub-order as the chimaphila. Low herbs, with subterranean stems, evergreen root-leaves, and flowers on a racemed scape six to twelve inches high. Leaves nearly round, from one to two inches in diameter, thick, shining, dark green, on petioles two to three inches long. Raceme many-flowered; calyx five-parted, persistent, half as long as the corolla, lanceolate-lobed, corolla five-petioled, nearly white, drooping, half an inch broad, fragrant; stamens ten, with the anthers somewhat horned at the apex; style longer than the corolla, turning to one side, with five stigmas. Found in damp woods, blooming in June and July. Fruit a five-celled and many seeded capsule. One variety has somewhat reniform leaves and flesh-colored flowers; another has smaller reniform leaves and reddish flowers.

Properties and Uses: The leaves are astringent and stimulant, diffusive in warm preparations, but rather tonic in cold preparations. They act largely on mucous structures, especially of the lungs and generative organs; promote the discharge of tenacious mucus, and leave a tonic but not particularly drying impression; and are used in debilitated coughs with viscid expectoration, leucorrhoea, catarrh of the bladder, and sub-acute gonorrhoea. They promote the action of the kidneys moderately; but are especially valuable for strengthening these organs and relieving enuresis, and I have found them of such benefit in some cases of diabetes as to think them deserving of some attention in this malady. They may be used in chronic diarrhoea, especially that of scrofulous origin, to which they seem well adapted; and are of service as a wash in chronic ophthalmia and scrofulous ulcers. Combined with such agents as caulophyllum and helonias, they make a remedy similar to, though milder than the mitchella in female complaints. They are mild agents, but good ones; and though not suited to very degenerate conditions, will be found of decided value in intermediate classes of cases. The usual method of administration is by decoction; an ounce of the herb being infused in a quart of warm water for an hour, strained with strong pressure, and given in doses of two fluid ounces three times a day. A *fluid extract* may be prepared as in epigea.

QUERCUS ALBA

OAK

Description: Natural Order, Cupuliferae. In the same Family with chestnut, beech, and ironwood. Common and familiar in Europe, Asia, and America, the species being variously numbered from forty to sixty; some of them attaining great dimensions, while others are but little larger than shrubs; some of them (especially *quercus virens*, or live oak) furnishing remarkably tough and highly valued timber, while others are of small worth except for firing. The inner bark of them all is quite astringent, yielding large quantities of tannin, and being largely used in tanning. Only a few species deserve mention in a medical connection.

QUERCUS ALBA; *white oak*. This species is abundant in the Middle States, but less common in other sections. It is a large and broadly-branched tree, attaining a magnificent size, covered with a whitish bark. Leaves regularly divided into oblique and moderately deep lobes, obtuse, sometimes three to five in number and rather broad, at other times nine and narrow; bright green above, pale underneath. Acorns an inch or more in length, ovate; cup saucer-shaped, shallow, gray, rough or tubercled at maturity, on peduncles an inch long, solitary or in pairs. The inner bark, which is the active portion, is coarse, fibrous, tough, and light-brown.

QUERCUS TINCTORIA; *black oak, yellow-barked oak, quercitron*. This also is a very large tree, sometimes reaching a height of eighty feet, the branches forming a much less circumference than the preceding species. Bark dark brown, and deeply furrowed; inner bark very thick, yellow. Leaves sinuate lobed, sometimes nearly pinnatifid, lobes somewhat toothed; rusty-pubescent when young, nearly smooth when mature, turning yellow after frost. Acorn broadly globular, half an inch long, a little flattened at the top, nearly buried in the cup, which is distinctly scaly and somewhat contracted at the base; produced every two years. Wood coarse-grained and reddish.

The large *scarlet oak* (*coccinea*) and small *red oak* (*rubra*) have their leaves very deeply sinuate, on long petioles, and turning brilliant scarlet after frost. *Quercus nigra*, *black-jack* or *barren oak*, seldom grows higher than twenty feet, and delights in barren soils through New Jersey and Illinois. These three species are seldom used in medicine, yet are similar to the others.

Properties and Uses: The *inner bark* of the white oak is the one most commonly used in medicine. Usually it is set down as a simple astringent; but while this quality is predominant, it contains a distinct tonic principle of the slowly stimulating character. Water extracts its qualities fully, and diluted alcohol less fully. The principal use made of it, is as a gargle in aphthous sores, putrid sore throat, and diphtheria; where it is of much service, especially if combined with xanthoxylum or a little capsicum. Also used locally for hemorrhages, as in spongy or bleeding gums, and piles. Equal parts of oak bark and lobelia seeds, in powder, make a good ointment for indolent bleeding piles that are painful but not inflamed. A decoction is also used in leucorrhoea, prolapsus ani, flabby ulcers, and similar cases of lax fibers, especially if there is a tendency to offensiveness. It is a good antiseptic; and as such, as also for its tonic influence, may be used on phagedaenic ulcers and buboes. Eberle mentions a case of small-pox, extremely low and of a putrefactive tendency, where a very strong decoction (popularly called

“ooze”) of oak bark was used over the entire surface, to the arrest of putrefaction and saving of the patient. A decoction is a popular remedy on bruises, both of men and horses. The late Dr. W. T. Craig of Illinois, told me of a lady who had tetter on both hands, which caused fissures, bleeding, great swelling, extreme pain, and actual helplessness; and obtained no relief from any medication till a strong decoction of oak bark (probably the *quercus nigra*) was used, which gave relief in a few hours, and cured them rapidly. These facts all show this article to be decidedly tonic and antiseptic; and it is my impression, from some limited observations, that its active principle, *quercin*, may prove analogous to quinia and salicine. The bark has been used internally in extreme cases of chronic diarrhea, (while regulating hepatic action;) passive hemorrhages from the bowels, uterus, or lungs, especially in combination with capsicum; in hemorrhage from the bowels after typhus; in colliquative sweats, and even intermittents where the fibers become greatly relaxed. A bath of it is quite strengthening to the skin, and may be used for children and adults to give tone to flaccid structures, and in various cutaneous affections of the moist class, as sweating feet. Applied to the scalp, it frequently prevents dandruff and loss of hair; and for this purpose may be combined with a little capsicum and added to glycerin. Dose of the powder, twenty grains every six or four hours. An ounce of the bruised bark, boiled in a pint and a half of water till a pint remains, forms the usual decoction; of which a fluid ounce or more may be given every two or three hours. Like other astringents, it should not be combined with peruvian bark.

The *acorns* of white oak are sweet and eatable. The Germans roast them and prepare them into a coffee; which they speak of in warm terms as a tonic drink in scrofula.

The bark of the *black* oak is more bitter and stimulating than that of the white; and is sometimes unpleasantly exciting to the stomach and bowels, very much as the bark of cinchona. It is seldom used in medicine; but is at least equal to the white oak as an astringent and antiseptic in all the cases above named, and unquestionably superior to it as a stimulating tonic. The proper use of it is in languid and relaxed conditions of the stomach, and not in tenderness or sensibility. It evidently deserves the careful investigation from a medical point of view, that it has received among the arts—the decoction being of “ a brownish-yellow color, which is deepened by alkalies and rendered brighter by acids,” which is used extensively as a yellow dye for wool and silk, under the name of *quercitron*.

Pharmaceutical Preparations: I. *Extract*. I have a few times seen an extract made from the bark of *quercus nigra* or black-jack. Dr. W. P. Brickley, of Indiana, first called my attention to it. It is a resinous-looking, reddish-black, and rather shining brittle mass, readily pulverulent, and yielding a pretty and dark red powder. The appearance is not unlike that of kino, and its action is similar to that article, and I judge fully equal to it.

II. *Quercin*. This is a bitter principle, obtained from the European bark by Gerber, but also contained in the American white oak. The United States Dispensatory contains the following account of its preparation, condensed from *German Archives of Pharmacy*: “It is obtained by boiling the bark with water acidulated with one-hundredth of sulphuric acid; adding milk of lime until the sulphuric acid is removed, and then a solution of carbonate of potassa so long as a white precipitate is produced filtering the liquor, evaporating to the consistence of a thin extract, adding alcohol, and finally evaporating the spiritous solution down to a small volume, and

allowing it to rest for some days. Yellow crystals form, which may be obtained colorless by repeated crystallizations. Quercin thus obtained is in small white crystals, inodorous, very bitter, readily soluble in water less so in alcohol containing water, insoluble in alcohol and ether and without acid or alkaline reaction." This principle seems to bear to quercus the same relation that quinine bears to cinchona and represents the tonic properties of the bark. Undoubtedly it merits close attention.

QUERCUS INFECTORIA

DYER'S OAK, NUT-GALLS

Description: With the same family and generic characteristics as *quercus alba*. This species is most abundant in Asia Minor, and extends to middle Asia. A small tree from four to six feet high, crooked and shrubby-looking, with smooth and bright-green leaves. Acorn long and narrow, cup short, scaly, and downy.

This tree is valued for excrescences which are formed upon the young branches, and which are known in market under the names of *galls* and *nut-galls*. They are the result of a puncture made in the bark by an insect (*Diplolepis galls tinctoriae*, or *Cynips quercifolii*) for the purpose of depositing its egg. A small tumor soon follows the puncture, and forms a very dense mass about the egg. The egg hatches into the fly while in these tumors, eating its way by a small opening. The excrescences vary from the size of a large pea to that of a small hickory-nut, are nearly round, hard, and quite smooth with the exception of small tubercles scattered over the surface. Those in which the egg has not yet turned into larva are most compact and heavy, of a dark blue or bluish-green color externally, grayish-brown internally, and of an almost flinty fracture. When the larva has been developed, the external color lightens; and those of large size and grayish appearance are more or less fed upon internally by the grub, and depreciate in value.

Galls abound in tannin, containing more than sixty per cent. of this astringent substance; also a small percentage of gallic and some other acids. They are the chief source of commercial tannic acid; and by suitable manipulation are made to yield a large percentage of gallic acid, at the expense of their tannin. Forty times their own weight of boiling water are said to dissolve out all the soluble elements, but a larger quantity is needed to prevent a small yellowish precipitation on cooling. Alcohol and ether act on them freely. Their decoction or tincture forms bluish-black precipitates with salts of iron, and is a basis in all black writing inks. They also form insoluble precipitates with gelatin, cinchona, columbo, and other vegetables containing alkaloids.

Properties and Uses: Galls are purely and powerfully astringent, scarcely stimulant. Are rarely employed by the stomach, though sometimes prescribed (to no great advantage) in chronic diarrhea. They may be used as a wash and gargle in aphthous sores and putrid sore throat, and as an injection in bad leucorrhoea; in which cases they arrest putrefactive tendencies, and may be combined with suitable stimulants. By coagulating the blood, they frequently will arrest hemorrhage from small vessels; and sometimes are used for bleeding piles, both as ointment and suppository, but are inadmissible when the tumors are sensitive. From five to fifteen grains have been used internally. A *tincture* is made by macerating four ounces of galls in diluted alcohol for two days, and then treating them by percolation (in a porcelain apparatus) till a quart has passed. It is rarely used. Age impairs its astringency. One ounce of powdered galls rubbed into seven ounces of lard, forms the usual *ointment*.

RESINA

RESIN, COLOPHONY

Resin, commonly called rosin, is an abundant constituent of the exudations from several species of pinus and abies, where it is in combination with more or less turpentine. It is found as the residuum after the turpentine has been distilled off. Various roots, bark, and woods contain resinoid substances, not in combination with turpentine, as podophyllum, guaiacum, etc.; but this is not the class of resins here alluded to.

The true (or terehinthinate) resins are smooth and brittle, breaking with a shining fracture, nearly transparent, of a yellowish tint, and often with only a trifling odor or taste, though many times bitterish and acrid. At a temperature of about 280°F. they melt; at 900°F. they ignite, burning with a yellow flame and large volumes of black smoke; and if thus heated in suitable retorts, are decomposed into a large volume of superior illuminating gas. Water has no action upon them; but ether and alcohol dissolve them more or less readily, while the addition of water to such solutions occasions first a dense and milky-yellow turbidity, and afterwards a precipitation of the resin. The last-named facts pertain to the resinoids. Resins also unite with concentrated solutions of potassa and soda, and form soluble soaps. When melted, they unite readily with wax and the fixed oils. Common resin is a clear yellowish-brown color, sometimes almost black, and heavier than water. By boiling it in a weak solution of carbonate of potassa, a thin soap is formed; and if the vapor of sulphurous acid is conveyed into this till the potassa is occupied, the resin will fall as a nearly white, opaque, and flaky mass.

Uses: Resin is not employed internally, though some physicians commend doses of five to ten grains as a stimulating diuretic. It is used as an ingredient in a large variety of plasters, both to give them firmness and to preserve the fatty matters—a property possessed to a considerable extent by the resins. Its own action is moderately and rather persistently stimulating.

Pharmaceutical Preparations: I. *Resin Cerate, Basilicon Ointment.* Melt together eight ounces of lard, five ounces of resin, and two ounces of beeswax; strain, and stir constantly till cool. A gently stimulating dressing for indolent ulcers and burns; and one that may be used as a basis for other medicaments. II. *Compound Resin Ointment, Deshler's Salve.* One pound each of resin, suet, and beeswax, half a pound of turpentine, and half a pint of flaxseed oil. Melt and treat as in the foregoing. This is rather more stimulating than the basilicon ointment, but is employed for the same general purposes.

RHAMNUS CATHARTICUS

BUCKTHORN

Description: Natural Order, Rhamnaceae. A shrub six to eight feet high, common in Europe, and found in limited quantities through the Middle and New England States, and now cultivated for hedges. Leaves ovate, minutely serrate, in clusters. Flowers dioecious, small, greenish; calyx, petals, and stamens, each, four; petals like small scales. Fruit a black, berry-like, shining drupe, with four seed-like nutlets. Branches numerous, armed with thorns.

Properties and Uses: The *berries* are used in medicine, their juice being the officinal part. This juice, when expressed, is of a dark green color and a bitter taste; which is reddened by the acids, and by the alkalies is lightened into a color known by painters as sap-green. They are stimulating and active cathartics, severe in their operation, and causing nausea, griping, watery stool, and dryness of the mouth and fauces. They are too harsh for general use; and can be employed only in limited quantities as an addition to milder agents in extreme cases. A sirup is formed by taking four pints of the clear juice, adding six drachms each of ginger and allspice, and four pounds of sugar, treating with a gentle heat, straining, and when cold adding six fluid ounces of diluted alcohol. The common direction is, to set aside the juice for three days, and then strain it; but in such time the juice is liable to fermentation, and the sirup formed from it is much more acrid and harsh than that from the fresh juice. Dose, half a fluid ounce, or even less; though most authors direct more.

RHEUM PALMATUM

RHUBARB

Description: Natural Order, Polygonaceae. In the same Family with smart weed and yellow dock. A plant with perennial roots, and annual herbaceous stems; native to Tibet and Chinese Tartary, but now much cultivated through all Asia and in Turkey. One species, sported into several varieties, is extensively cultivated in Europe and America under the common names of *pie-plant* and *garden rhubarb*. Genus RHEUM: Corolla wanting; calyx petaloid, six-parted, withering. Stamens nine, inserted into the base of the calyx; styles three, reflected; stigmas peltate, entire. R. PALMATUM :Leaves large, roundish-cordate, half palmate; lobes pinnatifid, acuminate; dull green, uneven and much wrinkled above, minutely downy beneath; petioles pale green, marked with short purple lines, round, obscurely channeled above. There are several other species of Asiatic rhubarb, which furnish a medicinal root; of which the UNDULATUM has oval and wavy leaves that are quite downy beneath, and blood-red and downy petioles; and the COMPACTUM has thick, heart-shaped, smooth, and almost shining leaves, and green petioles which are slightly compressed at the sides. The undulatum was long considered the best, but that distinction is now accorded to the palmatum; though it is probable that there are but few differences between the three.

The root of this article is gathered in the latter part of summer, from plants which are six years old. It varies in diameter from an inch and a half to three inches at the collum, gradually tapering, somewhat porous, covered with a thin dirty-brown cortex, yellow or brownish-yellow within, and of a peculiarly agreeable and rather spicy aroma. After being dug and washed, the cortex is peeled or scraped off, a hole bored through the center and the roots strung on threads, and then dried in the sun. Two leading qualities come to market, as follows:

Russian or Turkey Rhubarb. This has been furnished through the medium of a treaty between the Russian and Chinese governments, by which the former received in barter all the rhubarb grown in Buchara and Tartarian China, accepted only such as passed satisfactorily under the inspection of a Medical Commission from Russia, and burnt all inferior samples. It came to market either by way of St. Petersburg or Constantinople, and its superior excellence was uniformly insured by the rigidity of inspection. It is in somewhat roundish pieces, three to four inches long, flattened irregularly from having the cortex sliced off, yellow mixed with reddish-white externally, yellow marbled with grayish and reddish wavy lines internally, light, of a rather bitter and but faintly astringent taste, somewhat gritty under the teeth, and of a strong aroma. It is imported in square chests covered with a hempen cloth and then a hide; and the pieces are usually covered with a fine yellow dust. This is by far the choicest article, and yields a light yellow powder.

East Indian or Chinese Rhubarb. This is exported from Canton, Shanghai, and other parts of Eastern China. It is usually in somewhat top-shaped pieces, smooth and round from having the cortex scraped off rather than peeled, more dense than the Russian, dull yellow or yellowish-brown without, the veins of a dull reddish-brown; the aroma much fainter, and the taste less bitter but more astringent, than the Russian. Some pieces are worm-eaten, and these are of inferior quality. An angular-looking quality is imported from Singapore, which in the rough

resembles the Russian; but may be distinguished by its duller color and less marked aroma. The great cost of the Russian variety, brings the Indian rhubarb into most general use; and the difference in medical power is too limited to justify the purchase of the former in lieu of a good quality of the latter. Yet the poor qualities of India rhubarb are of little worth; and its powder is so almost universally adulterated with an inferior English article, as well as being made from rejected roots, as seldom to represent more than half the strength of a good article. At present, the powder of rhubarb is extensively adulterated with flour and colored with turmeric.

RHEUM RHAPONTICUM is the species now so much cultivated in the gardens of Europe and America for its very large and acidulous petioles, which are used in early spring for family pies. By cultivation, several varieties have been produced; of which the principal are known among gardeners as Linnaeus, Victoria, and Calhoun. Its root is gathered from the fourth to the sixth year. It has a muddy yellowish-red epidermis, beneath which the root has a pinkish-yellow hue, and internally has parallel pinkish veins. The density is less than that of the Asiatic species, and the center of the root is sometimes soft and even spongy. The odor of this species is faint, and not so agreeable as that of the foreign roots; the taste is bitterish astringent, mucilaginous, and not gritty nor always pleasant.

Rhubarb contains a yellow coloring matter, volatile oil, tannic and gallic acids, and peculiar aromatic and bitter principles. Water acts on it rather freely; diluted alcohol much more effectually; and solutions of potassa, soda, and ammonia act on it thoroughly, changing the liquid to a deep red or brownish red by the solvency of the alkaline agents upon a yellow granular principle of an acid character, called crysophonic or rheic acid, or *rhein*. The red veins contain the tannic acid, whence the reddened roots are most astringent. Crystals of oxalate of lime, quite insoluble in water, also exist in the root; and the presence of starch is shown in all species, and especially in the rhaponticum, by iodine.

Properties and Uses: Turkey (Russian) rhubarb is the officinal standard, but the cheaper Indian root has almost superseded it. The two are nearly the same in general action; but the Turkey is pleasanter, a little less astringent, and of greater relative strength. The English and American, as above mentioned, are less agreeable to the taste, somewhat more astringent, and distinctly mucilaginous; yet their general impression upon the system is nearly identical with the foreign species, though about twice the quantity is required. I have used this for several years, and am well pleased with it; and think that, by due care in its cultivation, and the selection of a proper variety, the profession would find a suitably efficient quality of rhubarb at their own doors.

Rhubarb root has the peculiar character of combining in itself relaxant, stimulant, and astringent powers—the first two enabling it to prove mildly tonic, and the last diminishing mucous discharges and leaving behind a full astringent impression. Its action is mild, its taste not unpleasant but rather agreeable to the stomach, and its impression on the alvine mucous membranes peculiarly soothing. The saliva is soon colored yellow by it; the faeces also become yellow in from ten to twenty hours, or when the rhubarb has fairly passed through the bowels; and it may even color the urine and the perspiration—both which secretions may leave a yellow stain upon the linen. In doses of from four to eight grains three times a day, it soothes irritability of the stomach and promotes digestion; and often proves peculiarly serviceable in those forms of indigestion which are accompanied by acidity, laxity of the gastric structures,

morning looseness of the bowels, and sallow countenance. A portion of its good effects are due to its mild stimulation of the gall-ducts, leading to the ejection of bile. Doses of from twenty to forty grains prove gently laxative, increasing peristaltic motion, procuring the dislodgment of scybala or other offensive materials, and not causing exhaustion at any time. In sensitive persons, or when the alvine canal is sensitive, large doses occasionally cause griping; and in febrile conditions they not unfrequently accelerate the pulse. The alvine discharges it procures are never watery, but rather consolidated; and its action is peculiarly beneficial in diarrhea and dysentery by first procuring the dislodgment of crude materials, and afterwards gradually diminishing the fluidity of the discharges. The principal use now made of it, is for this class of cases, and for all other cases where the bowels are prone to looseness; the better method usually being to give two medium laxative doses (of about twenty grains each) at intervals of three hours, so as to procure the evacuation of alvine accumulations, and, when the stools become yellowish, showing that the rhubarb has passed through the bowels, to continue doses of from three to five grains at intervals of three or four hours for the astringent- tonic effect. If the alvine crudities have been removed previously, the cathartic doses are not to be given. The tendency of this agent to leave astringency, rarely produces constipation; yet is sufficient to make it inadvisable to use it as a common physic, though it is well adapted to children of a scrofulous habit with tumid abdomens. It is in similar cases that its tonic action is of most service; for it seems to improve the assimilative powers well, and, like geum, myrica, and a few other agents, to give firmness and activity to lax mesenteries in scrofulous constitutions. Certain it is that, in curdy diarrhea, cholera morbus, and similar difficulties, its action in diminishing the discharges and giving tone to the duodenum, small intestines, and possibly the pancreas, is most favorable.

The average cathartic dose for an adult, is about thirty grains. The alkalies, by acting upon the acid principle of the root, increase its cathartic power; so that fifteen grains of the root, in company with three to five grains of bicarbonate of soda or potassa, usually make an efficient evacuant. Heat, on the other hand, drives off a portion of volatile material in which the cathartic power seems to reside; so that roasted rhubarb is more distinctly astringent than the common root. For bilious diarrhea three grains of rhubarb may be given with two grains bicarbonate of soda, and two grains fresh charcoal, (especially that made from corks,) and repeated every three or four hours, to much advantage. Two grains of rhubarb and one grain of leptandrin, will be found of much service in diarrhea, dysentery, typhoid looseness of the bowels, etc. Though not partial to the use of camphor, I have found much advantage in moistening five grains of this gum with a few drops of alcohol, rubbing it with ten grains of bicarbonate of soda and thirty grains of rhubarb, and giving five grains of this mixture every three hours, till the passages become yellow, in cholera morbus, diarrhea, dysentery, and cholera.

Pharmaceutical Preparations: I. *Extract.* This is obtained by treating a pound of crushed rhubarb in the percolator with diluted alcohol till a gallon has passed, and carefully evaporating this to the proper consistence on the water bath. Heat readily injures it, and much of this extract on the market is of trifling value. A good article has the smell and taste of the root strongly marked, and may be used in cathartic doses of ten grains. II. *Fluid Extract.* A pound of rhubarb is to be crushed mixed with a pound of sand, moistened with seventy-five percent alcohol, and treated by percolation till six fluid ounces have passed; reserving this, continuing the percolation with diluted alcohol till two pints have passed, evaporating the latter product to ten fluid ounces,

and mixing the two products. Or half a pound of sugar may be added to the second product, and it then evaporated to ten fluid ounces, and mixed with the first product. Laxative dose, twenty to forty drops.

III. *Pills*. Six drachms of powdered rhubarb are to be beaten well in a mortar with the shavings of two drachms of soap. (White Castile soap is always preferable.) Use a sufficient quantity of water to form a pill mass, and make into one hundred and twenty pills. (*U. S. P.*) Each pill contains three grains; and they may be used as a mild laxative. IV. *Compound Pills*. Rhubarb, one ounce; aloes, six drachms; myrrh, half an ounce; oil of peppermint, half a fluid drachm. Beat with water into a proper mass, and divide into two hundred and forty pills. (*U. S. P.*) These are stimulating laxatives, in which the aloes counteract the rhubarb, and the quantity of peppermint oil is unpleasantly excessive. A far better hepatic tonic formula is the following: V. *Rhubarb and Leptandrin Pills*. Rhubarb, one ounce; leptandrin, two drachms; hydrastis, one drachm. Beat, in a mortar, two drachms of white castile soap and fifteen drops oil of caraway; mix the powder well with these; and then add a sufficient quantity of molasses to form a pill mass. Divide into four-grain pills. These act mildly on the liver, gall-ducts, and bowels, and leave a gentle astringed and tonic impression; and are of much value in diarrhea, dysentery, light biliousness, and similar cases. I offer them to the profession as a preparation of good qualities.

VI. *Sirup*. Mix four ounces of crushed rhubarb with eight ounces of sand, and add four ounces of thirty-five percent alcohol. After four hours, transfer to a percolator, and add alcohol of the same strength till two quarts (in all) have been used. Evaporate on a water bath to thirteen fluid ounces, and form into a sirup with two pounds of sugar. A mild laxative for infants, in doses of one to two fluid drachms. Rhubarb swells largely when wetted, and will form so compact a mass that sand (or coarser drugs) must always be incorporated with it when treated by percolation. VII. *Aromatic Sirup*. Rhubarb, two ounces and a half; cloves, cinnamon, and ginger, each half an ounce. Macerate the crushed articles for four hours in a sufficient quantity of diluted alcohol, transfer to a percolator, and treat with diluted alcohol till two pints have passed, evaporate this to a pint on a water bath, and add it to six pints of heated simple sirup. Or the articles may be tinctured for fourteen days with a quart of diluted alcohol, strained, evaporated to a pint, and then added to the warmed sirup. The *U. S. P.* uses two drachms of nutmegs instead of the above half ounce of ginger. It is a mild aromatic laxative for children in doses of a fluid drachm every two hours till the passages look yellow. Twenty grains of bicarbonate of potassa may be added to each eight ounces of the sirup, when an alkaline accompaniment is desirable.

VIII. *Compound Powder, Rhubarb and Magnesia*. Mix well together the powders of four ounces rhubarb, two ounces ginger, and one pound calcined magnesia. The quantity of magnesia, in practice, is seldom greater than six ounces. It is a mild antacid and laxative, of much value for children and lying-in women. Dose for an adult, half a drachm to a drachm; for a child of three years, ten grains or less. IX. *Tincture*. Rhubarb, three ounces; cardamon seeds, half an ounce. Crush well, macerate for fourteen days with a quart of diluted alcohol, express, and filter; or treat by percolation after forty-eight hours of maceration in a sufficient quantity of the diluted alcohol. Two drachms of coriander seeds make the preparation pleasanter. It is seldom used alone, but is a good cordial adjunct to stronger purgative mixtures. Dose, as a stomachic, a fluid drachm; as

a laxative, half a fluid ounce. It is suitably combined with infusion or sirup of gentian in very lax and atonic conditions.

X. *Sirup of Rhubarb and Potassa, Neutralizing Cordial.* Rhubarb, well crushed, four ounces; dried peppermint herb, eight ounces, (or the green herb, four ounces;) golden seal and cinnamon, each, one ounce. Macerate for two days with one quart of brandy, or with the same quantity of forty percent alcohol. Transfer to a percolator, treat with water, and set aside the first pint and a half. Continue the process with water till three quarts have passed, express the dregs, add four pounds of sugar, and dissolve at a gentle heat—evaporating till the addition of the first liquid shall make a gallon. When cold, mix the liquors, and add one ounce and a half of the bicarbonate (not carbonate) of potassa. The addition of the alkali turns the whole sirup deep red, and occasions a flocculent precipitate, to remove which, the whole may afterward be filtered through flannel; though in practice this sediment may be allowed to remain, and shaken up when used, as it contains no inconsiderable portion of power, though not so palatable as many desire. Two ounces of bicarbonate of soda may be used in lieu of the potassa alkali, but the latter is preferable. Some formulas use as much alkali as rhubarb; but this makes an unduly alkaline preparation, and one not sufficiently medicinal. When desired, or when the presence of liquor is objectionable, the ingredients may be mixed in powdered form, and made into infusion as needed. Some prefer to add twenty drops of peppermint oil and ten drops of cinnamon oil, by trituration, to each gallon of the sirup, instead of percolating the drugs; but percolation makes a better article. Merrell and some others tincture the drugs on seventy-six percent alcohol; but such a preparation is unfit to use.

Dr. H. H. Hill prepares this sirup with two ounces, each, rhubarb and carbonate potassa; one ounce each golden seal and cinnamon, treating them with a gallon of brandy, and adding four pounds of sugar and twenty drops oil of peppermint. This is very pleasant to the taste; but the small quantity of rhubarb, and large quantity of potassa, make it less medicinal than the sirup obtained by the above formula.

This sirup is based upon an ancient German formula, which directed two parts of Turkey rhubarb, and one part each of peppermint and bicarbonate of soda. Dr. W. Beach first gave it prominence in American practice, but failed to give credit for its origin. It is unsurpassed for flatulent and bilious diarrhea, dysentery, flatulent pains in the bowels, the green and griping discharges of children, sourness with feebleness of the stomach, etc. The dose may range from a drachm to an ounce, at intervals of six hours or less. It is very soothing to young children, to whom it may be given in doses of ten drops to a teaspoonful. If the discharges are watery, one-tenth part of tincture of myrrh may be combined with it; and if there is hepatic obstruction, an equal part of fluid extract of leptandra may be used with it, till the liver is acted on. I have found much advantage, in severe flatulence, in adding from one-fourth to one-half a part of fluid extract of dioscorea to this sirup; or a small proportion of fluid extract of valerian and essence of anise may be employed in griping diarrhea, restlessness, and a tendency to convulsions, in children.

RHUS GLABRA

SUMACH, UPLAND SUMACH

Description: Natural Order, Anacardiaceae. This species of sumach is common on thin and sandy soils in all parts of the United States, forming a shrub from six to twelve feet high, with numerous nearly horizontal branches; sometimes forming a small and bushy-topped tree fifteen feet high. Leaves compound, of eleven to thirty-one pinnate leaflets, which are oblong-lanceolate acuminate, sharply serrate, very smooth, green above, pale beneath, turning bright red in autumn. Flowers polygamous, in oval and thyrsoid panicles, terminal; sepals five; petals five greenish-white, inserted on the calyx. Fruit a single dry drupe (called berry) to each flower, globular, clothed with acid and crimson hairs, with a smooth and hard stone. Blooming in June and July.

This species of sumach is readily distinguished by its light grayish-red and smooth bark; and by the large, oval cluster of brilliant red berries which ripen in early autumn, and sometimes remain nearly all winter. There are three poisonous species of rhus, (used by Allopathists, Homeopaths, and Eclectics,) which are distinguished by bearing their flowers in loose and slender panicles in the axils of leaves—*rhus toxicodendron* being a vine with trifoliate leaves, and *rhus venenata* (the more poisonous) a shrub with seven to thirteen pinnae in each leaf. The fruit of the poisonous species is of a whitish dun color, and is not covered with hairs.

Properties and Uses: The *leaves* are a very pure astringent of the same soothing character as the leaves of hamamelis, but much stronger and more drying. They may be used for the same general purposes as the hamamelis; and also make a good wash in light cases of aphthous sores. They are seldom used but deserve much consideration in leucorrhoea, and prolapsus spongy gums, capillary hemorrhage, and other cases where a reliable local astringent is needed. Small excrescences are often found upon them, which are nearly equal to the nut galls.

The *bark* of the root is a stimulating astringent, of tonic action and moderately antiseptic powers. Its chief action is upon the mucous membranes; and is of much greater power than is generally supposed in laxity of the bowels, chronic and camp diarrhea, and intestinal hemorrhage. Acute and sub-acute diarrhea are cases in which it should not be employed; but in camp diarrhea, and other cases of liquid and offensive stools, an infusion is of much value for giving due tone to the mucous structures and fullness to their capillary circulation. Also of superior excellence as a wash in foul leucorrhoeal discharge and chronic prolapsus; and a gargle in aphthous sores, in diphtheria, and scarlatina, and in mercurial sore mouth. It may also be applied in powder to flabby and ichorous ulcers, and those of a phagedaenic tendency, but not to sensitive or dry ones; and I have found much benefit from it in phagedaenic chancres and buboes. As an astringent, it acts upon the assimilative organs much as myrica does; and may be added to tonics in the treatment of scrofulous maladies with diarrhea; and in constitutional mercurial and mercurio-syphilitic maladies, may be used with alterants. An infusion, combined with such diffusives as zingiber and caulophyllum, is of much value in uterine and pulmonary hemorrhage; and it is an agent that promises well in hemorrhagia purpurea, and other forms of the hemorrhagic diathesis. Half an ounce to a quart of boiling water, simmered for ten minutes in other than an iron vessel, forms an ordinary decoction; of which from one to two fluid ounces

may be given every three hours in chronic difficulties, or every half hour in hemorrhages. A *fluid extract* is prepared as in myrica.

The berries, or more properly the hairs which cover the fruit, are of a very pleasant though rather transient acid taste, moderately stimulating and astringent. They act on the kidneys as well as mucous membranes; are of service as a gargle in quinsy, and mild forms of sore throat and aphthous sores; are sometimes used as a drink in bilious and bilious remitting fever; and have been commended as a good remedy in diabetes, though probably not on good grounds. The acidity of these berries is said to depend upon malic acid.

A gum exudes from the bark on its being slit; and this is a soothing and demulcent remedy, which promises to be of service in irritable bowels, kidneys, and lungs.

ROSES

Our many garden roses are occasionally used in medicine, though more as a grateful flavor than as a remedy. ROSA CENTIFOLIA, or *hundred-leaved* rose, is the most fragrant; and its petals are employed in preparing *rose water* by distilling two gallons of water from eight pounds of the fresh, or ten pounds of the dried petals. The dried flowers, when designed for this use, are usually preserved with one-third their weight of common salt; and these are said to yield a better-flavored and longer-keeping water than even the fresh petals. More commonly, however, rose water is prepared by adding twenty drops of oil of roses to a drachm of carbonate of magnesia, triturating with eight ounces of water, then agitating with enough water to make two gallons, and filtering. This water is often used as an addendum to mild sirups, and some external washes designed for diseases of the scalp, or irritable diseases of the skin. *Sirup of roses* is prepared by macerating seven ounces of petals in three pints of water for twelve hours, heating gently, straining, evaporating to two pints, adding three pounds of white sugar, and finally five ounces of diluted alcohol. It has little of the odor of roses, but is a very gentle laxative, sometimes used for children, but principally employed for making confection of senna and of scammony. For *confection* or *conserve of roses*, pulverize four ounces of red petals, and rub them with eight fluid ounces of rose water at a temperature not above 150°F.; gradually add thirty ounces of pulverized sugar and six ounces of clarified honey, and beat till thoroughly mixed, using a marble mortar. It is used only as a vehicle for other medicines.

ROSA GALLICA, the *red* or *French rose*, is somewhat astringent; and its sirup or confection is employed when unpleasant or powerful astringents are to be given in powder.

ROSA CANINA, a plant found only in Europe, is without thorns on its peduncles, and is called *dog rose*, *wild brier*, or *hiptree*. “The fruit is fleshy, smooth, oval, red, and of a pleasant sweet, acidulous taste. The pulp, separated from the seeds and the silky bristles, is employed in Europe for the preparation of a confection.” {*U. S. D.*}

ROSMARINUS OFFICINALIS

ROSEMARY

Description: Natural Order, Labiatae. An evergreen shrub, three or four feet high, erect, with many slender branches, native to the shores of the Mediterranean, but much cultivated in the gardens in Europe, and occasionally in America. Leaves numerous, opposite, sessile, linear, an inch and a quarter long, light-green above, downy-white underneath, turned backward, stiff. They have a strong and pleasant balsamic odor, which is diminished by drying and age. They yield a moderate percentage of a volatile oil, obtained by distillation, colorless, of a strong odor, and lighter than water.

Properties and Uses: The *leaves* are diffusively stimulating and relaxing in action; and when used as a warm infusion prove slightly diaphoretic and nervine, and somewhat emmenagogue. They are useful in recent colds, recent suppression of the menses from exposure, and as an antispasmodic in mild hysteria, painful menstruation, and other difficulties. Its tincture is sometimes added to other medicines as an adjuvant. The oil is a good nervine stimulant for external uses, as in neuralgia and other acute pains; and enters into compounds named under camphor and spearmint. The leaves are an ingredient in the Compound Spirits of Lavender.

ROTTLERA TINCTORIA

KAMELA

Description: Natural Order, Euphorbiaceae. A small tree, from ten to fifteen feet high, native to India, China, Southern Arabia, and Northern Australia. Leaves alternate, oblong, pointed, entire, three-nerved, five to seven inches long. Flowers dioecious, without corollas, in terminal panicles. Sterile flowers, calyx two-cleft, stamens thirty to forty. Fertile flowers, calyx three to five-cleft, ovary ovate, style three-feathered. Capsule roundish, three-valved, the size of a small cherry; covered with minute, sessile, roundish glands of a bright red color. (*Roxberry*.)

The powder that adheres to the capsules, is the part used in medicine. It is granular, mostly resinous, of an orange-red or brick-red color, with very little taste or smell. With water it mixes only indifferently, and is scarcely affected by it; but ether and alcohol act on it well, and so do solutions of the caustic alkalies and their carbonates.

Properties and Uses: This powder enjoys a high repute in Eastern Asia, as infallibly removing tapeworm. As yet, it is scarcely known in America; but the accounts of several English physicians of eminence go far toward confirming its Asiatic reputation. Dr. Mackinnon gave it to fifty patients, and it failed but twice; and Dr. Addison reports but two failures out of ninety-five cases. It acts freely on the bowels, sometimes inducing six or seven thin stools in a few hours; and the entire worm usually comes away, dead. The powder is given in doses ranging from fifty to one hundred and fifty grains; or the ethereal extract is used in ten-grain doses.

RUBUS STRIGOSUS

RED RASPBERRY

Description: Natural Order, Rosaceae. This is the well-known wild raspberry, with red and fragrant fruit, and growing in dense and shrubby clusters in the northern half of the United States, and in Canada. Stems upright, beset with straight bristles, or weak and hooked prickles, rather smooth, dotted-glandular when young. Leaves compounded of three to five oblong-ovate, pointed, and cut-serrate leaflets, light green above, whitish-downy beneath, one and a half to two inches long. Fruit ripening in June and July, light-red, hemispherical, tender, fragrant. The leaves are the medicinal portion.

RUBUS VILLOSUS, *high blackberry*. This is the common blackberry, now so extensively cultivated for its large and luscious fruit. Stem shrubby, nearly angular, furrowed, armed with strong and recurved prickles; branchlets, stalks, and under surface of the leaves hairy and glandular. Leaflets three, (rarely five,) ovate, pointed, unequally serrate, on long stalks, the petiole and mid-rib with short and recurved prickles. Flowers numerous, racemed. Fruit long, oval, black, juicy, sweet. The root of this species is used in medicine; is round, woody, branching, covered with a thin reddish-brown bark.

RUBUS CANADENSIS, (incorrectly named *rubus trivialis*,) is the *dewberry* or *low blackberry*. Shrubby, extensively trailing slightly prickly. Leaflets three, sometimes five or seven, ovate-lanceolate, pointed, thin, sharply serrate, smooth. Flowers racemed, with leaf-like bracts. Fruit large, black, sweet. The root is much as in the previous species, but has a dark-ashy epidermis without any reddish tinge.

Properties and Uses: The *leaves* of the red raspberry are mildly astringent, and of a peculiarly soothing nature, being very acceptable to the stomach, always leaving a slight tonic impression, often allaying nausea and vomiting, and not unfrequently soothing and sustaining the nervous system. Their infusion is one of the mildest and most suitable astringent tonics in sub-acute dysentery and diarrhea, lessening the discharges without abruptly checking them, and soothing instead of exciting the bowels. It exerts a moderate impression on the kidneys, and may be used for mild catarrh of the bladder. A. F. Elliott, M. D., of Minneapolis, tells me that a strong infusion, with a small quantity of Compound Tincture of Myrrh, is of rare service in diabetes. Dr. S. Thomson found it exerted a fine influence on the uterus, sustaining it in flagging labor; for which purpose he usually made it into an infusion with cypridium, and added a minute portion of capsicum when needed. It also anticipates flooding and relieves after-pains. As a wash, it is excellent in recent ophthalmia, especially in infants; and may be used as an injection in leucorrhea, dysentery, and gonorrhoea of mild grades. Though of but medium power, they are at once grateful and reliable. An ounce to a pint of boiling water, strained with pressure, makes an infusion of which one to two fluid ounces may be used at suitable intervals.

The *roots* of blackberry and dewberry are nearly alike, though some physicians prefer the latter. They are strong astringents, of the drying but not stimulating class, and exerting some tonic action. They are used in chronic dysentery and diarrhea, and in sub-acute forms with decided relaxation; as an injection in prolapsus and leucorrhea with laxity, prolapsus ani, bleeding piles,

and colliquative diarrhea; and as a wash to aphthous sores, bleeding gums, and other hemorrhages. Combined with pimento or similar aromatics, they are good in passive uterine hemorrhage and excessive menstruation. An ounce of the roots, which are quite dense, may be digested for two hours in a pint of hot water, and given in doses of a fluid ounce every two or three hours.

The *fruit* of the blackberry is one of the most grateful kind to weak and irritable stomachs; and may be used freely to the greatest advantage in diarrhea and bilious laxity of the bowels in summer. It alone is often the only corrector of the bowels needed; though when the stomach is quite sensitive, it should be crushed and strained, so as to remove the seeds. It is frequently made into a *blackberry cordial*, for which there are many formulas; but the following will be found at once pleasant and effective in relaxation of the bowels, diarrhea, camp diarrhea, etc.: Take any desired quantity of berries, and set them on a moderate fire till they begin to break; then mash them well, and strain through a flannel bag, with pressure. To each pint of juice put two drachms, each, of ginger, cinnamon, and allspice; and one drachm, each, of mace and cloves; well crushed, and tied in a thin piece of muslin, and immersed in the juice for an hour, and kept at a moderate heat with the vessel closely covered. Remove the spices and press them well, and to each pint of the juice add a pound of white sugar, and dissolve. When cold, add four ounces of brandy to each quart of the sirup, and keep in close bottles. Dose, a tablespoonful from four to six times a day.

RUDBECKIA LACINIATA

THIMBLEWEED, CONE-FLOWER

Description: Natural Order, Compositae. Genus RUDBECKIA: Perennial herbs with alternate leaves. Flower-heads large and showy, terminal to the branches; rays yellow, long and drooping, resembling a sunflower, neutral; scales of the involucre in two rows, leaf-like; receptacle long-conical, with short and soft chaff; achenia four-angled, smooth, with a minute crown-like border. R. LACINIATA: Stem smooth, branching, three to seven feet high. Leaves roughish, lower ones of five to seven-cut leaflets, upper ones irregularly three to five-parted. Heads long-peduncled; rays one to two inches long, strongly drooping; disk columnar in fruit, dull greenish-yellow. Common in low thickets, blooming from July to September. (*Gray.*)

Properties and Uses: The *leaves* and *flowers* are of a pleasant bitterish and somewhat balsamic odor, moderately diffusive, and leaving a tonic impression. Their chief action is upon the kidneys, effectually increasing the flow of urine without exhausting these organs; but rather distinctly improving their tone, and relieving inefficiency and torpor. Said also to be useful in Bright's disease. They relieve congestion of the bladder, chronic catarrh, and chronic difficulties of the prostate gland. An ounce may be infused in a pint of hot water, and strained with pressure; of which one to two fluid ounces may be given every four or two hours. They exert a good influence on the uterine nerves, and promise to be of much service in painful menstruation and hysteria.

RUMEX ACETOSELLA

SHEEP SORREL

Description: Natural Order, Polygonaceae. Generic characteristics as in *rumex crispus*. Low plants, with annual stems four to eight inches high, from perennial roots. Leaves oval-lanceolate, blunt at the apex, heart-shaped at the base, especially the lower ones; one to two and a half inches long. Pleasantly acid, and often eaten by children. Flowers dioecious, small, in slender paniced racemes; styles adherent to the angles of the ovaries. Abundant in sandy soils and sterile fields, the fertile panicles turning reddish in summer.

Properties and Uses: This *herb* is made into an extract, and this is used upon indolent ulcers and cancers, in the same manner as the extract of *oxalis acetosella*. It forms a sharply stimulating preparation, usually too nearly caustic to be used alone; but when suitably modified by extract of *celastrus*, it is an agent of much power, and one that deserves attention. Allusion was made to it at *oxalis*.

RUMEX CRISPUS

YELLOW DOCK, CURLY DOCK

Description: Natural Order, Polygonaceae. Genus RUMEX: Coarse and troublesome herbs, with perennial roots and annual stems. Corolla wanting; calyx of six sepals, the three outer of which are leaf-like and spreading, the three inner colored, larger than the outer ones, and finally converging over the fruit; stamens six ; styles three. R. CRISPUS :Stem one to three feet high, smooth, furrowed, light yellowish-green. Leaves large, alternate, wavy margined; lower ones petiolate, heart-shaped at the base, acute; upper ones narrow and almost sessile. Flowers on close, erect, terminal, and leafless panicles, in crowded whorls; inner sepals (valves) round heart-shaped, pale yellowish-green, each bearing on its back a conspicuous brown tubercle or grain. Fruit a three-angled achenium, pale yellowish. This is the species of yellow dock usually so troublesome to farmers, with a long, tapering, yellow root.

RUMEX OBTUSIFOLIUS, *bitter dock*, *blunt-leaved dock*, closely resembles the above; but its leaves are more lanceolate, less wavy, and much larger; and its whorls of flowers are fewer and less crowded. It is as common as the crispus, in many sections; and the roots of the two species are so nearly alike, that no distinctions are needed between them. They both love rich and stiff soils.

RUMEX VERTICILLATUS, *swamp dock*, is the R. BRITANICA of Linnaeus and the U. S. Pharmacopoeia; and its root has been officinal among physicians for a long time. Leaves pale green, lanceolate, acute at both ends, flat, smooth, thickish, entire, willow-shaped. Flowers perfect, in crowded whorls; inner sepals dilated, strongly reticulated, each bearing a very large grain. An inhabitant of ditches and wet swamps. Root large, dark or yellowish-brown without, yellow within. Other species are used, but the crispus is mostly employed at present.

The roots of these several species are of the same general characters, though that of the crispus is decidedly the most effective and least astringent. Water and diluted alcohol extract their properties readily; and they contain a notable quantity of yellow coloring matter, and a large portion of extractive. The young leaves are often used in families as “greens.”

Properties and Uses: Yellow-dock *root* is an alterative of the slowly relaxing and stimulating class, leaving behind a mild tonic impression that is sometimes classed as astringent. (The other species above named are considerably astringent.) The greater portion of its power is expended upon the skin; but the gall-ducts, small intestines, and kidneys, feel its impressions to a fair extent. Though not cathartic, it is fairly laxative; and exerts a desirable tonic and diluent influence upon the entire hepatic and alvine structures. It moderately resembles rhubarb, in the same botanical Family. The chief use made of it, is in scrofulous affections of the skin, scrofulous ulcers, and scrofulous forms of diarrhea; for all which it is of superior efficacy, and seems to give that solidity and tone to the assimilative apparatus which are so necessary in such cases. In nearly all forms of dry, scaly, and pustular skin diseases, it has a deserved reputation, both as an inward and outward remedy; in itch and eczema, its sirup and ointment are among the most effective remedies; and it is of good use in syphilis, if combined with more stimulating agents, as jeffersonia and guaiacum.

Pharmaceutical Preparations: I. *Decoction.* Boil two ounces of the dried and crushed root, for ten minutes, in a pint of water; strain with pressure, and give one to two fluid ounces four times a day. II. *Extract.* A common extract is made with water, and a hydro-alcoholic extract is also made, in the usual manner. They are seldom used internally, though some physicians use them in the formation of their rumex sirups; but while such a preparation may be made conveniently, it is not elegant. The principal use made of the extract, is in the formation of ointments. III. *Ointment.* The most elegant ointment is formed by mashing four ounces of the fresh roots, digesting them at a low heat in pure cream or lard, and straining when the roots begin to get crisp. It is a soothing and strengthening application for salt rheum, tetter, eczema, itch, scrofulous sores, scald head, and other irritable skin diseases. An ointment may also be formed by softening half an ounce of the hydro-alcoholic extract with a sufficient quantity of seventy percent alcohol, and triturating it with two ounces of simple cerate and a few drops of olive oil. That with cream and the fresh roots is best, but is not easily preserved beyond two or three days. IV. *Compound Sirup.* Root of rumex, two pounds; celastrus scandens, scrophularia marilandica, each, one pound; guaiacum chips, gentiana ochroleuca, each, four ounces. Macerate in a close vessel with a pint of alcohol and two quarts of water, for two days; transfer to a percolator, and add water, setting aside the first quart that passes; continue the percolation with water till the drugs are exhausted, add fourteen pounds of sugar, and evaporate to seven quarts. When cold, add the quart of tincture first obtained; and then triturate and add ten drops of oils of anise and sassafras, and an ounce of rose water. This is different from the common sirup of this name; and is a far more efficient preparation for scrofula, cutaneous affections, secondary syphilis, etc. Dose, two to four fluid drachms three times a day. The common sirup prepared under this name, is composed of two pounds rumex, one pound celastrus, and half a pound each ampelopsis and scrophularia, made into two gallons of sirup. It is a good preparation; but is made up of so many relaxants as to lack the sustaining vigor that is secured by the above formula.

Rumex enters into combination with a large number of alterants and alterant tonics, and is everywhere valued as one of the best of its class.

SABBATIA ANGULARIS
AMERICAN CENTAURY

Description: Natural Order, Gentianaceae. In the same Family with *fraseria*, *gentiana*, and *menyanthes*. A neat and trim-looking plant, with an erect, slender, and four-angled stem two feet high. Branches many, opposite, erect, giving the plant a corymbose outline. Leaves opposite, ovate, five-nerved, half-clasping at the base, an inch or more long, smooth, entire. Flowers many, on long and terminal peduncles; calyx of five slender sepals; corolla five-parted, tubular wheel-shaped, an inch and a half in diameter, fine rose-colored; stamens five, erect, short. Fruit a one-celled capsule, with many seeds.

Properties and Uses: This *herb*, which should be gathered when in full bloom, is an active tonic, of the more stimulating class, with moderate and somewhat diffusive relaxing qualities, allied to the American gentian, but rather milder. Its chief power is exerted upon the stomach, gall-ducts, and spleen; and the general circulation and uterus feel it moderately. A warm infusion gently promotes the menstrual secretion, in cases of debility. Cold preparations increase appetite and digestion in weak and flaccid conditions of the stomach, and may be used for chronic dyspepsia and general debility. By maintaining the portal circulation somewhat vigorously, it proves of eminent service for the intermediate treatment of agues; and though not a nervine stimulant and antiperiodic as cinchona is, it is of decided value against intermittents where the cinchona preparations (and similar antiperiodics) prove too exciting to the nerve centers. In cases of this class, I have several times arrested ague paroxysms by the fluid extract of this plant alone, with suitable daily hepatics; yet it is not strong enough to meet the chills of deeply-prostrated or congested cases. It makes an excellent tonic addendum to such agents as *fraxinus*, *angustura*, or *euonymus*, in treating chronic biliousness with indigestion; and may be used to advantage with *caulophyllum*, *convallaria*, and similar uterine remedies, in chronic prolapsus, leucorrhoea, hysteria, etc. Its sustaining influence is shown to excellent advantage in the treatment of night sweats, exhaustion from excessive purulent discharges, recovery from malignant scarlatina, and other prostrated conditions. Some use it for worms, as a tonic. Usually given by infusion, made by digesting an ounce of the herb in a pint of hot water; of which a fluid ounce may be given every two or three hours during the intermission of an ague, or half a fluid ounce every three hours as a tonic.

Pharmaceutical Preparations: I. *Decoction.* Digest two ounces of the herb in a quart of hot water for half an hour; strain with pressure, and carefully evaporate to eight fluid ounces. Dose, half a fluid ounce or more, every two hours, for ague; which may be rendered more stimulating by adding a grain of capsicum to each dose for six or eight hours before an anticipated chill. II. *Fluid Extract.* A pound of the herb may be made into a pint of this preparation, with diluted alcohol, after the manner for fluid extract of boneset. It is a very efficient article in doses of half to a whole fluid drachm.

SALIX ALBA

WHITE WILLOW

Description: Natural Order, Salicaceae. This large genus embraces plants of most varying size and general appearance. The article here alluded to, is the European willow, now much cultivated in this country, where it is a large and thickly-branched tree from fifty to eighty feet high, much used on the prairies to make heavy screens against the wind. Trunk covered with a rough, cracked, grayish-brown bark; branches smooth and greenish, shoots silky. Leaves alternate, short-petiolate, lanceolate, pointed, with silky hairs. Flowers dioecious, in terminal and long catkins, without calyx or corolla, each subtended by a few greenish-yellow bracts; stamens two, hairy below, the filaments slightly united; stigmas nearly sessile, thick, recurved. The catkins appear in April and May, or even so late as June in high latitudes.

The bark of this tree is used in medicine, that of the branches being preferable. The latter comes to market in thin pieces, from a few inches to two feet long, greenish-brown outside and light pink within, slightly rolled inward, and tough. It contains a crystalline principle called *salicin*. This bark has a moderate and somewhat pleasant aroma, and a bitter and astringent taste.

Properties and Uses: This *bark* is among the distinct and rather intense tonics, with a fair portion of astringent power, though less absolute in its astringency than many have represented. The chief use made of it is for chronic diarrhea, atonic forms of dyspepsia with looseness of the bowels, passive hemorrhages, atonic menorrhagia, and scrofulous maladies with curdy diarrhea. It has been used to moderate advantage in mild forms of intermittents accompanied by general laxity of the tissues, but is not such a strong nervine stimulant as cinchona, though less exciting to the system and better borne by the stomach. At present, the bark is not used thus; but its preparation *salicin* is largely employed for agues. Externally, it is a good application for bleeding surfaces, indolent scrofulous ulcers, and aphthous sores; and as an injection for low forms of leucorrhea, is among the very best. An ounce of the crushed bark may be macerated for an hour in a pint of hot water; and two fluid ounces of this given three or four times a day.

SALIX NIGRA, *black (not pussy) willow*, is a native tree from fifteen to twenty-five feet high, on the margins of streams, with very narrow leaves and a rough black bark. SALIX PURPUREA, *rose willow*, is a small shrub, adventitious from Europe, with the scales of the aments very black, and the bark of the twigs polished and ashy-olive. The bark from the roots of these two species is even more intensely bitter than the preceding, and that of the rose willow is more astringent. They are both of much value in atonic menorrhagia, and as an injection in leucorrhea. *Cornus sericea* is also called rose willow.

Pharmaceutical Preparations: I. *Tincture*. Macerate six ounces of crushed willow bark with a sufficient quantity of forty percent alcohol; after two days transfer to a percolator, and treat with alcohol of the same strength till twelve fluid ounces have passed; express the dregs strongly, and add enough of the menstruum to make a pint. Dose, one to two fluid drachms. II. *Fluid Extract*. This may be prepared after the manner of the fluid extracts in general, using diluted alcohol, and reserving the first eight ounces that pass. It is an excellent preparation, and may be given in doses of half a fluid drachm or more.

III. *Salicin, or Salicine.* This is a crystalline principle obtained chiefly from the twigs, leaves, and bark of the European *salix pentandra*; also from those of the *salix alba* and other willows; from the bark of *populus tremuloides* and others of that genus, and some other plants. . It may be prepared by exhausting the strength of the bark with boiling water, concentrating this decoction to a small bulk, and treating it with powdered protoxide of lead. The lead is then precipitated by passing a stream of sulphureted hydrogen slowly through the solution, and carries down with it the gum, tannin, and extractive. The clear liquid is then to be poured off, and further evaporated till crystals form when the liquid cools. By allowing the salicin to crystallize out, mixing it with charcoal, dissolving in boiling water and filtering, and then again evaporating till it crystallizes, a pure product is obtained. It forms small, white, silky needles, neutral, without odor, intensely bitter. Cold water will dissolve about one-twentieth of salicin, and boiling water much more; it is soluble in alcohol, but not in ether or the volatile oils; and is turned blood-red by sulphuric acid. A pound of bark yields half an ounce or more of crystals. It is an excellent tonic and a good antiperiodic. Doses of from two to five grains may be given three times a day in periodical neuralgia, atonic diarrhea, and the low stages of typhus; and doses of ten to fifteen grains every three hours, with one grain of capsicum, will nearly always cut short an intermittent paroxysm. Though not so powerful as quinine, it is better received by the stomach, and is not so liable to excite the brain unduly, and is much more acceptable in ague cases with cerebral sensitiveness.

SALVIA OFFICINALIS

GARDEN SAGE

Description: Natural Order, Labiatae. This is the well known garden plant, perennial and shrubby, with grayish-looking ovate-lanceolate and rugose leaves, cultivated everywhere as a pot herb. Calyx two-lipped, corolla two-lipped and blue, stamens two.

Properties and Uses: The *leaves* of sage are of a peculiar and pleasant aroma, due to a full quantity of volatile oil. They yield a considerable portion of their properties to lukewarm water, and make an infusion that is a soothing and diffusive drink, relaxant and moderately stimulant, and which allays nausea and induces a gentle perspiration. It is a good family remedy in measles, recent colds, quinsy, and similar maladies; though it is usually 'rendered worthless for such uses by being infused till a bitterish and astringent principle is obtained. The latter infusion is a mild tonic and astringent, of use as a gargle in quinsy and other sore throats, and reputed of some service in spermatorrhea. Used cold, it may be given in the colliquative sweats of hectic and of typhus; also in the diarrhea of measles. For sweating and nervine purposes, half an ounce of the leaves may be infused for ten minutes in a pint of warm (not boiling) water, strained, and given warm in doses of two fluid ounces or more every hour. Used cold, it frequently acts upon the kidneys. For tonic and astringing purposes, an ounce of the leaves may be infused in a pint of boiling water, in a covered vessel, for an hour, and used freely as a gargle. A drachm of alum and two ounces of honey are commonly added to a pint of this infusion for gargling. Rafinesque says an application of the leaves will diminish the flow of milk.

SAMBUCUS CANADENSIS

ELDER

Description: Natural Order, Caprifoliaceae. This is the rank shrub so troublesome to farmers in many sections of the country, growing in moist and rich clays. Stem five to seven feet, with a large pithy center. Leaves of seven to eleven pinnate leaflets, which are oblong-oval, acute, and serrate. Flowers numerous, small, white, lightly fragrant, in very large, compact, and compound cymes; calyx and corolla five-parted. Fruit a round, smooth, juicy, deeply purplish-black berry. Flowering in June, and ripening the berries in September.

Properties and Uses: The *flowers* contain a small quantity of volatile oil, which may be obtained by distillation, and becomes as stiff as butter on cooling. Their aroma, when fresh, is strong and rather pleasant; but becomes feeble by age. An ounce to a quart of water makes an infusion that is diffusibly relaxant and mildly diaphoretic, gently nervine, and useful in measles, recent colds, and as a soothing diuretic. It is used in erysipelas; and the leaves are also reputed an alterant, but are of little service as such. They make a useful fomentation and soothing poultice. The *berries* are sweetish, and by many are used as food. Their medicinal action is that of a mild laxative and secernent. Some physicians value them in eruptive and gouty maladies; and Dr. W. T. Craig, of Illinois, used to value them above blackberries when prepared as a cordial with the spices. They make a light and very pleasant wine, but lack sufficient saccharine material to yield a preservative quantity of alcohol; whence it is necessary to add two pounds of brown sugar to each gallon of the expressed juice, and treat in the general manner directed for wines. It is slightly laxative, and deserves preference over the greater portion of poisoned wines brought from abroad. The *inner bark*, when fresh, is a strong hydragogue cathartic and emetic, reputed powerful in dropsy, but not worthy of use. When dried, it is much less active, and acts upon the bowels and the secretions in general as a relaxing and stimulating alterant. Though at one time in much repute in dropsy, syphilis, and herpetic skin diseases, it is now seldom employed. A pound of this bark slowly digested with a pound of warm lard and four ounces of spermaceti, makes a green *ointment* that deserves the good opinion of the profession in burns, scalds, ringworm, and similar cases.

SANGUINARIA CANADENSIS

BLOOD ROOT, RED PUCCOON, RED TURMERIC

Description: Natural Order, Papaveraceae. This is a low perennial plant, with the stem (root) a few inches long, one-fourth to half an inch thick, horizontal, reddish-brown without, deep red within, dense and brittle, and yielding freely of a deep blood-red juice. The leaf is solitary, rising directly from the rhizoma, on a petiole several inches long, large, rounded, deeply sinuate-lobed on the outer margin, yellowish-green above, whitish and veined below, veins orange-tinted. Flower single, rising from the root on a long scape, infolded in the leaf while in bud, pure white, an inch in diameter; sepals two; petals eight to twelve, spreading, fleeting; stamens about twenty-four, with large yellow anthers. Blooming in April or early May.

Properties and Uses: This *root*, coming from the suspicious Family of the poppies, is accused of being an aero-narcotic. I long shared the same belief; but the thorough investigation of it by the members of the Indiana Physio-Medical Association, (*Transactions*, 1866,) shows quite to the contrary, so far as concerns the dried root. The fresh root is bitter and harsh. The dried root is a slow relaxant and stimulant, influencing the mucous membranes, gall-ducts, and secreting organs in general. Large quantities are nauseant, and even emetic, especially to those of sensitive organization; but the bilious and lymphatic are seldom more than slightly nauseated by it. As an emetic, it is slow and harsh; and though some would deem it a virtue to “modify” lobelia by its association, it is altogether too harsh an article for emetic purposes, and should have no connection with lobelia for such purposes. Small doses arouse the stomach slowly in atonic dyspepsia, act moderately upon the gall-ducts, and promote expectoration in low coughs. Chronic torpor of the liver in bilious temperaments, and chronic jaundice, are the conditions in which its use is most available. For chronic affections of the skin, arising from hepatic torpor, it may be used in quite small proportions with relaxing alterants; but it is not beneficial in dropsy and scrofula, except as an addendum in low cases. Small quantities may be added to relaxants for expectorant purposes. It is not an agent to be used in sensitiveness or irritability of any mucous membrane or other part, but only in sluggish conditions. Combined in limited quantities with hydrastis and lobelia, it may be used in chronic catarrh and nasal polypus, as a snuff, if the parts are freely discharging and are not too sensitive. I have found great benefit in applying the same combination, in powder, upon true hunterian and indolent chancres; in a short time obtaining a discharge and the removal of the gray membrane, when the sanguinaria may be omitted. The powder is also a good application to fungous ulcers; but does not act as an escharotic, as is generally asserted. The U. S. Dispensatory says four persons lost their lives at Bellevue Hospital, New York, by drinking largely of blood root tincture in mistake for ardent spirits—a due share in the disaster being of course due to the alcohol, and the report failing to note the symptoms peculiar to sanguinaria.

Dose of the powder as a tonic and alterant, two to five grains three times a day; as an expectorant, one to two grains every second hour or less. Twenty grains or less are said to prove emetic, but this would be only in sensitive persons. Usually, not more than an ounce of blood root is used in a gallon of any ordinary alterative sirup, as in a compound of celastrus, arctium, and euonymus. The powder combined with leptandrin, in boneset extract, forms a good pill for hepatic purposes. Some combine it with leptandrin and podophyllin in powder; and such a

mixture is truly a sharp hepatic purge, and any considerable dose of it will cause persistent and harsh retching for hours.

Pharmaceutical Preparations: I. *Tincture*. Crushed sanguinaria, six ounces; diluted alcohol, a quart. Digest for two weeks, and filter, or macerate in a sufficient quantity of the alcohol for two days, and then treat by percolation till a quart has passed. In doses of from five to fifteen drops, it is an actively stimulating expectorant addition to cough sirups, especially in languid conditions. An *acetous tincture* is made with four ounces of blood root and a quart of distilled vinegar, and is also used as an expectorant; but both these preparations are rather harsh to the respiratory membranes. In doses of a fluid drachm every ten or fifteen minutes, in diluents, they prove quickly emetic; but are useful only in sudden and alarming cases, as in narcotic and other poisoning. An ounce of the acetous tincture to seven ounces of rose water, makes a good wash for ringworm, eczema, pimples on the face, etc. II. *Compound Tincture*. Two ounces each of sanguinaria, lobelia, and skunk cabbage, are treated with a quart of diluted alcohol, as for simple tincture. Or the same articles may be treated with a quart of distilled vinegar, to form the *compound acetous tincture*. These are less harsh, and more generally useful, expectorants than either of the preceding; and may be given in doses of from five to twenty drops in some suitable sirup. Neither of them is fitted for sensitive cases; and as an emetic, they are still too harsh for ordinary use. The preparation on vinegar is always least valuable for internal use; but is admirable, with rose water, in the skin affections above named, and is also an excellent application (especially with an equal quantity of glycerin) to give tone to the hair follicles and prevent baldness. Alcoholic preparations of this article exhibit its harshness to the fullest degree; and are not so appropriate for alterant purposes as preparations on water. III. *Sanguinarin*. Make a saturated tincture of blood root with absolute alcohol, by percolation. Distill off one half the alcohol, add the remainder to twice its own bulk of distilled water, and distill off the remainder of the alcohol. By standing for several days, a precipitation slowly takes place, which is to be washed, and carefully dried. The product is a reddish-brown powder, bitterish and nauseous, and leaving a persistently acrid taste on the fauces. This preparation seems to represent the relaxing and alterant influence of the root most fully. Doses of two or three grains at intervals of four hours, soften and reduce the frequency of the pulse in sub-acute rheumatic fever, gouty fever, and similar cases; and though not a suitable remedy for other fevers, it seems not to disturb the brain at all, though some have classed it as narcotic. On the liver it acts slowly but effectually; and half a grain, with a grain or more of leptandrin, makes an excellent hepatic alterant, especially in skin affections arising from the liver.

This article enters into a large variety of compounds with aralia, lobelia, caulophyllum, and other agents. While marvelous and contradictory powers have been ascribed to it, I think close observation will justify the above limitation of its powers, whether alone or in combination.

SANICULA MARILANDICA

SANICLE, BLACK SNAKE-ROOT

Description: Natural Order, Umbelliferae. In the Family of the parsnips, but with its umbels so imperfect that the flowers are in nearly capitate umbellets. Botanically associated next to eryngium. Perennial herbs, with a smooth, furrowed, dark-brown stem two to three feet high, branching in pairs. Leaves all five to seven-parted, radical on petioles ten inches high, cauline on two-inch petioles; divisions narrow, rigid, sharply cut-serrate, armed with short and almost cartilaginous teeth. Flowers polygamous, mostly sterile, on slender pedicels; the fertile often nearly sessile. Fruits several in each umbel, globular, without ribs, thickly clothed with hooked prickles, each with five oil-tubes. June to August.

This peculiar plant is common through woods and copses throughout the United States, and often annoys persons with woolen clothing by the tenacity with which the fruit (late in the fall) will cling to their garments. The poisonous cynoglossum (hound's tongue) does the same, and must not be confounded with sanicle. The cimicifuga and asarum are also called black snake-root. The root is fibrous, small, dark-colored, and with a pleasant smell and somewhat aromatic bitterish taste.

Properties and Uses: This *root* is mild in action, diffusibly stimulating and relaxing, leaving a moderately tonic impression. Used in warm infusion, it promotes perspiration and diuresis fairly, and sustains capillary circulation and the nervous peripheries ; and may be used to decided advantage in recent colds, and typhus and other low forms of fever. By its action on the nervous system, it sustains patients nervously depressed and restless, and has been much praised in the chorea of early life. The Indians are reported to have relied upon its free internal use in snake bites; and I have been much pleased at its action in a few cases of measles, and in painful menstruation. The article certainly deserves attention. An ounce to a pint of water makes a good infusion, of which two fluid ounces may be given every three or two hours.

SAPO

SOAP

Soaps are chemical compounds of fatty substances with alkalies; or of certain metallic oxides, as of lead, with fats. Those with lead form plasters, and those with lime are sometimes used as liniments; but these are not soluble in water, and are considered as soaps merely because of the analogy in the chemical changes which produce them. All the other soaps are soluble, are used as detergents, and have a moderate excess of alkalinity. They are of two general classes: *1st.* Those made with the vegetable oils, as olive oil, almond oil, and palm oil. *2d.* Those formed with the animal oils, as lard, tallow, suet, and resin. Their formation depends upon the alkali—potassa, soda, ammonia—uniting with the acids of the fats, (see *Olea Fixa*;) and if the fat contain a large amount of oleic acid, as lard does, the soap is of a soft consistence; while if stearic acid is in excess, as in tallow, the soap is of a firm consistence. The alkali used has a perceptible influence in determining the solidity of the soap; soda making the most solid, potassa less solid, and ammonia fluid. According to density, soaps are classed as SAPO DURUS, *hard soap*; and SAPO MOLLIS, *soft soap*.

Castile soap is the best representative of the class for pharmaceutical purposes. It is made by boiling the coarser qualities of olive oil with a strong solution of caustic soda. The solidified substance is separated from the water and glycerin by boiling the solution down till the alkali is largely in excess, or by adding a small portion of salt. The white soap rises to the top, and is dipped into oblong molds while warm. The mottled castile soap is due to the admixture of a little solution of some iron-oxide salt, but is less valuable than the white kind for pharmaceutical purposes, though a stronger detergent. The common hard soaps are made, in the same general way, from the animal fats with soda; while the soft soaps are from animal fats with potassa. A moderate portion of hard soap may be obtained from a good quality of the latter, by adding a moderate portion of salt. Common hard soap is more positively alkaline than castile soap, and soft soap is much stronger still.

The hard soaps, and especially those of fine quality, are those alluded to in medicine. They are incompatible with acids, earths, and earthy and metallic salts—as of lime. Hard (lime) waters decompose them, and form a new kind of insoluble and curdy soap. They are soluble in cold, and much more so in warm alcohol. When soaps from the *animal fats* are dissolved in alcohol, they form a jelly on cooling, and become permanently transparent and brownish. Soaps from *vegetable oils* dissolve perfectly in alcohol, and do not form a jelly.

Uses: Besides its general use for cleansing purposes, soap (castile) is used inwardly. It is an antacid and gentle laxative; and is employed by softening it to the desired degree with alcohol, (or some essence,) and incorporating with it such articles as rhubarb, leptandrin, apocynin, etc. By neutralizing acidity of the stomach, it secures a better result from such cathartics. Externally, all soaps are more or less stimulating, according to the amount of their alkalinity; castile soap being always most suitable for washing infants, and for surgical washings. They may also be employed in liniments, where their alkaline action is often an advantage—castile soap being used when the preparation is to be liquid, as in the Stimulating Liniment; and hard soaps from animal fats when the preparation is to be jelly-like, as in Opodeldoc. Soft soap is never suitable

in liniments, as it will not mix fully with other ingredients. In cases of emergency, soap of any kind may be used as an antidote to poisoning by strong acids; in which cases the soap is to be dissolved in three or four times its own weight of water, and half a teacupful or more given every three or four minutes, as long as the patient can receive it. A solution of soap makes a strong cathartic enema; for which purpose from ten grains to a drachm of either castile or common hard soap may be dissolved in from four to eight ounces of water.

SASSAFRAS OFFICINALE

SASSAFRAS

Description: Natural Order, Lauraceae. The *Laurus sassafras* of Linnaeus. A genus of small trees, usually ten to twelve feet high, but sometimes twenty-five or thirty feet. Trunk from six to twelve inches in diameter, covered with a dark-gray, furrowed, and aromatic bark ; branches smooth, twigs greenish-yellow. Leaves alternate, large, variable in shape from ovate to three-lobed, tapering at the base, light-green and smooth above, grayish-downy beneath, soft, mucilaginous, deciduous. Flowers dioecious, in clustered and corymbose racemes, small, greenish-yellow, appearing with the leaves, naked; calyx six-parted, spreading; stamens nine in the sterile flowers, inserted in three rows on the calyx, six in the fertile flowers. Fruit a deep-blue, ovoid drupe, as large as a pea, supported on a red and club-shaped pedicel. Common in rich woods, blooming in April.

The inner bark of the trunk, and especially the bark of the root, is aromatic and warming, with a pleasant taste peculiar to itself. It contains a large quantity of volatile oil, which is of a yellowish color, fragrant, and heavier than water. The bark of the root is ruby-red, in short pieces, and brittle. The twigs contain a white pith, which is very light, mucilaginous, and slightly gummy.

Properties and Uses: The *bark* is an aromatic relaxant and stimulant, yielding most of its properties to water, but commonly rendered almost worthless by boiling. A warm infusion is a fair stimulating diaphoretic and nervine, useful in colds and recent obstructions of the menses, and a popular drink in skin affections, etc. It is much used as an addition to alterants in sirups for syphilis, scrofula, rheumatism, and skin diseases, but is usually boiled till it is nearly inert. I would respectfully call the attention of the profession to its action as a stimulant to the capillary circulation and the absorbents, in which direction I apprehend its chief value lies. As an addition to poultices and fomentations, the powdered bark will be found of much value in bruises and congested swellings; and combined with mullein, makes a superior appliance in swollen face, chronic abscesses, and similar cases. Under such circumstances, it both relieves the suffering and promotes the absorption of effused materials. The same influence would no doubt be good in local dropsies. While the oil represents the bark in part, it represents this particular property only to a limited extent.

The *oil* is among the best of the nervine stimulants and relaxants, less exciting than origanum, but more so than spearmint. It enters into most rubefacient liniments for rheumatism, deep-seated congestions and inflammations, dropsies, abdominal and pelvic sufferings, sprains, bruises, etc. Some use it internally, in doses of from two to four drops on sugar, for painful menstruation; but its action is not equal to an infusion of the bark. As an adjuvant to lobelia and other unpleasant agents, it is excellent. The *pith* yields a large amount of mucilage on maceration in water, and is very well accepted by the stomach in irritation of the stomach, bowels, respiratory passages, kidneys, and bladder. With many, it is a favorite local application in acute ophthalmia. Cold water, of which it absorbs a large quantity, is best to moisten it with. The oil is an ingredient in the Stimulating Liniment mentioned under capsicum.

SATUREJA HORTENSIS

SUMMER SAVORY

Description: Natural Order, Labiatae. This is a well-known garden plant, with bushy stems, very small leaves, and little pink flowers, extensively cultivated as a fragrant pot herb. It yields an essential oil by distillation, and has an odor and taste similar to thyme.

Properties and Uses: This herb is seldom used in medicine, but is quite an efficient aromatic stimulant. A warm infusion induces perspiration, and is useful in recent colds, incipient fever, measles, and painful and acutely obstructed menstruation. It is also a good carminative. The better method of using it, is to combine a drachm of the leaves with an ounce of *asclepias tuberosa*; or it may be associated with *angelica* and *anise* for colic and flatulence.

SCROPHULARIA NODOSA

CARPENTER'S SQUARE, HEAL-ALL, FIGWORT, SQUARE-STALK

Description: Natural Order, Scrophulariaceae. This genus is represented in our country by but one species, the *S. Marilandica* being but a variety. They are tall, smooth herbs, three or four feet high, with strongly four-sided stems, erect, and with opposite branches. Leaves opposite, ovate-oblong below, narrow above, three to five inches long, cut-serrate, rounded-cordate at base, very dark green. Flowers small, on loose cymes which are axillary and terminal; calyx deeply five-cleft; corolla scarcely bilabiate, globose-tubular, a fourth of an inch long, lurid purple or dull greenish; stamens four, declined, with the rudiment of a fifth as a scale at the top of the corolla tube. July. The leaves and root have a rather rank smell, which is lost by drying.

Properties and Uses: The *leaves* are most medicinal, though the roots also are employed. They are largely relaxant, moderately stimulant, with a small portion of demulcent power; slow in action, mild, soothing, and leaving behind a fair tonic impression. They are chiefly alterative, the mesenteries, kidneys, and skin, receiving the principal impression. They are used in irritable forms of scrofula, and in scaly and irritable forms of skin affections; for which purposes they are best combined with such articles as rumex and stillingia. By limiting their alterative use to cases of the above class, the happiest results will be obtained. They exert an unusually excellent influence on the kidneys, moderately promoting the flow of urine, relieving torpor, and imparting a soothed and toned impression to these organs. In weakness of the female generative organs, with painfulness and irregularity in menstruation, they deserve especial notice; and I would respectfully, but confidently, commend them to the profession as among the most desirable soothing tonics for these cases. An ointment on lard is of much service in soothing burns, inflammation, sore nipples, ringworm, eczema, and piles. A decoction is made by digesting two ounces of the herb in a pint of hot water, and straining with strong pressure; of which two fluid ounces may be given three or four times a day. Three pounds are required to make a gallon of sirup. This agent is an ingredient in the Female Tonic and the Compound Sirup of Yellow Dock.

SCUTELLARIA LATERIFLORA

SCULLCAP, BLUE SCULLCAP, HOOD-WORT

Description: Natural Order, Labiatae. Genus SCUTELLARIA: Calyx bell-shaped in flower, two-lipped; the lips entire, closing over the ripening fruit after the corolla has fallen, the upper lip with an enlarged appendage which becomes hoodshaped over the fruit. Corolla with the tube ascending, elongated, curved, dilated at the root, two-lipped. Stamens four, ascending under the upper lip of the corolla, filaments bearded, anthers approximate in pairs. S. LATERIFLORA: Stem smooth, upright; one to two feet high, square, stout, much branched. Leaves ovate-oblong, rounded at the base, pointed, coarsely serrate, opposite, on spreading petioles two or three inches long. Flowers in axillary racemes; racemes two to four inches long, the flowers on only one side; corollas pale blue; calyx appendage giving this closed envelope the appearance of an old-fashioned hood. Common in moist and shaded places, blooming in August.

This, the true medicinal scullcap, is distinguished from all the other species by the arrangement of its flowers on only one side of the long axillary (in a few cases terminal) racemes. Other species are medicinal, especially the CANESCENS, which is from two to four feet high, slightly branched above, covered with a minute white down when young, and with corollas more than half an inch long; and also the SERRATA, which is from one to three feet high, slender, scarcely branched, smooth, leaves tapering at both ends, and with tapering corollas an inch long. This latter species, much less valuable than the lateriflora, is often mistaken for it; but can easily be distinguished by its leaves, the terminal and not one-sided arrangement of its racemes, and its large corolla with an undilated tube.

The whole herb is medicinal; is without smell, but has a bitter and not very pleasant taste. Age and heat impair its virtues, and it needs to be dried in the shade, and kept in airtight vessels. Water extracts its qualities moderately well, and diluted alcohol effectually.

Properties and Uses: This much-neglected *herb* is a truly valuable medicine, but is many times rendered inert by being boiled; and some physicians have laid it aside, having used some of the weaker species instead of the true lateriflora. It is equally relaxant and stimulant; antispasmodic, and tonic, acting upon and through the nervous system. It is best suited for restless and wakeful conditions, with feebleness; and for all forms of nervousness with fatigue or depression. In the wakefulness of typhoid, delirium tremens, and other acute cases; and also in chronic wakefulness, and even in the horrid sleeplessness that arises under the effort to abstain from the habitual use of opium, it is one of the most prompt and reliable agents of the whole *Materia Medica*. By toning and also soothing the nervous structures, it secures that steadiness of action which is followed by quiet sleep; and it induces no shade of narcotism, neither leaves behind any excitement, sensitiveness, nor languor. Through the nervous system, it reaches localized pains of the above character, (§138;) whence it is of much value in uterine sufferings, nervous headache, aching through the bowels, and neuralgia, when any of these difficulties is due to feebleness with agitation, but not connected with acute or sub-acute inflammatory excitement. It may also be used to excellent advantage with suitable diffusives in spasmodic difficulties, to sustain nervous tone, as in hysteria, chorea, puerperal convulsions, and epilepsy. The steady tonic power it exerts, makes it an available combination in nervous forms of dyspepsia, female

weaknesses, and nervous forms of intermitting difficulties. At one time it enjoyed a wide repute in hydrophobia, though the good opinion of it once entertained has not been fully confirmed. There is no sense, however, in trying to sneer down this reputation by saying that “empirics” use it thus; for the most eminent Allopathic authors plainly say that a large portion of their best practice is empirical, and the use of scullcap in hydrophobia was first commended by Dr. Vandesveer in 1772, and its good name warmly defended by Dr. White of Fishkill, and Prof. Rafinesque of New York—all established and honorable Allopathic physicians. While the plant has, in this direction, probably been overrated, its antispasmodic power is of the highest quality, and an abundant use of it would certainly be suitable treatment in that malady.

Dose, of the powder, five to twenty grains every six or four hours. Half an ounce digested with a pint of warm (not boiling) water, makes a good infusion; of which a fluid ounce or more may be given three times a day, cold, for tonic purposes, or used warm every second hour or hour for acute nervousness. For spasmodic difficulties, it is best associated with lobelia or caulophyllum, and given in doses of half a fluid ounce every hour or half hour.

Pharmaceutical Preparations: I. *Tincture*. Finely crush four ounces of scutellaria, pack it well in a percolator, and treat with diluted alcohol till a quart has been obtained. Dose, a fluid drachm at suitable intervals. II. *Fluid Extract*. Macerate a pound of well-crushed herb for two days in diluted alcohol; transfer to a percolator, and treat with diluted alcohol till eight ounces have passed; set this aside, and proceed as for fluid extract of cyripedium. This is a strong and very available preparation, in doses of from five to twenty drops as often as necessary. It can be combined to much advantage with fluid extract of macrotys or of valerian, with essence of anise as an adjuvant, in acute and sub-acute wakefulness and general nervousness. III. *Scutellarin*. Under this name the market occasionally furnishes an article claimed to be the active principle of the plant. One method of procuring it is by making a saturated tincture on absolute alcohol, and then proceeding as for podophyllin. The precipitate thus obtained is a lightish-green powder; but it is obtained at the sacrifice of a very large portion of the scullcap, and does not fairly represent the active qualities of the article. Another method is by carefully evaporating the absolute tincture on a water bath. It finally becomes pulverulent, though it will not always remain so without the addition of one fifth part of the powdered herb. The latter preparation is usually a good article, and may be employed in doses of from one to three grains.

SEMPERVIVUM TECTORUM

HOUSE LEEK

Description: Natural Order, Crassulaceae. The fibrous root of this plant sends off numerous tufts of thick and succulent leaves, about an inch in length and two-thirds of an inch broad, acute, stiffly fringed along the edges, and arranged in the manner of the petals of a rose—the size of the leaves regularly diminishing toward the center. The flower-stalk rises to the height of a foot from the center of one of these leafy tufts, erect, downy, sparsely leaved, and bearing at its summit a cyme of numerous large and pale-rose flowers. The plant is native to Europe, and is frequently cultivated in this country for its peculiarly-arranged leaves and its remarkable tenacity of life.

Properties and Uses: The *juice* of the leaves, readily obtained by mashing and pressure, has a cooling and slightly saline taste. It is a cooling application in much repute for acute and sub-acute ophthalmia, burns, simple erysipelas, and other cutaneous inflammations. Taken internally in doses of a teaspoonful to a tablespoonful every four hours, it increases the flow of urine, and has been much commended in catarrhal and bilious fever, and in erysipelas. The split leaves are reputed of great value as a local application to shingles, tetter, corns, and warts.

SENECIO AUREUS

LIFE-ROOT, GROUNDSEL, UNKUM, GOLDEN RAGWORT, SQUAW-WEED, FEMALE REGULATOR

Description: Natural Order, Compositae. This is a plant common to most meadows and the grassy edges of swamps throughout the United States, especially northward; but varieties of it are found on high and rocky grounds. Stem ten inches to two and a half feet high, erect, sometimes with a few branches above, woolly when young, smooth and striate when older. Leaves alternate, those from the root long-petiolate, simple, rounded or sub-cordate, crenate-toothed, two and a half inches long; lower stem-leaves lyrate, short-petiolate; upper stem-leaves few, small, lanceolate, cut-pinnatifid, half-clasping. Flowers in corymbose heads an inch in diameter, all yellow; rays eight to twelve, pistillate, spreading, ligulate; disk florets numerous, small, tubular; receptacle flat, naked; pappus of numerous and very soft capillae. Involucre of a single row of flat and somewhat purplish-tipped scales. Blooming in May and June. This species has two principal varieties, named merely from local differences in the leaves—OBOVATUS and LANCEOLATUS. In rocky situations the lower leaves are small, and the upper stem-leaves often wanting; whence it has been classed as SENECIO GRACILIS. The roots of this genus are perennial, and the stems annual.

Properties and Uses: The *herb* and *roots* are medicinal, and come to market together. As in hydrastis, mitchella, and a score or more of other agents, the knowledge and exclusive use of it are claimed by our Eclectic neighbors; but the European species VULGARIS, under the name of *groundsel*, has been a very popular remedy in England for several centuries, and the American species was used by the English colonists of New England from the earliest settlements. It is of moderately slow and rather persistent action, combining relaxation with stimulation, sharp and bitter in taste, and leaving a full tonic impression upon the stomach, nervous system, and uterus. The chief use made of it is as a nervine tonic in female weaknesses, and a mild yet reliable prompter of menstruation. For neuralgia and rheumatism of the womb, the achings and crampings incident to gestation, and mild cases of leucorrhoea and prolapsus, it is of much value; also in uterine hysteria, and the feeble appetite and aching of the back suffered by so many females; possibly also acting on the kidneys. While it promotes menstruation in languid and partially atonic amenorrhoea, it does so mostly by virtue of its efficient tonic action; and it is in no sense a forcing emmenagogue, but rather aids passive menorrhagia by giving tone to the uterus. Used as a warm infusion, it expedites parturition with great certainty in cases of uterine and nervous fatigue. The kidneys feel its influence moderately well, especially when they are involved with female difficulties. The lungs are strengthened by its use; and though it is extravagant to talk about its curing tubercular consumption, it is unquestionably good for old and debilitated coughs. Some physicians value it highly in sub-acute and chronic dysentery, preferring it even to hydrastis as a tonic for such difficulties. It is only by remembering its tonic and nervine qualities, that the true character of its action in these numerous cases can well be understood.

Pharmaceutical Preparations: I. *Decoction.* Senecio, one ounce; macerate in a pint and a half of hot water for half an hour; strain with pressure, and carefully evaporate to half a pint. Dose, a fluid ounce three times a day. II. *Compound Tincture.* Senecio, one ounce and a half; caulophyllum, anthemis, and zingiber, each, half an ounce; cimicifuga and anise, each, two

drachms. Crush well, macerate for two days in a sufficient quantity of diluted alcohol; transfer to a percolator, and treat with alcohol of the same strength till a quart has passed. I commend this as a valuable nervine diffusive and tonic for painful menstruation, hysteria, and flagging parturition. Dose, a fluid drachm or more in warm water, or in a warm tea of catnip or balm.

III. *Fluid Extract*. Treat one pound of crushed senecio with diluted alcohol, and proceed as for fluid extract of boneset. This is a strong preparation, exhibiting the bitter and stimulating qualities of the senecio quite fully. Dose, fifteen to thirty drops.

IV. *Senecin* or *Senecionine*. These are one and the same preparation, obtained by processes similar to those for procuring scutellarin. The dried alcoholic extract is somewhat oleo-resinous, and may be used in doses of from two to three grains.

SILPHIUM LACINIATUM

ROSIN WEED, COMPASS PLANT

Description: Natural Order, Compositae. This is a plant peculiar to the western and southwestern prairies. Stem three to six feet high, round, naked above, alternate-leaved toward the base, rough-bristly throughout. Leaves large, pinnately parted, divisions lanceolate; lower leaves a foot to two feet long, ovate in outline, fully developed before the stem rises, and standing with their faces uniformly north and south. Flower-heads few, one to two inches broad; flowers radiate; rays numerous, fertile, with their ovaries in two or three rows; disks numerous, sterile; achenia broad, winged, and notched. July.

Properties and Uses: The *leaves* of this singular and coarse plant contain much resinous material, which is bitter and stimulating. They are reputed of good effect in asthma of the humid character, used by decoction; and also in spitting of blood and chronic diarrhea. They are said also to act upon the kidneys, as a diuretic and tonic. The root is quite nauseant, and in large quantities emetic; and is much used in some sections for the heaves of horses. The plant seems deserving of professional attention.

SILPHIUM PERFOLIATUM

CUP PLANT

Description: Natural Order, Compositae. In the same genus with the preceding, but quite different in general appearance. Stem four to eight feet high, stout, square, often branched above. Leaves opposite, connate, six to fifteen inches long, thin, the upper pairs united by their bases so as to form a hollow or cup around the stalk. Flowers nearly as in the preceding plant. Common in rich soils by the borders of streams through the West and South. July.

Properties and Uses: The *root* of this plant is among the stimulating relaxants, moderately diffusive in action, and of a gently tonic character. A warm infusion is diaphoretic, and sustains the capillary circulation; and is used in colds, catarrh, and bilious and remitting fever. Cold preparations are somewhat alterant, and are said to be of value in intermittents, biliousness, and ague cake.

SINAPIS ALBA

WHITE MUSTARD

Description: Natural Order, Cruciferae. Annual plants. Stem two feet high. Leaves lyrate, all deeply pinnatifid, rough, pale-green, with stiff white hairs on both sides. Flowers in racemes, yellow. Pods nearly round, swollen, bristly, with a very long and sword-shaped beak. Seeds in a single row, round, yellowish-white. Cultivated from Europe.

SINAPIS NIGRA, *black mustard*, is from three to four feet high, with numerous divided and subdivided spreading branches. Leaves rough, lyrate, and lobed below; smooth, narrow, and entire above. Flowers small, yellow. Pods smooth, four-cornered, with a short style rather than a beak. Seeds smaller than in the preceding, dark brown, yellow within. In fields and waste places. Resembling the *S. arvensis* (*wild mustard* or *charlock*) which so often annoys the farmer.

The seeds of both white and black mustard furnish the powdered mustard of our tables. When treated by cold pressure, (see *Olea fixa*,) they yield a quantity of fixed oil, which is of a greenish-yellow color, and has little smell or taste. The flour from the white seeds is not pungent, when dry; but when mixed with water, a change in its constituents is effected, by virtue of which it acquires the peculiar biting acridness which distinguishes it. The flour from the black seeds, when first deprived of their fixed oil by pressure, will yield a very small quantity of volatile oil by distillation with water, which has the peculiarity of containing a distinct quantity of sulphur. No such oil exists in the dry seeds, but is developed only when water is added to them. Thus, in both kinds of these seeds, the presence of water determines a change in their constituents, by which a pungent principle is developed in the white variety, and a very acrid oil in the black variety. Such a change bears an analogy to that wrought in the almond by admixture with water. Alcohol, acids, and boiling water impair the activity of the mustards.

Properties and Uses: Mustard is an extremely biting stimulant and excitant. A teaspoonful, mixed with a few ounces of water, acts as an emetic, and is employed when quick vomiting is needed in cases of narcotic poisoning. Associated with emetics proper, it hastens the promptness of their action in similar cases. Small quantities, especially of the crushed seeds with their husks, are used in digestive atony; and have some repute as a suitable stimulant to combine with tonics and hepatics in dropsy. A teaspoonful to a tablespoonful of the whole seeds, softened in warm water, and given in molasses, prove stimulating and laxative. The powdered article, moistened with water, is much used as an external stimulant over congested organs, either as a wash, or mixed with flour and cold water and applied as a cataplasm. In the latter form, it is extremely powerful, soon causing redness and smarting, and (in less than an hour) intolerable burning and pain. It occasions persistent tenderness of the skin, is frequently followed by desquamation, and may cause blistering if too long continued; on all which accounts it can not be repeated as often as is sometimes desirable, is in this respect far inferior to capsicum, and can scarcely be considered a true Physio-Medical remedy.

SMILAX OFFICINALIS

SARSAPARILLA

Description: Natural Order, Smilacaceae. A Tribe of climbing and shrubby plants, with oval leaves conspicuously veined. The plant now under consideration is a native of Central America, especially of Honduras, Guatemala, Mexico, and New Grenada. Several varieties of the root come upon the market, of which the present species seems most valuable. According to Humboldt and Bonpland, this plant has an angular, twining, and somewhat prickly stem, the young shoots being smooth. Leaves ovate-oblong, acute, smooth, tough, five to seven-nerved, a foot long, on short petioles, with stipules in the form of tendrils. The roots are slender, very long, several from the same collum, reddish-brown, and tough. They come to market folded in lengths of two and a half feet, in small bundles. Some specimens are a dirty ash-gray, and others rather reddish. The average size is that of a large goose-quill. It has but little odor, but emits a decided and pleasant smell on being boiled; and its taste is at first mucilaginous and slightly bitter, but afterwards moderately yet persistently biting and warming to the fauces.

Several species of smilax are common in woods in all sections of the United States, some of which are called by the popular name of *greenbrier*, and one (*S. herbacea*) furnishes a flower with the wretched smell of carrion. The roots of some of the greenbriers appear to be fairly medicinal, though they have not been used sufficiently to venture an opinion upon their usefulness. The *menispermum palmatum* is called sarsaparilla, though not allied to the order Smilacaceae; and so is *aralia nudicaulis*.

Properties and Uses: The *root* of the sarsaparilla is placed among the most efficient alteratives, of the relaxant and moderately tonic grade. Its powers have been much overrated; and though good, it is more valuable for its pleasantness and mildness than for its potency. The method of its action is less as a secernent than a sustainer of capillary circulation; and its ultimate benefits are seen only after long use. Secondary syphilis and mercurial cachexy are the cases to which it is mostly applied; though it is also commended in rheumatism and chronic cutaneous affections. Used alone, its benefits are moderate; but if combined with such articles as guaiacum, stillingia, and iris, good results will be obtained. A long continuance of heat decidedly injures it; and some old bundles are nearly inert. The great price of the article is scarcely remunerated by the virtue obtained from it. Decoction, sirup, or extract, is the proper method of administration.

Pharmaceutical Preparations: I. *Decoction.* Five ounces of sliced sarsaparilla are boiled in two quarts of water to one quart, and strained. But the evidence is abundant that such an amount of boiling renders the product nearly inert; and indeed boiling at all is quite injurious to the article. A better method is to digest the sliced root for an hour in a quart of water not above 150° F., in a close vessel. Dose, two to four fluid ounces three times a day. II. *Extract.* An extract of this root prepared by water, is of small consequence. That prepared by exhausting the root with seventy-five percent alcohol, and evaporating to solidity on a water bath, is a fair representative of the root, and an ounce of it commonly contains the strength of half a pound of the drug. Dose, ten to twenty grains, dissolved in water, three times a day. III. *Fluid Extract.* This is usually prepared, according to the Pharmacopoeias, by either boiling the root or digesting it with hot water. A much better way is to macerate a pound of the root in a covered vessel for

two days with diluted alcohol; treating by percolation till eight fluid ounces have passed; reserving this, and exhausting with tepid water; evaporating the latter on a water bath to eight fluid ounces, and mixing the two products. Dose, a fluid drachm four times a day. An officinal *sirup* is prepared by boiling, and is almost worthless. An officinal *compound sirup* is made of two pounds sarsaparilla; three ounces guaiacum; two ounces, each, rose leaves, senna, and licorice; five drops, each, oils of sassafras and anise; and three drops oil of wintergreen, using diluted alcohol as a menstruum, procuring a gallon of the tincture, and adding eight pounds of sugar. It is a very pleasant but mild preparation.

SODIUM COMPOUNDS

Sodium, the analogue of potassium, is obtained either from sea weeds, or from common salt—the latter being first made to yield carbonate of soda, as will be described presently. The dry carbonate is mixed with a little hot water, and then with fine charcoal, and some charcoal in small lumps. The mixture is then dried, put into a retort of hammered iron, and heated to whiteness. The sodium distills over through a bent tube dipping into naphtha. It is a silver-white metal, soft, lighter than water, and with an avidity for oxygen similar to that shown by potassium; but it will not decompose cold water with enough energy to ignite the liberated hydrogen, though it will do so instantly with warm water. The majority of its compounds are derived from salt, (chloride of sodium.)

CHLORIDE OF SODIUM. NaCl . *Common Salt*. This is a leading component of the waters of the ocean, and of great numbers of springs. The better qualities are obtained by evaporating the water from the latter, which usually yields this substance almost free from impurities. Its characteristics are too well known to need repetition. Medically, it is stimulant and antiseptic, and forms a good gargle for putrid sore throat and diphtheria. Small quantities, dry, or in solution, at intervals of a few moments, generally arrests sudden attacks of spitting of blood and bleeding from the stomach, and the risings of worms. From one to two teaspoonsful may be dissolved in a half pint of lukewarm water, or a gill each of water and milk, and given as an enema; which proves an effective and moderately stimulating cathartic, and usually dislodges pin worms. Large doses, as one to two teaspoonsful, are slowly cathartic, and still larger quantities, dissolved in four times its own weight of water, act promptly as an emetic of a moderately stimulating character, and may be used thus in emergencies. Ten grains or more every half hour, in mucilage of slippery elm, make a favorite German prescription for the paroxysms of ague, and for enlarged spleen. Hungarian physicians are especially partial to this use of it; and numerous instances are met where the American people have used it in teaspoonful doses every hour for four hours, with decided success. Externally, its solution is tonic and moderately stimulant, and is much used as a wash for bruises, sprains, and rheumatism; or the dry salt, in thin bags, is well heated and laid over a painful part as a fomentation. A pound of salt in four gallons of water forms a saline solution of about the strength of sea-water; and this makes an excellent tonic bath for rickety and scrofulous children, and for all patients with constitutional debility.

CARBONATE OF SODA. $\text{NaO}, \text{CO}_2, + 10\text{HO}$. This was formerly obtained from the ashes of sea-weeds and plants near the seashore. At present, it is obtained from chloride of sodium. This is first heated in a reverberatory furnace, and mixed with an equal weight of sulphuric acid; by which the sulphate of soda is formed, and the chlorine driven off with water, in the form of hydrochloric acid. The sulphate of soda is then powdered, mixed with an equal weight of ground limestone and half its weight of fine charcoal, and the mixture highly heated in the furnace. Sulphate of lime and carbonate of soda result; and the soluble carbonate is washed out with water, and evaporated to dryness. This is one of the most curious, yet simplest and most useful, interchanges of chemistry. The carbonate obtained is in large and nearly white crystals, which in the air effloresce to a fine white powder. It is a strong and harsh alkali, used extensively in making soda soaps, but not used in medicine except to form the bicarbonate.

BICARBONATE OF SODA. $\text{NaO}, 2(\text{CO}_2)+\text{HO}$. This is prepared by making a cold solution of the above carbonate, and passing into it a stream of carbonic acid gas. Or crystals of carbonate may be placed in an atmosphere of carbonic acid gas. In either case, an extra equivalent of this gas is absorbed, and the bicarbonate results. It forms fine white crystals, soluble in twelve parts of cold water, of a mild alkaline taste, and not deliquescent in the air. It is used in the same manner as the bicarbonate of potassa; and though more commonly employed than the latter alkali, is not usually so acceptable.

BIBORATE OF SODA. $\text{NaO}, 2(\text{BO}_3)+10\text{HO}$. *Borax*. This salt occurs in the waters of certain lakes in Tibet and Persia; and is also obtained from the borate of lime, found native in southern Peru. When purified, it is a whitish salt, feebly alkaline in taste and reaction, soluble in twelve times its own weight of cold water, and much more soluble in boiling water. Borax water has the peculiar property of rendering shell-lac soluble in water, and also of rendering cream of tartar much more soluble. Though much used internally for gravel, nephritic difficulties, and lesions of the bowels, it is of doubtful efficacy; and the only use to which it can be put with even a semblance of advantage, is in combination with a strong infusion of sage as a wash in aphthous sores and sore throat, or rubbed up with honey and then mixed with water for the same purpose.

The nitrate of soda is similarly poisonous with the nitrate of potassa. The phosphate, muriate, and sulphate are used in medicine, but are not Physio-Medical agents.

SOLIDAGO ALTISSIMA
COMMON GOLDEN-ROD

Description: Natural Order, Compositae. Of the large genus *solidago*, this is one of the most abundant. Stem two to four feet high, stiff, rough-hairy. Leaves ovate-lanceolate, nearly sessile, coarsely toothed, feather-veined, thickish and sometimes wrinkled. Flowers in small heads, on paniced racemes, which spread sideways and form a brilliant yellow top to the stem. Abundant through fields and copses.

SOLIDAGO RIGIDA is also frequent on sandy soils. Stem three to six feet high, rough or somewhat hoary, stout, very leafy. Leaves thickish, oval, slightly serrated or entire, feather-veined from a strong midrib. Flowers in rather large heads, with seven to ten yellow rays and a distinct disk; in a dense compound corymb.

Properties and Uses: The *leaves* of these two plants, and probably most others of the golden-rods, are quite astringent, with mild tonic properties; and have been used in passive menorrhagia, and other forms of bleeding. Externally, they have been commended for indolent and fungous ulcers, and also as an injection in foul leucorrhoea. The flowers make a brilliant yellow dye to silks and woollens.

SOLIDAGO ODORA, *sweet-scented golden-rod*, has a slender and often reclined stem two or three feet high, and is almost smooth. Leaves linear-lanceolate, smooth, shining, with pellucid dots. Flowers in small heads with three or four rather large rays; in small, one-sided, paniced racemes. The leaves are fragrant, when crushed, with an odor similar to anise, and yield a volatile oil. They are a pleasant aromatic relaxant, useful in colic, flatulence, nausea, and to disguise the taste of harsh medicines; and may be used freely by infusion.

SPIGELIA MARILANDICA

PINK ROOT

Description: Natural Order, Rubiaceae; by the U. S. Dispensatory classed in the Order Gentianaceae, but not now placed there. Showy herbs with perennial roots and annual stems. Stem simple, erect, smooth, nearly square, dull-purplish, six to eighteen inches high, several from the same root. Leaves opposite, sessile, ovate-lanceolate, acute, three to four inches long. Flowers large, very showy, along one side of a terminal spike; calyx of five slender divisions; corolla tubular, an inch and a half long, slightly inflated in the middle, divided at the margin into five acute segments, valvate in the bud, crimson outside, yellow within; stamens five, extending beyond the corolla along with the single fringed style. Fruit a double capsule, flattened at the sides, and when ripe separating to the base into two carpels. Each spike bears but from four to eight erect flowers. June and July. In rich woods through Pennsylvania, the Carolinas, and southward.

The root of this plant consists of a bundle of fibers from four to seven inches long, from a short and knotty rhizoma, dark or yellowish brown, and of a sickish odor and a slightly bitter taste. Hot water extracts its virtues. Many samples are mixed with a very slender and light-yellow root, with numerous small fibers; which is said to belong to a small vine common in the vicinity (?) and are pronounced poisonous.

Properties and Uses: This *root* is an indigenous anthelmintic, a knowledge of which was obtained from the Indians. Large doses sometimes purge, but not uniformly; and often cause headache, dizziness, crowding of blood to the brain, and muscular twitchings about the face. A sluggish and narcotic feeling is left behind, and death has been attributed to its use. (*U. S. D.*) This is certainly a suspicious reputation; and though pink root is a popular worm remedy, it is by no means a certain one, and the *Materia Medica* furnishes many far better. The ill effects have been attributed to the foreign root above named, but this is not at all confirmed. From ten to twenty grains, either as powder or by infusion, are directed for a child three years old; and it is customary either to combine it with a fair dose of senna, or to give a brisk cathartic in three or four hours after.

SPIREA TOMENTOSA

HARDBACK, MEADOW SWEET, STEEPLE BUSH

Description: Natural Order, Rosaceae. Small shrubs, several species of which are much cultivated, and assorted into numerous varieties, as pretty ornamental plants. Stems numerous, two to three feet high, slender, purplish, and downy. Leaves opposite, ovate-lanceolate, minutely serrate, dark-green above, gray and very woolly beneath. Flowers in dense, terminal spicate racemes, calyx and corolla five-parted, corolla light-red. Pods woolly, remaining throughout the winter, and the seeds eaten by snow-birds. July. Very common in low grounds through New England, and extending southward.

Properties and Uses: The *root* is a tonic and astringent, of rather strong powers, of a pleasant odor and taste, and usually well received by the stomach. It is used in sub-acute and chronic diarrhea, especially that of a scrofulous character where the assimilative organs are at fault; and may be used in hemorrhages and other cases to which astringent tonics are suited. The *leaves* are said to be even better than the root. An ounce to a pint of boiling water makes a good infusion, of which a fluid ounce or more may be given from three to six times a day.

SPIREA OPULIFOLIA, *nine bark*, is a shrub from five to ten feet high, growing mostly by river banks on rocky soils. Not woolly. Branches slender, recurved, crowded toward the extremities with small white flowers in umbel-like corymbs. Leaves roundish, slightly heart-shaped, somewhat three-lobed. Pods three to five, inflated, membranous, purplish. The old bark separates in a number of thin layers. The leaves of this shrub are mildly astringent, tonic, a little demulcent, and rather soothing in character. They make a much pleasanter remedy than the root of the above species, and one that can be employed for a larger range of cases where an astringent is needed. In sub-acute dysentery and diarrhea, it is an admirable agent.

STAPHYLEA TRIFOLIA

BLADDER NUT

Description: Natural Order, Sapindaceae. A sub-order in the same Family with the maples, horse-chestnut, and buck-eye. Upright and handsome shrubs from six to ten feet high, with greenish and striped branches. Leaves opposite, of three oval leaflets, pointed, serrate, pale beneath. Flowers perfect, regular, in short and drooping racemed clusters at the end of the branches. Calyx and corolla both white or yellowish-white, five-parted throughout, petals on a thick ridge which lines the disk of the calyx. Fruit a large, membranous pod, inflated, three-lobed, three-celled, looking bladdery, (and not watery, as in ptelea,) and containing from one to four long seeds in each cell.

Properties and Uses: The *bark* of this plant, especially that from the root, is a pleasant bitter tonic, of the soothing order, relaxant and but moderately stimulant, and acting on the nervous system as well as the stomach. It increases appetite and digestion moderately well, sustains the uterine structures to good advantage, and is of value in feebleness of the stomach, mild prolapsus, and hysteria. The stomach receives it well, and is not irritated by it. Dose, a fluid ounce of infusion made by digesting an ounce of the bark in eight ounces of water.

STATICE CAROLINIANA

MARSH ROSEMARY, INK-ROOT, SEA-LAVENDER, AMERICAN THRIFT

Description: Natural Order, Plumbaginaceae. Maritime herbs with perennial roots and an annual flower-scape. Leaves radical, oblong, spatulate, petioled, erect, thick, tipped with a deciduous bristly point. Scape round, smooth, erect, branched, six to eighteen inches high. Flowers loosely spiked on one side of the branches, two to three-bracted; calyx funnel-form, dry, membranous, persistent, five-parted; corolla of five long-clawed petals, lavender-colored; stamens five, on the claws of the corolla. An inhabitant of salt marshes from New England southward. August and September.

Properties and Uses: The *root* is large, hard, and of a reddish-brown color, of an intensely astringent character, containing a large percentage of tannin. Its action much resembles that of geranium, but is more intense; and may be used in the same general classes of cases, as chronic dysentery and diarrhea, aphthous ulcerations, putrid sore throat, leucorrhoea, local hemorrhages, etc. When Dr. Thomson was on trial for the murder of Ezra Lovette, (see Lobelia,) Dr. French testified on oath that a certain powder exhibited in Court, and prescribed by Thomson, was lobelia, but it proved to be rosemary.

STILLINGIA SYLVATICA

QUEEN'S ROOT, YAW ROOT, SILVER LEAF, QUEEN'S DELIGHT

Description: Natural Order, Euphorbiaceae. An indigenous, herbaceous plant, with perennial roots, and an annual, smooth, and upright stem two to three feet high. Leaves alternate, nearly sessile, oblong-lanceolate, minutely serrate, with two glandular stipules at the base. Flowers monoecious, in terminal spikes, without corollas, yellow; the male flowers of a two-cleft calyx or crenulate little cup, with two stamens on elongated filaments united at the base; female flowers few, at the lower part of the spike, with a three-cleft calyx, thick style, and three-cleft stigma. Fruit a three-lobed, three-celled, and three-seeded pod. April to July. Juice milky.

This plant is found on sandy soils through the south-eastern and Southern States. The root is medicinal; and is large, somewhat woody, yellowish-brown without, grayish-yellow within, coming to market in cylindrical pieces half an inch or more in thickness. Its taste is bitterish and rather acrid. Water and alcohol extract its virtues; though it contains an oil in limited quantities, which is not acted on except by strong alcohol or ether.

Properties and Uses: This *root* is prominently and almost acridly stimulant, with a fair portion of relaxant influence, of much power, acting with much persistency. Large doses prove cathartic, and sometimes emetic, acting slowly, and leaving a burning sensation through the stomach and bowels. It is employed for its steady influence on the glandular structures, all of which it stimulates to more vigorous action, at the same time opening the bowels and elevating the general circulation somewhat. The chief use made of it is in secondary syphilis, and chronic diseases of the skin accompanying hepatic derangement; also internally for indolent and syphilitic ulcers, mercurial cachexy, and low grades of scrofula. As usual, the Eclectics claim it as peculiarly their remedy, though it was fully described by Dr. Simons as early as 1828, has been a standard Allopathic remedy ever since, and the third edition of Dr. King's Dispensatory copied (almost word for word) the **description** given of it in the U. S. Dispensatory, without credit.

This article is generally used in sirup or decoction; and is most commonly combined with less exciting and more relaxing agents. Sensitive and irritable stomachs do not bear it, and it is suitable only to quite languid conditions. The strength of from ten to twenty grains may be given three times a day.

Pharmaceutical Preparations: I. *Extract.* A hydro-alcoholic extract is prepared after the usual method, and makes a powerful preparation, not often used on account of its concentrated stimulation, yet an efficient ingredient to incorporate with relaxing extracts. Dose one to two grains. II. *Fluid Extract.* Macerate one pound of well-crushed stillingia for two days in seventy-five percent alcohol; transfer to a percolator, and add alcohol of the same strength till six fluid ounces have passed, which set aside; continue the percolation with hot water till the strength of the root is exhausted, evaporate to ten fluid ounces on a water bath, and mix with the first product. This is an extremely active preparation, usually relieved by the addition of twenty-five drops of oil of caraway to the first drippings. From two to five drops are given as a dose, in some demulcent; but it is too harsh to be a good remedy. III. *Sirup.* Three pounds of

stillingia, and a pound and a half of prickly ash berries, are crushed and macerated with seventy-five percent alcohol for three days; then percolated with hot water till five pints pass, which are reserved; the percolation continued to exhaustion with hot water; eighteen pounds of sugar added to this, and it evaporated to six and a half quarts, and the first product added. It is a most unwise combination of two intense stimulants, (§262,) and one that is scarcely usable in any but the most rare cases of prostrated rheumatism.

IV. *Compound Sirup*. Root of stillingia and root of dicentra, (turkey-corn,) each, one pound; blue flag root, elder flowers, and pipsissewa leaves, each, half a pound; coriander seeds and prickly-ash berries, each, four ounces. Crush, macerate with seventy-five (or, better for a clear sirup, fifty) percent alcohol for two days. Transfer to a percolator, and treat with hot water, reserving the first quart that passes, till exhausted. Evaporate the watery solution to six quarts, dissolve in this sixteen pounds of sugar, evaporate till seven quarts remain, and when cold add the reserved quart of tincture. This also is a powerful preparation, highly stimulating, and of much efficacy in secondary syphilis and low cutaneous affections. Sensitive persons can not well use it. Dose, half a fluid ounce in water. Judicious therapeutics (§262) does not allow a combination of four such intense stimulants as stillingia, dicentra, iris, and xanthoxylum berries; and the modifying qualities of the elder flowers and coriander are nearly destroyed by the heat that must be used. A far pleasanter and more extensively useful compound sirup can be made by the following formula, kindly furnished us by Dr. J. Overholt, of Columbus City, Iowa: Stillingia, four ounces; sarsaparilla, seeds of arctium lappa, bark of cornus circinata, and leaves of chimaphila, each, three ounces. Crush the articles thoroughly, and macerate them for two days in a quart of diluted alcohol; place in a percolator, and treat with hot water, reserving the first pint that passes; exhaust with water, add two and a half pounds of white sugar, and evaporate to three pints. When cold, add ten drops of oil of sassafras by trituration; and then add the reserved tincture. Dose, half to a whole fluid ounce three times a day.

STYRAX BENZOIN

BENZOIN, BENJAMIN TREE

Description: Natural Order, *Styraceae*. This is a tree native to the East India islands; twenty to forty feet high, covered with a soft and whitish bark. Leaves alternate, oblong, smooth above, downy beneath, entire. Flowers in long compound, axillary racemes, with a funnel-shaped corolla. The bark, on being wounded, exudes a viscid juice that is very fragrant, and which slowly dries into whitish, yellowish-white, and sometimes reddish-brown tears. These come to market in compact and mottled masses, which are hard and brittle, and may be reduced to powder readily. They are a compound of different resins, united with a substance named benzoic acid; and thence properly a balsam. Water acts slightly upon them, and becomes impregnated with the benzoic acid; alkaline waters dissolve out the acid in considerable quantities; and alcohol of eighty percent acts on them freely.

Properties and Uses: This *balsam* is valued mostly for its fragrance, and its stimulating expectorant properties. Its tincture may be added in small quantities to tonic expectorant compounds in the treatment of old coughs; or a portion of it may be thrown into hot water so as to have a room impregnated with its odor. The French make pastilles, to burn for a medicated inhalation, by mixing the powders of four parts benzoin, one part balsam tolu, three parts charcoal, and a trace of saltpeter, and forming them into a mass with water. A *compound tincture*, (called *Jesuit's Drops*,) is formed by macerating three ounces of benzoin, two ounces of storax, one ounce of tolu, and half an ounce of aloes, in a quart of seventy-five percent alcohol. As a stimulant expectorant, it is used in doses of from twenty drops to half a fluid drachm. *Benzoic acid* is obtained by putting the balsam into a suitable vessel, and subliming over the acid carefully from a sand-bath heat. It is a beautiful white and feathery substance, of an agreeably aromatic odor. Though commended as an expectorant and a remedy for gouty subjects, it is not a good agent on account of its extremely irritating character. A famous styptic liquid of Italy is made of eight ounces tincture of benzoin, one pound alum, and ten pounds water boiled in a porcelain vessel for six hours, and filtered.

STYRAX OFFICINALE

STORAX

Description: Natural Order, Styraceae. A tree found on the shores of the Levant, and through Italy and southern portions of Spain. “It is a tree which rises from fifteen to twenty- five feet in height, sends off many branches, and is covered with a rough gray bark. The leaves are alternate, petiolate, entire, oval, bright-green on their upper surface, white with a cotton-like down upon the under side. The flowers are united in clusters of three or four at the extremities of the branches. They are white, and bear considerable resemblance to those of the orange.” (*U. S. D.*) It bears a close resemblance to the liquid-amber; and like it, yields a fragrant balsam, obtained by incisions in the bark. Various qualities are found in market, the best consisting of plastic and yellowish-white tears, sometimes reddish-yellow, and adhesive. A less valuable but more common variety is soft and dark, with hard lumps through it.

Liquid styrax is the article most common in the American market; and is, in all probability, obtained from the bark of the LIQUID-AMBER ORIENTALE, in Asia Minor. It is a half-fluid mass, of a dark blackish-green color, and a strong odor not unlike that of balsam Peru. Resin, cinnamic acid, and a trace of fatty matter, make up its chief composition.

Properties and Uses: These *balsams* are stimulating expectorants, scarcely employed except in minute quantities as adjuvants to less agreeable and more relaxing agents. The fluid styrax may be used in sub-acute gonorrhoea and gleet, especially by incorporating half a drachm of it in four ounces of the copaiba emulsion. Absolute alcohol dissolves it completely; and its tincture in that form is sometimes added to pill masses, as when aloes or other intensely bitter agents are being used.

SULPHUR

Sulphur exists extensively in combination with numerous metals, especially with arsenic, iron, copper, and antimony. Though easily separated from iron and copper by sublimation, these pyrites always contain a notable quantity of arsenic, from which it is as yet impracticable to free the sulphur. The chief source of the world's entire supply, is from the lava and rocks of volcanic regions. These substances are broken up, and placed in erect retorts, from the top of which a tube communicates with a close chamber. On applying a suitable heat to the retort, the sulphur sublimes, passes over into the chamber, and there condenses into a pulverulent mass known as *flour of sulphur*. If the tube be turned downward into another vessel partly filled with water, the sulphur will condense in molds under the water; and this is called *roll sulphur*, or *brimstone*. It is a non-metallic substance, of peculiar chemical interests; but too well known, in its physical qualities, to need **description** here. The sublimed or powdered article is most used for medical uses; but is always contaminated with a greater or less quantity of sulphuric acid, formed during the subliming process, which is objectionable. To purify it, it must be washed thoroughly with boiling water, till the trace of acid is so effectually removed as to cause no stain with litmus paper.

Properties and Uses: Flour of sulphur, when well washed as above directed, seems to be an utterly harmless agent; and may be used internally, even in excessive quantities, with apparent impunity. It acts as a gentle laxative, securing solid stools; but especially passes to the skin, increasing invisible perspiration, and leaving the surface open and liable to contract "colds." After a few days use, it will turn black any silver article worn about the person; and its odor may be detected on the surface. The internal use has been commended in chronic rheumatism, gout, catarrh, and piles; but it is of little worth in such cases. Slowly burning sulphur, conveyed around the body below the neck, is called a *sulphur bath*; but is simply the vapor of sulphurous acid gas mixed with air, and is an unadvisable remedy, no matter how highly praised for rheumatism and skin affections. The only worthy use to which it can be put, is in the treatment of itch; and it effectually destroys the itch animalcule. For this purpose, it is best applied as an ointment, thoroughly rubbed in after a good bath of soap and water once in twenty-four hours; though some also prescribe it in doses of one to two drachms, in molasses or milk, once a day, but this is needless. For eczema, and other skin affections simulating itch, it is of little value.

Sulphur *ointment* is readily prepared by mixing one ounce of sulphur with two ounces of lard. This is usually applied to the surface at bed-time, at the same time changing the under clothing. It should be rubbed in well, and four applications usually effect a cure. The addition of a few drops of bergamot oil will cover most of its unpleasant smell. The combination of sulphur with potassium, (sulphuret of potassium,) used as a wash, is more effective than the ointment. In the absence of this sulphuret, six ounces of sulphur may be mixed with three ounces of unslaked lime, a gallon of water added, and the whole boiled till the liquid looks orange-red. As the water evaporates, it should be replaced. The operation is quite unpleasant; but it yields a very efficient solution of bi-sulphuret of calcium, which may be diluted with from two to four times its own volume of water, and which rarely fails to cure the itch on two applications two days apart.

SYMPHYTUM OFFICINALE

COMFREY

Description: Natural Order, Borraginaceae. This is a somewhat coarse-looking plant, common in moist and grassy lands, sometimes cultivated in gardens. Root perennial, branched, fleshy, smooth, and nearly black without, almost white within, nearly an inch in diameter. Stems erect in the midst of a mass of large leaves, round, somewhat winged above by the decurrent leaves, branching, light-green, juicy, covered with long and moderately stiff hairs. Radical leaves oblong, wavy, rough-edged. Flowers axillary on the upper portion of the branches; calyx five-parted; corolla tubular, yellowish-white, occasionally purplish, spreading at the summit, with five awl-like scales in the throat; stamens five, on the corolla. Fruit of four seed-like nutlets, ovate, smooth, with a hollowed base. June.

Properties and Uses: The *root* of comfrey contains a large amount of mucilage, which makes the dried article dense and horny. When treated with water, or wine, it yields a moderate tonic power with this mucilage; and makes a mild remedy for recent and old coughs, sub-acute dysentery and diarrhea, simple forms of leucorrhea, spitting of blood, and other pulmonary affections. It is rarely used alone, but makes a good soothing addition to more tonic agents; and has much merit, when used in the fresh state, as an application to bruises, and irritable ulcers. Two ounces boiled in a pint of water, and then a gill of wine added, may be taken in doses of a fluid ounce or more three times a day.

Pharmaceutical Preparations: I. *Compound Wine.* Boots of comfrey, convallaria, and aralia racemosa, each, one ounce; cocculus palmatus, (not fraseria, as is generally used,) camomile, and gentiana ochroleuca, each, half an ounce. Crush, and macerate for twenty-four hours with sherry wine; transfer to a percolator, and add wine till two quarts (in all) have been used; then add water till two quarts of tincture have been obtained. This is a mild and valuable tonic for female difficulties, loss of appetite, nervousness, and insufficient menstruation. Dose, half a fluid ounce or more three times a day. This agent is an ingredient in the Compound Sirup of Aralia.

SYMPLOCARPUS FOETIDUS

SKUNK CABBAGE

Description: Natural Order, Araceae. The Ictodes of Dr. Bigelow, and the Dracontium of Willdenow. Perennial roots. Leaves one to two feet long, ovate, on short petioles, bright green, veiny, appearing after the spathes and flowers. Spathe broad, hooded, very thick and fleshy, incurved, spotted and striped with purplish and yellowish green, appearing early in the spring and often called leaves by the people. Flowers on a short and very thick spadix, within the spathe, thickly crowded together, and with their ovaries imbedded in the fleshy spadix; four hooded sepals, four short stamens, and a single four-angled style. Fruit as large as a pea, whitish, in the flesh of the spadix. The spathe dies as the flowers expand; and then it is that the leaves begin to be developed. Flowering in March and April, and ripening its curious seeds in September.

This singular plant is common in wet pastures and meadows, and is known by the strong skunk-like (and garlic-like) odor it emits in the spring. The root is an inch or more in diameter, several inches long, thickly covered with very short fibers, blackish without, nearly white within, and of a strong smell when fresh. Age weakens the odor, and also the power; and heat renders it nearly worthless as a medicine. Water and diluted alcohol extract its virtues. The seeds are similar to the root; but retain their powers for a long time, and hence are the more energetic article.

Properties and Uses: The *roots*, and also the *seeds*, are relaxant, very diffusive, promotive of perspiration, and much valued as an antispasmodic in coughs, and in the restlessness of fevers. By most persons it is accused of being mildly narcotic; but many experienced and careful physicians assure me that it is in no sense narcotic, but a simple and reliable nervine, of the most innocent and effective soothing character. It is most valued in hooping-cough, spasmodic asthma, and nervous irritability. Dose of the powder, from ten to twenty grains every three or two hours. An ounce of the fresh root, tinctured in four ounces of wine, makes an effective preparation in doses of one to two fluid drachms. Many practitioners employ it in various combinations for "fever powders;" among which class of mixtures is equal parts of skunk cabbage and white root, and one-fourth part of lobelia seeds, in doses of ten to fifteen grains every two hours or oftener. Some combine it with lobelia, blood root, and ipecac, for emetic purposes; but it is a crude and insignificant preparation.

TANACETUM VULGARE

TANSY

Description: Natural Order, Compositae. This is the strong and bitter tansy of gardens, in some places escaped into lawns and by-roads. Stem erect, smooth, striated, one to two feet high, leafy. Leaves large, smooth, dark-green, twice pinnatifid, edges cut-toothed. Flower-heads numerous, densely corymbose, many-flowered, deep-yellow, very persistent, all fertile, without rays; involucre imbricated, dry; receptacle convex, naked; pappus a short crown. The variety CRISPUM, called *double tansy*, has the leaves more cut and crisped. July to September.

The leaves of this herb have a strong odor, especially when bruised; and a bitter, biting taste. Boiling water and alcohol extract its qualities; but it contains a considerable portion of volatile oil, which is much dissipated by age and heat. The oil is greenish-yellow, lighter than water, and very pungent.

Properties and Uses: This *herb* is stimulating and moderately relaxing, rather diffusive, leaving a biting tonic-stimulating impression. A warm infusion favors perspiration, and stimulates the menstrual function; and is occasionally used in atonic amenorrhea, though a rather harsh remedy. It is a popular agent for all menstrual suppressions; and is often employed to medicate vapor for baths about the pelvis in such obstructions, and for local baths in rheumatism, sprains, etc.; and also as a fomentation for uterine and intestinal rheumatism, for all of which outward purposes it is an efficient article. Sometimes it is added to other agents in cold preparations, but is too harsh and unpleasant an article for internal use except under necessity. The oil is a good stimulating rubefacient, and is sometimes used as an abortive, but it is very dangerous. The *seeds*, and *flowers* when nearly ripe, are reputed to be a good remedy for worms.

TARAXACUM DENS-LEONIS

DANDELION

Description: Natural Order, Compositae. Root perennial, tapering, branched, several inches long, light-brown without, nearly white within. No stem. Leaves radical, in a spreading tuft, lying closely upon the ground, smooth, dull-green, coarsely runcinate. Flower-head solitary, an inch or more in diameter, radiant, rising upon a hollow and milky-juiced scape; flowers numerous, all ligulate, bright yellow, perfect; involucre in two rows. "After blossoming, the inner involucre closes, the slender beak elongates and raises up the pappus while the fruit is forming, the whole involucre is then reflexed, exposing to the wind the naked fruit, with the pappus displayed in an open globular head." (*Gray.*) Blooming from April till early frosts. Common in lawns and pastures.

The root of this plant is juicy, slightly milky, and of a mildly bitter taste. Its qualities differ much according to the season at which it is gathered; that dug in the spring being nearly worthless, that obtained in August and September being most decidedly bitter and medicinal, and that procured after frosts being sweetish and but slightly medicinal. Heat impairs its qualities.

Properties and Uses: The *root* is a mild laxative and alterant, of the relaxing-tonic grade, slowly and gently influencing the liver, small intestines, and kidneys. It is most useful in mild grades of chronic hepatic obstruction and torpor, with biliousness and weakness of the stomach; in engorgements of the liver and spleen, and abdominal dropsy dependent on these conditions. Though slow in action, it is well received by the system; and if gathered at the proper season, and used in cases not too degenerate, it deserves consideration, though concentrated preparations are required. When the stomach or bowels are irritable, it should not be employed. Among the people, it is in much repute; and though the profession mostly discards it—partly from gathering and preparing the root injudiciously, and partly as a reaction from its former too high laudation—it is, nevertheless, a pleasant and useful agent of the gentle class. The leaves and roots are often used together, but are less efficient than the roots alone.

Pharmaceutical Preparations: I. *Decoction.* Digest four ounces of the bruised roots with a pint and a half of hot water for an hour, bring to the boil for a few minutes, and strain. Dose, two to four fluid ounces three times a day. A very little essence of wintergreen or sassafras may be added to it.

II. *Extract.* This may be prepared from decoction, in the usual way; but the product is not of much medicinal value. A long time is required to evaporate the fluid; and during this long exposure to warmth, the bitter principle of the plant seems to undergo changes and become sweetish; and a sweet extract is nearly inert as a medicine. I have known a sample to be almost saccharine in its pleasantness; and have eaten two or three ounces of it in a day, for several days in succession, without any perceptible impression. A good article should retain the bitterness of the plant, and many ways have been devised to effect this object. Among the simplest of these is that of gathering and washing the fresh root, slicing and bruising it, and expressing its juice by powerful pressure. A little water may then be added to the dregs, mixed with them into a pulp, and then subjected to a second pressure. The two liquids are then mixed, and evaporated in very

shallow dishes in a current of air, with frequent stirring. This yields a dark, tenacious, and valuable product. Dose, ten to thirty grains three times a day. As it dissolves in water, it may be softened to any desired degree; and it is a useful body on which to form a pill mass.

III. *Fluid Extract.* Gather the roots in September or October, slice them while fresh, reduce to a pulpy mass in the mortar, add a pint of seventy percent alcohol to each five pounds of the roots, and let it macerate for a week in a closely- covered earthenware vessel. If it stand for six months, a still better product is obtained. The dregs are then to be subjected to powerful pressure; after which the marc may again be mixed with a quart of diluted alcohol, after three days again subjected to pressure, the product evaporated to a pint, and this mixed with the first product, and filtered. The quantity obtained will vary with the quality of the root and the amount of pressure used, but the total from five pounds will be about four pints. When desired, a pound of fine sugar may be added to each quart of the fluid. This makes a very efficient preparation, and may be used in doses of one to two teaspoonsful. A pound of dried roots are about equal to two pounds of the fresh ones; and may have added twelve fluid ounces of water to make up the loss by desiccation, and then treated as above. A good quality of solid extract may, upon necessity, be made into a fluid extract by dissolving four ounces of it in an ounce of alcohol, and enough water to make the whole measure half a pint.

TEREBINTHINA

TURPENTINE, OIL OF TURPENTINE

Turpentine is a compound of resin (or colophony) with a peculiar volatile fluid which is known as the *oil* or *spirits of turpentine*. The latter substance gives to the whole its peculiar terebinthinate odor. It is thus a peculiar oleo-resin, and is yielded as an exudation by most trees of the Order Coniferae, chief among which is the genus PINUS. The genus ABIES also yields terebinthinate oleo-resins, some of them in large quantities; and some kinds are obtained from the LARIX. Though each species yields its own peculiar varieties, one common series of characters mark them all. Of the trees which yield the great mass of the common turpentine of the world, two only need be mentioned, as follows:

PINUS PALUSTRIS, or RIGIDA; *pitch pine, yellow pine*. A tree from fifty to seventy feet high; with dark-green and stiff leaves from three to five inches long, in threes, flattish, from very short sheaths. Cones two to three inches long, cylindrical, often in clusters, the scales tipped with a short and stout recurved prickle, Common on sandy soils from Maine to the Carolinas.

PINUS TAEDA, *lob-lolly pine*. Tree from sixty to one hundred 46 feet high. Leaves in threes, eight to ten inches long, light green, with long sheaths. Cones four to five inches long, very smooth, blunt, the scales with a short incurved spine.

The oleo-resin (often called gum turpentine) is obtained by boring and scooping a hole into the lower part of the trunk, into which the half-fluid resinous material slowly oozes. When the cavity is filled, the exudation is taken out, and the secretion goes on—the process continuing from early Spring till late in the fall. The product is at first thin and clear, but it gradually becomes opaque, yellowish-white, stiff, and even brittle. Heat increases its softness, unless it has already become hard and dry. The smell is that of an aromatic turpentine, the taste bitterish and pungent, water scarcely acts upon it, alcohol and ether dissolve it readily, and it unites with the fixed oils. The volatile portion constitutes the *oil of turpentine*; and when this has been distilled off, the residuum is the common *resin* of commerce. These properties are common to all the gum turpentines; though the color of *Venice turpentine* (obtained from the Larix Europea) is greenish-yellow, but most of the article of this name is simply a solution of common resin in an excess of oil of turpentine. The *oil (spirits)* is a well-known colorless, volatile, pungent, and strongly odorous fluid.

Properties and Uses: The *gum* turpentine is a relaxant and stimulant, warming to the taste, and sometimes used in sluggish conditions of the uterus, vagina, and kidneys. From three to five grains are given in pill form, three times a day. The oil is a diffusive and exciting stimulant, arousing the stomach and circulation, strongly influencing the kidneys, and presently being absorbed so as to mark the exhalations of the lungs and skin with its peculiar odor. It also gives to the urine the odor of violets. Any considerable dose, or small doses continued for a number of days, may occasion burning of the stomach, scalding urine, strangury, irritation of the kidneys and bladder, painful looseness of the bowels, and even bloody urine. Sometimes it promotes perspiration and the catamenia. Used outwardly for any length of time, it occasions redness, followed by numbness and partial paralysis; and these effects have been known to continue for

many weeks after the article had been discontinued. Sometimes it has given rise to decided disorder of the mind. The principal uses made of it, inwardly, are for worms, in doses of from five to ten drops each morning for young children. It may be dropped on sugar, or mixed with an emulsion of sweet- oil or castor-oil; and several of the most popular vermifuges consist of an ounce, each, of oils of turpentine and chenopodium to a pint of castor-oil. For catarrh of the bladder and lungs, and for gonorrhoea, it has been used in doses of three drops to half a drachm, in elm mucilage, twice or thrice a day; As a diuretic it is powerful, but should never be used except in cases of extreme torpor. It is commended as an antispasmodic and laxative in colic, hysteria, tympanitis, and pin worms; for which purposes half a drachm or more is mixed with six ounces of a thick mucilage of starch, and given as an injection. Externally, it has long been used in stimulating liniments designed for rheumatism and other cases. Wonderful powers have been attributed to the agent in a large variety of maladies, and at different periods in the history of medicine it has been lauded as almost a panacea; but certainly the above array of ill effects from it, shows it to be a very suspicious remedy for either internal or external use.

PIX LIQUIDA, *tar*, is a blackish, viscid substance obtained by slowly burning the PINUS SYLVESTRIS, or *Scotch pine*, in piles, so covered as to prevent any open flame, as for charcoal. The resinous substances trickle downward, and are caught in a shallow iron pan at the bottom of the pile. They contain a portion of turpentine, along with acetic acid, empyreumatic acid or wood oil, and other substances. The action of tar is that of a harsh stimulant and irritant. One part shaken with four parts of water, and filtered after twenty-four hours, constitutes the *tar-water* of the Pharmacopoeias; which has received a fabulous and unwarranted reputation, in doses of half a fluid ounce three times a day, for catarrh, humid asthma, and even consumption.

THYMUS VULGARIS

THYME

Description: Natural Order, Labiatae. A small, shrubby- looking garden plant, wild in Europe, much cultivated in our country as a pot-herb similar to summer savory. Stem six to eight inches high, branching, weak. Leaves opposite, very small, numerous, ovate-lanceolate. Flowers very small, in terminal and leafy spicate-whorls, bluish-purple. The whole plant is fragrant, and pleasantly aromatic; and yields a pale-yellow volatile oil, which is used largely in adulterating oil of organum.

Properties and Uses: This *herb* is a pleasant diffusive aromatic, stimulating and relaxant, acting as a carminative and mild emmenagogue. It may be used in recent colds, menstruation obstructed and painful from exposure, colic, and general flatulence. A warm infusion may be used freely, and gently promotes perspiration; and the action of the plant is similar to that of pennyroyal.

TRIFOLIUM PRATENSE

RED CLOVER

Description: Natural Order, Leguminosae. This is the common red clover of our meadows, with perennial and horizontal roots, and several leaf-stems in a cluster, with the head of flowers on a separate stalk from the root. Stems ascending, somewhat hairy; leaves three, obovate, often emarginate; stipules broad and bristle-pointed. Flowers numerous, sessile, red, in a large oval head; corolla with the lower petal longer than the others, closed, withering; stamens ten, nine united by their filaments.

Properties and Uses: This *herb* is little used in medicine, yet its decoction is somewhat antispasmodic, and enjoys a good family reputation for whooping-cough. An *extract*, made by evaporating the decoction in the usual way, is a rather stimulating article; and is valuable as an application to indolent ulcers and cancers. In the latter malady, it enjoys an excellent reputation; and though not at all escharotic, is too sharp to be applied alone, and is best made into an ointment, or into a plaster with milder extracts, as mentioned at oxalis acetosella. It secures a good discharge, arouses a firm capillary circulation, and procures a granulating surface to indolent and phagedrenic sores. The profession should give this extract their consideration.

TRILLIUM SESSILE

BETH ROOT, BIRTH ROOT, GROUND LILY, JEWS-HARP

Description: Natural Order, Smilacaceae; sub-order, Trilliaceae. Genus TRILLIUM: Low herbs, with stout and unbranched stems from four to twelve inches high; bearing at the summit a single whorl of three large and broad leaves, and a single large flower in the axil of the leaf-whorl. Root perennial, round, an inch in diameter, one to two inches long, fleshy, somewhat tuberous, with a few short and stout fibers. Flower perfect; sepals three, herbaceous, spreading, persistent; petals three, large, withering ; stamens six, with short filaments. Fruit ovate, purple, three-celled, often six-sided. T. SESSILE: Leaves sessile, broad-ovate, acute, three to four inches long, dark-green with dull-purplish blotches. Flower sessile, with the three leaves as an involucre ; petals one to two inches long, persistent after withering, dull-purple varying to greenish. April and May. Common in moist woods.

Other species are equally medicinal, and all are characterized by the arrangement of the leaves and flower. The ERECTUM has its flower on a nodding peduncle; the GRANDIFLORUM has a similar peduncle, two to three inches long; and the CERNUUM has a short peduncle recurving under the leaves, white petals, and the root-stocks in clusters and usually bearing two or three stems.

The roots are medicinal, those of some species being yellow- ish-white ; but most of them being reddish-brown without and whitish within. The properties of all seem to be the same. When fresh, they have an acrid and bitterish taste; when dry, they are bitterish and slightly astringent. Water and diluted alcohol extract their virtues.

Properties and Uses: The *root* is possessed of relaxing and stimulating properties, which act with moderate promptness; and leaves a mild tonic and astringent impression that is quite persistent. The mucous membranes receive most of its influence; and it is used in tenacious mucous discharges, with debility, as in chronic dysentery, leucorrhea, catarrh, etc. Its astringency is not so great as to cause dryness; yet is sufficiently marked (in company with the tonic power) to diminish superfluous discharges, and to prove of the greatest service in bleeding from the lungs, nose, stomach, bowels, kidneys, and bladder, and is equally useful in checking excessive menstruation and lochia. Its power over hemorrhages is peculiar and excellent; and it is one of the very few remedies that prove reliable in the hemorrhagic diathesis. There is a moderate antiseptic power in it, which makes it available in foul leucorrhea as an injection; and as a local application in foul and somewhat degenerate ulcers. Like *rubus* and *uva ursi*, it exerts a distinct (and proportionately stronger) influence over the uterus, promotes parturition in languid cases, anticipates flooding, relieves after-pains, (especially in company with *cypripedium*,) and is an excellent associate with *convallaria*, *symphytum*, and *aralia racemosa*, in all ordinary female weaknesses, particularly when the tissues are lax. The leaves are also used as an application to ulcers and swellings. The common impression of the astringency of this root has led many practitioners to overlook its excellent tonic properties; but it is a remedy deserving of the first attention in the cases above named. Dose of the powder, from ten to twenty grains three or four times a day. It is generally given by infusion, made of an ounce of the root to a pint of hot water; of which a fluid ounce is a dose. A *fluid extract* is also prepared.

TRIOSTEUM PERFOLIATUM

HORSE GENTIAN, FEVER-ROOT, WILD IPECAC, DR. TINKER'S WEED

Description: Natural Order, Caprifoliaceae. In the same Family with sambucus and viburnum. Stem several from the same root, two to four feet high, round, hollow, very leafy to the top, and covered with soft hairs. Leaves opposite, oval, four to six inches long, pointed, abruptly narrowed below but connate round the stem, downy beneath. Flowers sessile, solitary or clustered in the axils, usually from three to five together; calyx tubular, persistent, with five lance-linear lobes; corolla tubular, swollen below, but little longer than the calyx, dull brownish-purple; stamens five, short. Fruit an oval bony drupe, half an inch long, orange-colored. Blooming in June.

This plant is not uncommon in rich woodlands, and in other shady situations. The root is used in medicine, and is a slow laxative-tonic, not unlike the bark of fraxinus. It has been commended in autumnal bilious fever, intermittents, and bilious forms of dyspepsia. No doubt it deserves more attention than has yet been paid to it; though the common accounts of it are so much based upon closet speculation rather than experience, that I do not feel justified in doing more than call attention to it as an article that, in some sections, has enjoyed a very popular reputation in agues.

TUSSILAGO FARFARA

BULLSFOOT, COLTSFOOT

Description: Natural Order, Composite; in the sub-order of the bonesets. Root perennial, small, creeping, blackish-brown, with numerous fibers. The flower-stems rise directly from the root, appearing early in spring before the leaves, from six to eight inches high, and each bearing a single flower-head, of the appearance of an ox-eye daisy, but with the ray florets bright yellow and in several rows. Disk florets few, tubular, sterile. Leaves all radical, appearing later in the season than the flowers, on long and furrowed petioles, broad-cordate, four to six inches long, smooth and dark-green above, whitish, veined, and soft-woolly beneath. Pappus of the fertile (ray) flowers abundant, capillary, and persistent. This plant is found in wet grounds through New England, New York, and westward; and attracts attention by its early flowers appearing without the leaves.

Properties and Uses: The *root* is stimulant and relaxant, of an agreeable and warming taste, and associated with some demulcent property. Like the *asarum canadense*, also called coltsfoot, its warm infusion promotes an outward circulation, increases expectoration, and leaves a warm and slightly tonic impression. The principal use made of it, is in debilitated coughs, hooping-cough, and humid forms of asthma; for all of which it is a good remedy to combine with such articles as cherry or boneset, though its virtues have probably been overrated. The powder is used as a snuff in chronic catarrh, when the discharge has become viscid and offensive. Prof. S. E. Carey tells me that this agent will prove fairly depurative to the liver, in doses of half a drachm three times a day; and that it is a good hepatic tonic of the moderately stimulating grade in scrofulous cases.

ULMUS FULVA

SLIPPERY ELM, RED ELM

Description: Natural Order, Urticaceae; sub-order, Ulmaceae. This is a tree from twenty to forty feet high, common in rich and stiff soils, near streams and other moist situations. Bark brown and rough without; thick, soft, yellowish-white, and very mucilaginous within. Leaves opposite, ovate-oblong, taper-pointed, four to eight inches long, doubly serrate, very rough above, soft-downy underneath, strongly marked with straight veins. Younger branches and buds downy. Flowers reddish, in small and nearly sessile lateral clusters, appearing before the leaves; corolla wanting; calyx bell-shaped, seven to nine lobed. Fruit a one-celled and one-seeded samara, two-thirds of an inch in diameter, the wing extending all around. Wood reddish, tough.

Properties and Uses: The inner bark is of a sweetish taste, mild odor, very mucilaginous, and slightly nutritious. When chewed, or chipped and macerated in cold water, it acts soothingly upon all mucous membranes; and the water may be used to the best advantage as a common drink in all mucous irritations and inflammations, as of the bronchi, lungs, stomach, bowels, kidneys, bladder, and uterus. It is thus employed in acute pneumonia, bronchitis, gastritis, dysentery, nephritis, etc.; and also in gastric, nervous, and other forms of fever where the intestinal canal is liable to irritation. Some use it previous to parturition, asserting that it secures moistness and early distension of the passages. The mucilage, made thick, is sometimes used as a vehicle for capsicum, quinine, and other concentrated powders; and either the mucilage or the powder makes the most soothing of all injections in acute dysentery, and a vehicle when any remedy (as lobelia, zingiber, or capsicum) is to be given by injection with reference to its being retained in the bowel for the sake of its slow action. It also makes a good demulcent and adhesive powder to incorporate with masses designed for troches or suppositories; and may even be used for powder of gum arable in the preparation of emulsions. The powder makes one of the most soothing and available of all demulcent poultices for inflamed surfaces, or a basis for poultices when any class of powders are to be mixed with a demulcent. The powder may also be sprinkled upon chafed places, on erysipelalous or other excoriations. The powder absorbs a large quantity of water, and swells; and is best prepared by first being mixed with cold water, and then warmed for the uses of a poultice, or mixed with a suitable quantity of tepid water and given at once when to be used as injection. An even teaspoonful of the powder is usually sufficient for an injection of from four to six fluid ounces. Two drachms of the whole bark, chipped, may be macerated in half a pint or more of cold water, and drank freely.

URTICA DIOICA

GREAT NETTLE, STINGING NETTLE

Description: Natural Order, Urticaceae. Stem two to three feet high, slightly four-sided, somewhat branching. Leaves opposite, ovate, somewhat heart-shaped at the base, deeply serrate, pointed, three to four inches long by an inch and a half broad, downy underneath. Flowers monoecious, often dioecious, without corollas, in paniced spikes; calyx of four greenish sepals. The stem and leaves thickly beset with bristly, stinging hairs, which emit a little acrid juice that causes small blisters. Root creeping, branching, half an inch or more in diameter, perennial. June to August.

U. GRACILIS, *tall wild nettle*, is slender, erect, rarely branched, from three to six feet high; with narrow, pointed, and three to five-nerved leaves, common in fence corners, and sparingly bristly. U. URENS, *small stinging nettle*, is not common, annual, scarcely a foot high, with elliptical leaves. The roots of these several species are probably alike, but that of the dioica is the one usually gathered.

Properties and Uses: The *root* is a strong astringent, with moderately stimulating and tonic qualities, of a sharp and rough taste. As a local arrester of bleeding, it has few equals; and its infusion or tincture is of much power, used inwardly, for bleeding from the nose, lungs, or stomach, and may also be used to excellent advantage in bleeding from the bowels and passive menorrhagia. Some have used it in diarrhea; but it is suitable only for low conditions and chronic forms of that malady. It is said to act well upon the kidneys, but I have been unable to obtain any such impression from it; and can not commend it in dropsy unless as a tonic and astringent with an excess of other agents, and it is certainly an unsuitable article to use in febrile and acute nephritic difficulties. Dose of the powder, from five to ten grains. A tincture may be made with two ounces to a pint of diluted alcohol.

URTICA PURPURASCENS is an annual nettle, found only on alluvial soils, and preferring moist and somewhat shady situations. Stem one to three feet high, slender, with spreading branches. Leaves large, broad-ovate, cordate, dark-green, coarsely serrate, on slender petioles. Flowers in short and simple clusters, of which there are usually two in an axil. Beset with slender and stinging hairs on the stem, branches, petioles, and leaves. I have used the unripe *flowers* of this species in ague, and especially in gastric intermittents with cerebral disturbance. A teaspoonful, powdered and given in molasses, usually induces a quiet sleep and a warm perspiration, without any sign of narcotism. My experience with it, in 1852, was too limited to allow more than a passing notice; but I feel well satisfied that it deserves careful investigation. This species is abundant throughout the West. The flowers of the other species may possess similar properties, though my own trials of them were not satisfactory.

VACCINIUM RESINOSUM

HUCKLEBERRY

Description: Natural Order, Ericaceae; sub-order, Vaccineae. This is now classed as *Gaylussacia resinosa* by Gray and others, having been separated from the genus *vaccinium*. It is the common huckleberry or black whortleberry, so familiar in moist grounds through New England and other northern States. A small and much branched shrub, one to two feet high, rigid, slightly pubescent when young. Leaves oval, an inch long, thickly covered with shining resinous globules. Flowers in short, clustered, one-sided racemes in the axils of the branches; calyx-tube adherent to the ovary; corolla ovoid- tubular, five cleft, with an open mouth, white tinged with purple. Blooming in May and June. Fruit a bluish-black, berry-like drupe, with ten nutlets; ripening in July and early August, and much used on the table for its sweetish taste.

VACCINIUM FRONDOSUM, (*Gaylussacia frondosa*,) is the true *whortleberry*, also called *blue huckleberry*, *dangleberry*, and *blue-tangle*. Stem three to six feet high, branches slender and spreading. Leaves ovate-oblong, pale and smooth beneath. Flowers in slender racemes. Fruit dark blue, with a white bloom, also sweet and edible.

Properties and Uses: The *berries* of these, and probably of other species of the *vaccinium*, act moderately upon the kidneys, and have been commended in dropsy; but their influence is so mild as scarcely to deserve any further consideration than is due to other edible fruits that help to increase the flow of urine. The *root*, and also the *bark*, are mildly astringent and stimulant, and form a good gargle in sore throat. A common New England practice is to make an ounce, each, of this bark and sage leaves, into a decoction, sweeten with honey, and use as a gargle.

VALERIANA OFFICINALIS

VALERIAN

Description: Natural Order Valerianaceae. This tall and showy plant is indigenous to Europe; and is at present much cultivated in England for its valuable medicinal root, and also by the Shakers in America. Root perennial, of the character of a rhizome, stoloniferous, giving off numerous long and slender rootlets, yellowish-brown externally, nearly white internally. Stem solitary, annual, herbaceous, erect, round, furrowed, two to four feet high. Leaves opposite, pinnate; leaflets seven to ten pairs, elliptical-lanceolate, entire or serrate; stem leaves on short and broad petioles, radical leaves on long petioles. Flowers in terminal paniced cymes; calyx-limb unfolding into a feathery pappus; corolla flesh-colored or whitish, small, five-lobed, fragrant; somewhat funnel-shaped; stamens three, exserted.

The root of this plant is of a very peculiar and penetrating odor, which increases by age, and is so strong as to be called foetid by some. The taste is warm, somewhat bitter, and slightly nauseous, very persistent, and giving its own peculiar smell and taste to the eructations for many hours after it has been swallowed. Its medical properties depend upon a small percentage of *volatile oil*; which seems to be a compound produced by the action of water upon the root, as in the case of the volatile oil of mustard, as none is obtained by treating the root with ether. By treating the article with water slightly acidulated with sulphuric acid, a sour, offensive, and acrid fluid may be obtained, called *valeric* or *valerianic acid*. This also is volatile; possesses the odor of the root in a most concentrated form; and unites with soda, ammonia, and other salifiable bases to form a series of salts called valerianates. This acid seems not to preexist in the root, but to be a result of oxidation of the above volatile oil; and is obtained by adding the acidulated infusion to carbonate of soda, and then distilling. Water, diluted alcohol, and strong alcohol, extract the medical qualities of the root.

Properties and Uses: This *root* is largely relaxant and moderately stimulant; somewhat diffusive in action, but impregnating the juices and eructations of the stomach for many hours; and apparently is absorbed, inasmuch as its repeated use will impart the valerianic odor to the breath. Its principal influence is expended upon the nervous system: *first* the peripheries, whence it is a nervine and antispasmodic in cases of irritability, restlessness, tormina, hysteria, and nearly all forms of acute nervousness; *second* the brain, inducing quietude and sleep. Many pronounce it a narcotic, but it assuredly possesses no such property; for while large doses will induce heaviness and drowsiness, the sleep procured by its influence is natural, is usually accompanied by a gentle and warm perspiration, and leaves no morbid impressions after it has passed off. Under the influence of the agent, the pulse becomes fuller and softer; but it is not an arterial excitant, as many suppose, though it has enough stimulating power to make it suitable to moderately depressed conditions. The most valuable uses to which it can be put, are cases of nervousness, restlessness, and hysteria. At one time it enjoyed a wide reputation in epilepsy and chorea, but is insufficient for such maladies, though a good adjunct to diffusive stimulants and light tonics. For the convulsions of infants, it is of much service; and also for the subsultus of typhus, and the agitations of delirium tremens; though in nearly all these cases it should be looked upon only as a valuable associate with other suitable remedies, to meet the nervous symptoms. The taste is very disagreeable to many persons, though less so to others. Dose of the

powder, twenty to forty grains three times a day. The *infusion* is more acceptable to the stomach; and may be made by macerating half an ounce of the root in a pint of water for an hour, in a covered vessel. Dose half a fluid ounce to two fluid ounces at intervals of three or two hours.

Pharmaceutical Preparations: I. *Tincture*. Macerate two ounces and a half of bruised root in twelve ounces of diluted alcohol for two days, with occasional shakings; transfer to a percolator, and use eight ounces more of diluted alcohol; press the dregs strongly, filter, and add enough spirit to make a pint. Dose, one to four fluid drachms. It is too weak a preparation to produce the full effects of the root without using too much spirit.

II. *Fluid Extract*. "Take of valerian, in fine powder, sixteen ounces; moisten with six fluid ounces of [75 percent] alcohol; introduce into a percolator, press firmly, and gradually pour alcohol upon it until twelve fluid ounces of the tincture have passed. Set this aside, and continue the percolation till two pints more of tincture have been obtained. Evaporate this to four fluid ounces, at a temperature not exceeding 120° mix it with the reserved tincture, and filter through paper." (*U. S. P.*) This is altogether the most serviceable preparation of this root, and probably will supersede all other forms for its administration. The strength of alcohol used, makes the product ineligible to add to water, on account of the turbidity occasioned, whence it may be preferable to use diluted alcohol, reserve the first eight fluid ounces, and proceed as above. Another method consists of treating the root with equal parts of absolute alcohol and ether, allowing this to evaporate to the consistence of a thin sirup; continuing the percolation with diluted alcohol, adding the previous product, and filtering after ten hours. It is customary to have the strength of eight ounces of roots in each pint of this preparation. The first process yields the most available article, and is the one now commonly followed. Dose, twenty drops to half a fluid drachm, in water, every three or four hours. Essence of anise best conceals its taste; and this fluid extract may be employed in a variety of combinations, of which I would especially commend the following:

III. *Nervine Essence*. Fluid extract valerian and essence anise, each, six fluid drachms; fluid extract dioscorea, four fluid drachms. Dose, half a fluid drachm or more, in water, every four, three, or two hours, in nervousness, restlessness, hysteria, colic, infantile convulsions, and all similar cases. Prof. J. E. Roop gave me the outline for this formula, in which he used essence of cinnamon instead of the fluid extract of dioscorea; but I prefer the formula here given, as being more effective. The combination of one part of this with two parts of Neutralizing Cordial, makes a preparation of unsurpassed efficacy in diarrhea, tormina, colic, and similar troubles. I have also employed this essence to the greatest advantage, with an equal part of fluid extract polygonum, for painful and tardy menstruation.

IV. *Valerianated Tonic*. Fluid extract liriodendron, two ounces; fluid extracts valerian and caulophyllum, tincture xanthoxylum, essence anise, each, half an ounce. Dose, half to a whole fluid drachm, in water, three to six times a day. This compound has been a great favorite with me, for the past year or more, in my practice among females, for nervousness, hysteria, uterine neuralgia, painful menstruation, and the entire catalogue of troubles that come under these heads, with feebleness and poor circulation as accompaniments. I warmly commend the compound to the notice of the profession, as one that has proven of rare service in my hands. Twenty grains of gum kino may be added for profuse menstruation.

Valerianate of ammonia is formed by tincturing two and a half ounces of valerian on a pint of aromatic spirit of ammonia; but it is not a sanative compound, nor is at all equal to the above Valerianated Tonic. The acid is occasionally obtained for the purpose of mixing with quinine, when it is desired to form the latter into pills for the treatment of nervous intermittent and periodic difficulties. Valerian may be associated with catnip, (see *Nepeta*,) and with *asafoetida*.

VERBASCUM THAPSUS

MULLEIN

Description: Natural Order, Scrophulariaceae. This is the tall mullein common to roadsides, pastures, and other trodden grassy lands. Radical leaves very large, oval, rounded at the apex, lying upon the ground; stem leaves alternate, gradually decreasing in size, and descending along the stem so as to give it a winged appearance; all gray or yellowish-green from the dense layer of stellate wool with which they are covered. Stem three to six feet high, rising erect and unbranched in the midst of the radical leaves, an inch or more in diameter, woolly. Flowers sessile, in a raceme along the upper portion of the stem for many inches; calyx five-parted; corolla open, wheel-shaped, five-parted, yellow, half an inch in diameter.

Properties and Uses: The *leaves* of this coarse-looking plant are relaxant, with a trace of tonic property. Their action is quite soothing, and moderately antispasmodic; and an infusion is a deservedly popular remedy in sub-acute dysentery and diarrhea, probably from their action on the lacteals. They have been commended in catarrhal coughs, spitting of blood, and piles. I would particularly call the attention of the profession to their peculiar and reliable power over the absorbent system, to which they seem a specific relaxant; and their power in promoting absorption in cellular dropsy, chronic abscesses, pleuritic effusions, and similar accumulations of fluid, is truly remarkable. For these purposes, the better method is to make a strong decoction of the leaves, and wilt other leaves in this and bind them over the part. They may be employed to similar purpose in synovial dropsy, and scrofulous and other swellings; though it is not proper to use them on carbuncles, buboes, cancers, and other swellings from which it would be injurious to have a deposit absorbed. A strong decoction (especially of the *roots*) may be used inwardly at the same time; and if tonics and some capsicum be added to this, such an outward and inward use of the article is of great value in all forms of dropsy, including abdominal and ovarian. Only a few articles of the *Materia Medica* exert a decided influence on the absorbents, and the mullein is one of the most reliable of these; though its prominent relaxing character often calls for the association of some diffusive stimulus, especially of sassafras and polemonium. While promoting absorption, it is a most positive anodyne; and relieves the suffering of chronic abscesses, tendonous and synovial swellings, etc. I have known a fomentation of the leaves speedily to allay the intense pain of a cancer, though mischief subsequently resulted from the application; but this fact points to the great power this agent must exert over the nervous system, and suggests a wide field in which to investigate its uses. J. Weeks, M. D., of Mechanicsburg, Ind., tells me that a fomentation of the leaves at night, applied over the chest, gives great relief to pectoral distress in old coughs, and improves the lungs rapidly. He also says that a tincture of the stem with the flowers on, is excellent in painful and debilitated coughs, asthma, etc. I have found some advantage in using a strong ointment, made from the extract, upon scrofulous swellings; though the leaves are preferable. Some use fomentations of the leaves in mumps, piles, white swellings, etc. The article certainly deserves the first attention for its powers as an innocent anodyne and promoter of absorption. Its relaxing taste is sometimes unpleasant to the stomach, and cummin or coriander may be used as an adjuvant. For internal uses, an ounce may be boiled in a quart of milk for diarrhea and dysentery, and used freely every hour or two; or two ounces may be made into a pint of decoction, with strong pressure of the dregs, and given in doses of a fluid ounce every hour or two, for dropsical cases and antispasmodic purposes. An extract may

be made by evaporating the decoction; but the great sponginess of the leaves requires frequent digestion and very strong pressure to obtain their total strength for this purpose.

A late letter from C. Gardner, M. D., of Lee Center, Ill., says: "I expressed the juice of the bruised mullein leaves, made it into a soft extract by drying in the sun, mixed one part of this with two parts of spermaceti, and used this ointment with the happiest effects on irritable and inflamed piles." The *flowers* are said, by Rafinesque, to be peculiarly soothing in cough preparations. By exposing them in a vial to the sun, they yield a little very relaxing oil.

VERBENA HASTATA

BLUE VERVAIN, SIMPLER'S JOY

Description: Natural Order, Verbenaceae. This plant is common along roadsides, with its stem from three to five feet high, bearing a few paniculate and spreading branches above. Leaves opposite, oblong-lanceolate, taper-pointed, cut-serrate, on long petioles, the lower ones sometimes lobed and halbert-shaped at the base. Flowers small, in long, close, and slender spikes, terminal to the stem and branches; calyx five-toothed; corolla tubular, unequally five-cleft, bine. Root perennial, stem annual. Blooming from July to September. V. URTICIFOLIA, *white vervain*, is more slender in its habits of growth, with very small white flowers, and with properties similar to the blue species.

Properties and Uses: The *roots* and *leaves* are relaxant tonics, closely resembling the leaves of boneset, but a little more stimulating. A warm infusion is slowly diaphoretic, promotes laxity of the bowels, and proves emetic if used freely; and is sometimes used in colds, bilious remitting fever, and recent obstructions of the menses. A cold infusion is a good tonic and mild laxative; and a free use of a concentrated decoction many times will open and sustain the liver and gall-ducts so effectually as to cure intermittents. It has also been used for worms, where its action is similar to chelone. This article is nearly overlooked by the profession, but deserves decided attention.

VERNONIA FASCICULATA

IRONWEED

Description: Natural Order, Compositae. Root perennial. Stem annual, four to ten feet high, an inch in diameter, purplish- green, striate, hollow, with a few short corymbose branches above. Leaves alternate, narrow-elliptical or lanceolate, tapering, four to eight inches long, serrate, coarse and rough. Flowers in crowded corymbose heads, all perfect, discoid, tubular, deep purplish-red; involucre of many appressed scales. Common on prairies, by streams, and in all places, through the West; sometimes in whole fields. Blooming from August to October.

Properties and Uses: The *root* is bitter, with stimulating and relaxing qualities, and leaving a full tonic impression. It has been commended in deficient and painful menstruation, and leucorrhoea. The use to which it seems best adapted, is in the treatment of ague as a hepatic and an antiperiodic; in which connection several reliable physicians have commended it to me in high terms, and J. Overholt, M. D., of Columbus City, Iowa, especially speaks of it as a remedy of the first value. There is no doubt but it deserves investigation; and its great abundance commends it still further to consideration. I have never employed the roots, but have tried the *flowers*; and find them a strong yet agreeable bitter, and think much good may be expected from them. Their taste is not unlike that of quinine, and they seem stronger than camomile. I would suggest that those having opportunity to employ this plant, might prepare a fluid extract of the roots, and another of the flowers, after the manner directed for fluid extract of boneset; and I would be much obliged for a report of their observations. The *leaves* are astringent and bitter.

VERONICA OFFICINALIS

SPEEDWELL

Description: Natural Order, Scrophulariaceae. The *Leptandra Virginica* is now placed in the genus *Veronica*. Stem prostrate, six to twelve inches long, with ascending branches, pubescent. Leaves opposite, an inch or more in length, oval or obovate, serrate. Flowers in racemes from alternate axils, dense with numerous flowers; calyx four-parted; corolla wheel-shaped. Fruit a flattened and notched pod. July. On the Alleghenies. The *V. SCUTELLATA* resembles the above, and is much more abundant, with few flowers, and growing in bogs throughout the North. All the other species of the speedwell genus are erect, and usually from eight to fifteen inches high. Probably the most of them bear a medical resemblance to the officinalis.

Properties and Uses: This *herb* once had a most fabulous reputation in England as a tonic alterant of relaxing and somewhat diaphoretic powers; and was used in old coughs, pulmonary weakness of all classes, skin diseases, jaundice, affections of the kidneys, and scrofula. While the article certainly has excellent qualities, it is of mild powers; yet it deserves more consideration than has been given to it in this country. Being scarce with us, it is probable that attention might be directed with profit to the more abundant species of the genus.

VIBURNUM OPULUS

HIGH CRANBERRY, CRAMP BARK

Description: Natural Order, Caprifoliaceae. In the same Family with the common elder, which it resembles in habits of growth and its more globose form of inflorescence. From the common name, many have supposed it to be a species of the edible cranberry; but this article is not a cranberry, which belongs to the order Scrophulariaceae and genus *Vaccinium*. The shrub here under consideration presents a variety under cultivation, known as snowball tree or guelder rose; and the wild plant so closely resembles its cultivated variety as to be essentially the same thing in a less vigorous form. A shrub, growing with clustered stems from five to ten feet high, erect, nearly smooth, branching above. Leaves opposite, strongly three-lobed, broadly wedge-shaped at the base, acuminate, toothed; petioles with two or more stalked glands at the base. Flowers in large, terminal, nearly globular cymes; calyx small and five-parted; corolla white, five-lobed, spreading, those of the margin many times larger than the others, and without stamens or pistils; central flowers with five stamens and one style. Fruit an ovoid, scarlet, one-sided, somewhat pulpy and acid drupe. Blooming early in June, ripening in summer. Showy. Common in rich and low lands northward.

Properties and Uses: The *bark* is a slowly-acting relaxant, with gentle tonic properties, mild, and chiefly influencing the nervous system. The character of its action is that of the antispasmodic class; and it is chiefly employed in hysteria, painful menstruation, neuralgia and rheumatism of the womb, and the uterine crampings incident to pregnancy. For these purposes, it is usually employed in combination, especially in the Compound Sirup of Mitchella. It is sometimes used in colic and crampings of the bowels, where it may be associated with dioscorea; and in asthma and nervous restlessness, with caulophyllum. The best method of preparation is in some compound sirup; but it may be formed into *decoction* by macerating two ounces in a quart of hot water, expressing, evaporating to half a pint, and giving a fluid ounce three or four times a day. A *wine tincture* may be made by percolation, using two ounces of the bark so as to obtain a pint of tincture, of which the dose may be a fluid ounce. This tincture is an excellent article with which to associate a moderate dose of the fluid extract of valerian, with the addition of some polygonum when a light stimulating impression is desired.

VIBURNUM PRUNIFOLIUM

BLACK HAW, SLOE

Description: Natural Order, Caprifoliaceae. A tree-like shrub, from twelve to twenty feet high, most abundant in dry woods and copses through the Middle and Southern States. Leaves opposite, broad oval, obtuse, finely serrate, smooth, dark-green and shining above; petioles naked. Flowers all perfect, white, in compound and flattened cymes. Fruit black, shining, ovoid-oblong, sweet, and edible. May.

Properties and Uses: The *bark* of this shrub is used, that of the root being preferred, but that of the stem and branches being most common in market. It is a good tonic of the mildly astringent class, acting slowly and rather soothingly, and influencing the kidneys and other secernents to a limited extent. The best use to be made of it, is as a tonic for uterine weaknesses, as prolapsus with flaccidness of the structures, chronic leucorrhea, and passive menorrhagia. The influence it exerts over this organ is of the best character; and the following compound is one that I can commend highly in the cases just named: Black haw, four ounces; prunus, liriodendron, and caulophyllum, each, two ounces ; scutellaria and menispermum, each, one ounce; treat with Madeira wine so as to obtain two quarts of tincture. Dose, half to a whole fluid ounce three or four times a day. This is also an excellent compound for threatened abortion from feebleness, a use to which the black haw itself may be put. This article is also good for passive diarrhea, apthous sores, indolent scrofulous ulcers, and some cases of chancre. The profession has generally passed it by, but it deserves careful attention. Dose of the powder, half a drachm. Other species of viburnum are no doubt medicinal.

VINUM

WINE

Wine is a light alcoholic product of the fermented juice of the grape. The alcohol it contains is developed by the chemical change which the grape sugar undergoes. This fruit contains a peculiar material which establishes the fermentative process in a manner analogous to that of yeast in moistened flour; and this ferment resolves the sugar into alcohol. The amount of ferment bears a close relation to the amount of sugar; and if the ferment fall below a due proportion, all the sugar will not be converted into alcohol, and the wine will be of the *sweet* class; while if the proportion of sugar is deficient, the wine will be of the *sour* class. It is from the fact that the grape contains enough of each element to make a complete fermentation, and produce a fluid strong enough in alcohol to be self-preserved, that it makes the *true* wines. Some other fruits, as the elderberry and blackberry, contain so little sugar that they will not yield sufficient alcohol to keep their wines from passing into the acetous stage of fermentation; and this deficiency has to be made up by the addition of some cane sugar, and wines thus manufactured are termed *bastard* wines. In the case of some grapes, the proportion of sugar is so small that the wine contains but a small percentage of alcohol, and these are called *light* wines. Sometimes the juice may be so poor in sugar that it will need quickly to be concentrated by boiling, or else cane sugar will have to be added; and a similar process may be pursued in the case of blackberries and currants.

The steps essential to the production of a good wine are few and simple. They may be summed up under three requirements: 1. Perfectly ripe fruit, free from all unripe or mildewed berries. 2. A steady temperature at no time below 60° nor above 77° F. 3. Perfectly clean vessels. The different steps are of these general characters: The grapes being carefully gathered when a little overripe, are mashed in a wooden vat with holes in the bottom. The juice, grape-stones, and a small portion of the husks or skins, pass into a lower vat—though the husks are kept back if the wine is desired to be of a light color and free from a portion of astringency. The mixed juice thus obtained is called the *must*. By maintaining it at a temperature of between 60° and 65°, fermentation soon begins; froth rises abundantly to the surface, along with the skins; carbonic acid gas is given off, the temperature of the must at the same time rising. The liquor gradually acquires a vinous flavor, and the fermentation slowly slackens, till after a few weeks it has so nearly ceased as to be imperceptible. The skins and other solids now fall to the bottom of the vat, and the liquor becomes clear. When this change has taken place, the wine is drawn (*racked*) off into clean casks, and bunged tightly. The process of fermentation still goes on imperceptibly for several months, during which time the solids fall to the bottom, and carry with them the crude tartrates of potassa and lime that are formed.

The first steps in the process of fermentation should be conducted in a barrel evenly full, lying upon its side, with the bung open. As some of the froth runs over, the waste should be replaced with a little water from day to day. The liquor should not be racked off till it becomes quite clear; and then it should be drawn with a syphon, or through a faucet high enough up to avoid disturbing the lees that have fallen to the bottom. The casks into which it is now drawn should be new, and should be prepared by plunging within the bunghole a single lighted match, (or at most two,) and afterward well washed with pure water. If the wine seem to remain turbid in the first cask, after all active fermentation has ceased, it can be clarified by thoroughly mixing with it the

whites of half a dozen eggs stirred into a quart of water, or a little isinglass dissolved into a quart of water, and allowing it to stand a few days longer. When racked off into the new barrels, it is to be bunged tightly; and then kept in a cool place not liable to vibrations. Changes still go on called the ripening process, occupying from several months to a number of years, in different kinds of wine; during which crude tartar and other earthy materials slowly settle to the bottom of the cask, and the wine improves in flavor.

In addition to alcohol, wine contains various flavoring and coloring materials peculiar to the variety of grape from which it is manufactured; some being white and others red, some slightly astringent from the presence of a little tannin, and those from tart grapes being sour. Sparkling wines are made by bottling the liquor before the final fermentation of the racked wine ceases, so as to retain some of the carbonic acid gas in it by tying down the corks. If a wine is wanted pale, the husks of grapes are pressed lightly and strained out of the liquor as it passes out of the pressing vat; while the color from red grapes is heightened by pressing the grapes firmly, and allowing a small portion of them to go into the fermenting barrel. The husks, and some of the stems, give the higher shades of astringency, as in port wine. Dried raisins may be crushed, macerated in water, and made into wine of a fine flavor.

No vinous product is, technically, called wine, unless made from grapes; yet a similar liquid may be prepared from blackberries, raspberries, and currants, and are usually classed among the wines. These fruits do not contain enough saccharine materials to furnish a sufficient amount of alcohol to preserve them. Two methods to effect this may be pursued, namely: *1st.* Proceeding as in the case of wines in general, and having racked off the liquor at the proper time, a pint of fourth-proof brandy is added for each gallon of the wine. *2d.* The juice having been pressed from the mashed fruit, sugar is added at the rate of two pounds for each gallon of elderberry, raspberry, and currant juice, and one pound for each gallon of the blackberry juice. The latter method is far preferable to the other, and is indeed the only proper one. Wine thus prepared may be preserved for any length of time; and is as good, for medical purposes, as many of the foreign wines, especially as now obtained. I can especially commend that from the elderberry as a light and sweet wine of decided value; while the raspberry is a mild tart wine equal to many of the Rhine wines so valuable in certain forms of dyspepsia. I would especially caution those attempting to make these domestic wines, that their product will be utterly spoiled either by adding water to the juice of the fruit, or by using yeast to hasten the fermentation. It is only necessary to employ a suitable amount of sugar to be converted into alcohol; and then strictly to observe the foregoing regulations as to the temperature employed, and the guidance of fermentation.

So-called wines are sometimes put upon the market, made from the leaves of garden rhubarb and from tomatoes. These are sour and vile liquors, irritating to the stomach, inflaming to the kidneys, and liable to produce chronic inflammation of the bladder, and even to lay the foundation for calculi.

The amount of alcohol contained in any specimen of wine depends upon the kind of grape used; and even this is farther modified by the soil on which the grape grew, the season, the manner of vintage, and the weather during vintage. The flavor will also be influenced very decidedly by climate, soil, and management. An approximation of the strength of absolute alcohol in some of

the leading varieties is made as follows by Dr. Ure, in his Dictionary of Manufactures:

Port Wine, average . . . 21.75	Raisin Wine . . . 23.
Madeira 20.	Currant wine . . . 17.
Sherry 17.50	Lisbon 18.
Claret 14.	Champagne . . . 11.
Malaga 15.	Elderberry 9.14
Hock 12.	Malmsey 16.

Uses: Wine is used as a gentle stimulant, especially grateful; and is quite as beneficial on account of its saccharine or acidulous properties, as for its alcohol. Indeed, its alcohol is no advantage whatever to the patient. Sweet wines are not always acceptable to dyspeptics; but the tart wines, especially hock or our native catawba, are often much better received than others. Sherry is the standard officinal wine, being neither acid nor saccharine, (*dry*;) Madeira is the strongest of the scarcely acid class; port is the most heating and astringent of them all; claret and elderberry are among the least heating and most sustaining of the sweet wines, and are both a little laxative and diuretic. When used as a menstruum to form tinctures, wine should not be diluted, as the alcohol present would then be too limited to preserve the substances; and such light wines as elderberry and Malaga sometimes need to have a moderate portion of sugar added to their tinctures. The proportion of drugs to wine is usually one half more than that used in forming an ordinary infusion; and this menstruum is not powerful enough either to exhaust or preserve vegetable substances as diluted alcohol will in ordinary tinctures.

WATER

For all ordinary medical and pharmaceutical purposes, the common water of springs, cisterns, and wells, is sufficiently pure. Where any of these is strongly impregnated with either mineral or organic substances, pharmaceutical uses require it to be purified, either by filtration through a bed of charcoal and sand, or by distillation. Filtration is sufficient in the majority of instances, but requires that the sand of the filter shall be washed frequently, and the charcoal renewed by frequent washings and heatings. Distilled water is the purest, and therefore is preferable for all pharmaceutical uses. The pharmacein readily obtains an abundant supply of it by taking the trouble to attach a still to his vessel in the ordinary operations of decocting and evaporating.

The uses of water as a menstruum in pharmacy, will be spoken of elsewhere; while at this place its remedial uses will be discussed. And in this article no reference is had to various medical springs, which are pressed upon the attention of the public with such marvelous laudation. Some of these may be passably useful; but the majority of them contain epsom salts, salts of magnesia or lime, or similar ingredients, which deceive the invalid, while steadily making him a dyspeptic and bringing on emaciation. It is safest to say that the great benefits obtained at mineral springs, are to be attributed to the regulated diet, outdoor life, agreeable company, and relaxation from business, while the minerals in the water play an inconspicuous part in the restorative process. This is proven by the fact that those who reside in cities, and use mineral waters artificially prepared, or brought from some favorite spring, fail to derive benefit from such medication, but rather are among the most pale-faced, hypochondriacal, and steadily-failing classes of invalids.

Inwardly, the use of water is mainly for the purposes of quenching thirst; in other words, of keeping the vascular apparatus suitably distended by a proper supply of fluid. It is the grand diluent of the system; and though, at one period of Allopathic history, it was strenuously denied to all classes of fever patients, a larger prevalence of common sense now directs its use in all such cases—with the simple restrictions of not allowing it to be too cold, nor to be used in excessive quantities, at a time. These restrictions are equally necessary among the well; for it is always a violation of the laws of health to use iced waters, which so suddenly lower the temperature of the stomach as to endanger its safety, as well as to arrest digestion and interfere with the heart's action; and it is far better to drink small quantities at short intervals, and only so fast as the absorbents can take it up, than to use large draughts and oppress the stomach with them. Much fluid, of any temperature, can not properly be used during or soon after a meal; as it dilutes the gastric juice, and thereby retards digestion. As a menstruum associated with remedies, its therapeutical influence depends largely upon the temperature at which it is used, as has been explained in the department of Therapeutics.

With express reference to its curative action, water is employed more extensively outwardly than inwardly. This has been done from the earliest recorded histories of man, as well among barbarous as among civilized peoples; and though our Hydropathic neighbors would claim a sort of monopoly of its use, they but run to an extreme which physicians from the age of Hippocrates have avoided with much greater judgment and discretion. Indeed, the Hydropathists almost continually abuse this excellent and indispensable agent; and apply it so lavishly and indiscreetly as frequently to induce extreme emaciation; to overwork the skin, and divert to it (in the form of boils and other eruptions) excretory substances which should have been eliminated through the

liver and other emunctories; and in various ways to reduce the patient by excesses in ablution, and by forcings of the perspiratory functions, till they are themselves compelled to desist and leave overburdened Nature to rally. I am well aware that an especial merit is claimed in the ability thus to induce “crises,” and so does Allopathy claim a merit in the use of her drastic cathartics; but depletion by the skin is equally prostrating with depletion by the bowels, (§187.) Nature abhors all such disregards of her mild processes, and neither method of proceeding has the least foundation in sensible Physiology.

Externally as well as internally, the temperature at which water is employed largely determines the character of its influence. Its impression, at all times, is more purely physical than distinctly remedial; and hence its physical impressions when quite cold, lead to widely different results from those made by it when quite warm. The curative part played by the vital force (§45) is also prominently noted in the use of this agent; whence a consideration of the temperature is of more consequence than that of the water alone. For general convenience, baths are usually divided into classes; though all such divisions must of necessity be arbitrary. The average warmth on the surface of a healthy person is taken as a sort of standard, and a convenient classification will be as follows:

Cold Bath, . . . 33° to 55°.

Tepid Bath, . . . 65° to 85°.

Cool Bath, . . . 55° to 65°.

Warm Bath, . . . 85° to 95°.

A temperature above 95° would be a Hot Bath. The state of the surface in each particular patient, would to a great extent determine the sensation caused on him by any bath; as when one in typhoid fever pronounces a tepid bath of 80° cool to his hot skin, and one in anaemia calls a heat of 60° quite warm. Nevertheless, with the standard of health to guide us, the above classification will be found generally applicable.

Cold Bath, 33° to 55° F.— Baths within these ranges act suddenly and powerfully in narrowing the caliber of the superficial capillaries, as cold always does. Such contraction physically forces the blood from the surface, as effectually as pressure would force water from a wet sponge. While this impression lasts, therefore, the outward circulation is reduced, and the inward accumulation of blood proportionately increased. This inward recession stimulates the heart and larger arteries to a renewed and more vigorous exertion, and they at once begin the labor of returning the surplus blood to the surface. If the cold application is discontinued in a few moments, this arterial effort is likely to be successful. Reaction then takes place, as from any other form of moderate shock; and a rush of blood to the surface, with a vigorous glow upon the skin, will ensue. This reaction is both hastened and heightened by friction. The good to be derived from this bath, is to be found in the promptness and completeness of the reaction that follows it; and when this is thorough and speedy, the glow it causes will prove tonic to the surface and invigorating to the locomotor muscles. In persons of robust frames and dense structure, the reaction is likely to be of a desirable character, and such people commonly enjoy this bath; and sometimes thin people have so much muscular density with nervous activity, that they also use it to advantage. But in all cases, the use of water at these temperatures secures an outward flow by first goading the inner vessels, and acts more as a provocative to than an

assistant of Nature; whence the cold bath always makes a temporary taxation upon the frame, and reaction from its disturbing impression is at the best an expenditure of just so much vitality.

When the frame is feeble, the heart feeble or suffering from organic disease, the large blood vessels weak, and the capillaries inclined to sluggishness, the power to react is greatly diminished. Extensive accumulations inwardly must of necessity follow the use of a distinctly cold bath, under such circumstances; and unless artificial measures of a firm character are at once brought to bear to secure reaction, congestion more or less complete must ensue. And even with the best help that can be rendered by suitable stimuli, a frame in any of the above conditions will suffer too severe a shock by such a bath; the best reaction that can be secured will be accompanied with oppression in the lungs and heart, loss of appetite, and a feeling of prostration; and sometimes no reaction can be obtained till serious mischief has been done. It is for such reasons that a true cold bath is inadmissible in cases of typhus, scarlet, and diphtheritic fever; in inflammation of the brain, lungs, liver, kidneys, peritoneum, uterus, or other internal organ; or in any case where distinct feebleness of capillary circulation is either present or threatened. This catalogue includes the surgical use of cold water, ice-bags to the head and spine in the large variety of cases where they are now employed, and all continuous applications of this kind over even a small extent of surface, as upon the head in brain fever. Such measures induce local stasis: and by them the healing of a wound is delayed, and exhaustive suppuration is fostered; the coma of brain fever is prolonged, and the danger of hydrocephalus increased; the collapse of cholera is hastened, and the painfulness of its spasms increased by the disturbance of the spinal cord; and other mischiefs of this class are insured. These views are contrary to current opinions; but the teachings of physiology, and the results of cold irrigations in army and hospital surgery, abundantly bear out these statements. Wherever substantial good has resulted from such applications, even upon an actively inflamed surface, it has been owing to the temperature of the water being cool rather than cold, and to its being renewed only at such intervals as allowed the wetted cloths to acquire a tepid warmth; whence the benefit is really due to the last temperature, and therefore it had better be the one selected at the outset.

Cool Bath, 55° to 65° F.—Within this range of heat, a bath is but moderately contracting, induces a mild and temporary in- flux of blood, and is quite sure to be followed by a full and pleasant reaction in any person of ordinary health. Being lower than the accustomed temperature of the surface, it absorbs a fair amount of heat without reducing the warmth to too low a point; and it usually leaves the skin slightly relaxed, with a sufficient freedom of capillary action to impart a feeling of vigor. The nervous peripheries at the same time feel soothed and strengthened; and all ordinary excitement and internal pressure of blood are likely to be much abated by this bath. Very prostrated conditions, however, offer to it the same kinds of objections as pertain to the previous bath; for the loss of power in such cases is so great, that a bath of 60° to such a patient is likely to have the same effect (relatively) as one at 40° would to a person but moderately feeble. The cases to which this class of applications is most suitable, are those of fever other than typhus, typhoid, diphtheritic, and erysipelalous; local inflammation (not congestion) with fever, fatigue, and sleeplessness or nervousness in persons of pretty robust frames. By most persons this bath is called the cold bath.

Tepid Bath, 65° to 85° P.—An average warmth of 80° probably represents that at which the tepid bath is most commonly applied; and below 70°, it might more fairly be termed lukewarm. At

about 80°, it is a mild yet efficient relaxant, as well to the capillaries and nervous peripheries as to the sebaceous glands. It promotes perspiration, enlarges the caliber of the superficial blood vessels, secures a full afflux of blood outwardly, relieves internal engorgements, and greatly soothes the entire nervous system. The influence it exerts is mild, and in no sense perturbative; but is none the less extensive and positive. In all forms of fever it is altogether preferable to any other bath; for it is below the heat of a fevered surface, and yet is not below that of the healthy skin, whence it absorbs surplus warmth without reducing the temperature under a normal standard. Leaving the tissues gently relaxed, and the perspiration reestablished to a fair extent, it has a marked power in relieving the frame of accumulated skin excretions, and in obtaining a more natural balance in the bodily heat. Reducing the temperature by a proper amount of absorption, depurating the skin, and procuring capillary softness and distension, it first obtains a large afflux of blood from any internal organ that may be in a state of inflammation, and gives a relief to the nervous system that is of the most desirable character. So long as its influence lasts, (which varies from one to several hours, according to the circumstances of the case,) all external febrile excitement measurably abates, the patient becomes calm and disposed to sleep, and a wandering mind is usually restored. These general facts at once indicate the many maladies to which this bath is applicable, as typhus and typhoid fever, (for which it is the only proper sponge bath;) bilious, scarlet, erysipelatous, rheumatic, catarrhal, and all other forms of fever; phrenitis, pneumonia, hepatitis, and other internal inflammation; febrile restlessness, as a powerful adjunct to the inward use of diaphoretics; and in all cases where the surface is hot and dry, and the patient irritable. Even when the more acute symptoms are passing into a state of feebleness indicating the need of internal stimulants, the tepid sponge is still advisable over those portions of the surface that are unduly warm; though it should give way to the hot bath when actual congestion has supervened internally. Another advantage in this bath is found in the frequency with which it may be repeated in cases needing it; for while twice in twenty-four hours are commonly sufficient, (avoiding its employment in the morning, if the febrile excitement have in a measure subsided,) it may be used three or four times a day, if a hard pulse and rapidly accumulating heat indicate it. With due care, such frequent repetitions of this bath relieve rather than weary the patient.

The local use of the tepid bath is to be guided by the same facts as its general use. For all acute inflammations, it is the best; and though commonly secured in the form of a poultice, may be employed as a simple sponge. And in acute inflammation of the brain, where the common practice has been to use quite cold applications, those of a tepid grade are altogether preferable—absorbing all proper amounts of heat, inviting the blood outwardly from the brain rather than pressing it inwardly upon it, and directly soothing the nerve structures.

The tepid bath is not suitable to strong local or general congestion, to flaccidity of the structures, a cool surface, a tendency to colliquative perspiration, threatening gangrene, or chronic reduction of vital energy.

Warm Bath, 85° to 95°.—*Hot Bath*, 95° F.—Baths of these two grades may be considered together; for a temperature of 90° is stimulating and relaxing to the surface, and the stimulation increases with the increase of temperature. A heat of more than 100° is rarely employed. Such degrees of warmth strongly arouse the capillary circulation; and are employed chiefly as a local stimulant over seats of congestion, and to relieve pain by promoting a positive outward

circulation from a congested organ. These baths are hence usually restricted to flannels wrung from hot water and laid over the suffering part, as the bowels, bladder, uterus, lungs, or kidneys; and these are renewed every few minutes, as the temperature falls from hot to tepid. For all circumstances of this class, as well as in local rheumatism and neuralgia accompanied by partial congestion, such applications are of great service; and the same may be said of their more extended use in spasmodic difficulties arising from congestion, as around the throat in both membranous and spasmodic croup, to the whole body (placing the patient in a bath of the water) for most forms of infantile convulsions; and even for the spasms of cholera and the agitations of delirium tremens. The bath is rarely used in the two maladies last named; but a distinct hot bath, as a companion to suitable internal medication, is often of marked value. When the skin is cold and clammy, a hot bath is not advisable, except as warm water is used to make washes of the strongest stimulants; but when perspiration is excessive and warm, as in the peculiar flashes of heat and sweat of some women about the turn of life, a warm bath is among the most suitable means for giving steadiness to the arterial action of the surface.

Partial baths are many times used, of the tepid, warm, and hot temperatures; among the most valuable of which is the *sitz* bath. This consists merely of sitting down into a tub or regular burdette properly filled with water of the warmth selected. Usually it is fairly warm or nearly hot, and is of great value for relieving the congestion and suffering of acute dysentery, acute inflammation of the bladder or kidneys, or neuralgic and rheumatic tenderness of the womb and other female organs. In such cases, the temperature can be borne pretty warm, and the bath needs to have more hot water added to it from time to time. The patient should be well covered while using this bath: and may sit in it from ten to thirty minutes, according to circumstances, using diffusive and diaphoretic teas meantime. A former Hydropathic practice, greatly lauded by that fraternity, was to use a cold *sitz* bath for lying-in women, an hour or so after delivery; but I must proclaim against this as a violent procedure, and one that perhaps never fails to leave chronic pelvic congestion and prolapsus for months or years.

Pack Baths. This kind of bath consists in wrapping the entire body in a sheet wrung out of water. The clothing of the patient is all to be removed, the wet sheet laid upon a firm mattress, the patient laid upon the sheet on his back, the sheet turned up over him and wrapped around his limbs so as to come in close contact with the surface, and one, two, or more blankets laid over him and closely tucked around him so as to keep in the accumulating heat. The real object of this bath is to secure and maintain a tepid warmth about the entire body; and hence it is desirable always to wring the sheet out of moderately warm water, so that the patient may get wrapped in it before it gets below the tepid heat. The Hydropathists are too largely in the habit of employing the sheet wrung from cold water, thus giving to the body a strong shock under circumstances where the patient is deprived of all muscular motion by which to aid reaction. In feeble persons, this shock may prove serious; while in all cases no benefit accrues till the sheet has become warmed and reaction has been secured; therefore common sense dictates to begin the operation at that temperature from which the patient will derive advantage from the first moment of application.

This pack steadily and largely relaxes the surface, absorbs excessive heat, enlarges the capillaries, and invites an outward flow of blood, relieves the internal organs from irritable accumulations, depurates the skin by an abundant perspiration, quiets nervous agitation, and

promotes the absorption of internal effusions. Under its influence, the pulse softens and becomes fuller and slower; the patient rarely fails to become drowsy, and presently to fall into a deep sleep; and an abundant perspiration breaks out. Thus its action is similar to the tepid sponge bath, being much more profound, as it is also more continuous; and it is usable for the same general class of cases to which the tepid bath is applied. Properly employed, it is a searching and valuable measure; but may be, and often is, continued too long for the welfare of the patient. The case which is obtained from it, and the quiet sleep into which the patient passes, are liable to deceive the nurse and to tempt her to continue the bath till the patient awakes. This may not be for one, two, or even four hours. Sleep ensues as a consequence of general relaxation; and to allow a patient thus to repose in the wet sheet, is to secure excessive relaxation, exhaustive perspiration, and a most unwarrantable wasting of his strength. (See *Therapeutics*, §§ 55, 187.) A due regard for the welfare of the sick will never, under any circumstances whatever, allow such a bath to be prolonged in this manner; for while robust frames, and cases of rheumatic fever, may merely feel tired after being removed from it; those of slender build, and cases of pneumonia, meningitis, puerperal fever, and similar maladies tending to congestion, will be exhausted to an extent that is not advisable, even if it be not utterly reprehensible. Sometimes such persons will seem greatly improved after such a long pack, and the physician and friends will be much elated with the success of the application; but the true condition of the patient is probably overlooked, and is not realized till he is found to be sinking from the sheer inability of over-relaxed arterial and nerve and fibrous tissues to rally a proper degree of tone. Two rules should always be observed, in order to the successful use of this pack; *first*, to give the patient some diffusively stimulating tea before and during the bath, to sustain the inner organism; *second*, to discontinue the bath when a fair perspiration has appeared on the face, whether the duration of the bath itself has been long or short. The patient, being removed from the bath, is to be well dried and placed in a fresh bed. By the observance of these directions, the tepid pack will prove a very valuable measure; though one that should not be used too frequently, being an exertion to the patient as well as to the nurses. Sometimes the wet pack is made a little stimulating by employing a blanket instead of a sheet, the woolen fibers causing a slight mechanical excitation. Partial packs, called *compresses*, are much used for local difficulties, such as aching of the back, weight and pain through the loins, irritation of the respiratory passages, and similar cases. In such instances, it is most common to wring a narrow and soft towel out of cool water, wrap it about the part, cover this with two layers of a broader and dry towel, and wear it during the night. Both general packs and local compresses may be made powerfully medicinal by the addition of either stimulants or relaxants to the water. Relaxants are rarely used for general packs, but may be of service in acute inflammatory troubles; but the use of such agents as xanthoxylum, polygonum, or capsicum in this manner, makes the most powerful measure that can be employed in cases of profound congestion, as cholera, the last stages of malignant dysentery, etc. The stimulant may be applied to the surface as a wash, and the tepid pack then used, as a method often preferable to adding the stimulant to the water of the pack.

Vapor Baths. The vapor or “steam” bath is among the most powerful means ever devised for the relief of disease; and one which, though long cried down as a barbarous and destructive procedure, is now used by all classes of physicians, both as a valuable remedy and a positive luxury. The Russian people have used it for centuries; and the great luxury of the Turkish bath has been enjoyed through western Asia for a long time. To Dr. S. Thomson, the American and the discoverer of lobelia, is due the credit of first systematically employing it in the treatment of

disease; and though he was persecuted by law, and defamed by many horrible and false tales of serious results to his practice, a century has not passed without witnessing the triumph of this novel and powerful measure. In many of our cities, the Turkish bath is a fashionable luxury; in a number of hospitals it is an established institution; and the foreign journals are well supplied with reports of the marvelous cures wrought by this agency in Europe, though applied after the crudest methods. While it is true that the uses of vapor as a remedy had here and there been hinted at by European writers previous to the time of Dr. Thomson, it is also true that he, without the least knowledge of those hints, first taught the great value of the measure, and made it an established portion of treatment.

Dr. Thomson's earlier method of applying vapor, was by setting a chair upon narrow pieces of board over a tub containing boiling water; removing all the clothing of the patient, and covering him behind with one blanket, and in front with another, reaching from the neck to the floor outside of the tub; and then causing vapor to rise around the body by, from time to time, plunging a highly heated brick into the water. This is a laborious though effective method; and I have noticed recently that some prominent physicians in the English hospitals have resorted to it in some hopeless dropsical cases, and, to their unfeigned astonishment, cured their patients. A simple mode is to generate the vapor in a close vessel upon, a furnace or stove, and conduct it under the chair by means of tin tubes an inch or more in diameter. This method allows such a bath to be given to a patient upon a bed, the clothing being lifted up by pieces of hoops suitably placed. Another method consists in a large wooden box, about two feet square and five high, into which the patient is placed upon a chair, and the vapor conducted by pipes from a suitable boiler. By this plan, the patient breathes the vapor, which is many times a decided advantage; though when the blood has a tendency toward the brain, it is desirable to stretch a sheet across the box so as to confine the steam from the neck downward. The simplest and least laborious method, now almost universally adopted, is that of generating the vapor, by an alcoholic lamp, from a shallow basin shoved under the chair. The lamp may be tin, and hold about six ounces; and be provided with three pretty large wicks. The basin may be six inches in diameter, four inches deep, and supported a suitable distance above the flame of the lamp by three iron stilts, slipping into slots upon the sides. The patient being seated upon a wooden chair and properly surrounded by blankets from the neck downward, the lamp and the basin (nearly filled with boiling water) are to be pushed under the chair. In this case, the heat of the burning alcohol is added to that of the vapor; and it would not be allowable to cover the head with the blankets. This is commonly called the *hydro-alcoholic bath*, and is more stimulating than the vapor alone.

Whichever method is adopted, the feet must be placed in some quite warm water; for the vapor rising around the body, the upper parts will get heated, the extremities remain cool, and the balance of circulation be disturbed, unless this precautionary step is adopted. And as the bath progresses, the water at the feet may need to have its temperature increased by suitable additions of boiling water. Diaphoretic drinks, more or less stimulating as different cases require, should be given previous to and during the bath. The vapor, like the tepid pack, should be continued till the face gets into a fair perspiration; though chronic and sluggish cases may have the bath continued for several minutes after. When the patient is removed from the bath, a slight dash of cold water should be thrown upon the chest and shoulders, and the entire surface dried with that amount and force of friction suited to the case in hand. From ten minutes to an hour may be required for such a bath.

The vapor bath resembles the sponge bath, varying from tepid to hot, though the degrees of heat here extend but from 110° to 140°. The average warmth of this bath is probably not above 120°. The lower temperatures are relaxing, the middle are relaxing and stimulating, and the upper quite stimulating. But while the same in *kind* as the sponge bath, the influence of the vapor bath is far more penetrating and powerful, its impressions upon the entire body more prompt and vigorous. It secures a full, strong outward determination of blood, breaks up internal congestions, and imparts tone and stimulated action to the entire surface. The classes of cases to which it is applicable are various. Among these are the ones in which Dr. S. Thomson was first led to employ it, namely, the tardy appearance of malignant nettle-rash. In all eruptive forms of disease—including scarlatina, measles, small-pox, and chronic skin affections—it is unequalled for procuring an early and free elimination of the virus, and at the same time giving relief to internal organs that may be endangered from delay in casting out the poison. Cases of small-pox, taken in due season, often have the offensive material so rapidly cast out by the aid of vapor baths, (associated with emetics,) as to prevent any abundant accumulation of pustules. Dr. Bouisson, of Paris, in 1828, treated sixteen cases of well-defined hydrophobia in which the use of pretty high vapor so effectually secured the ejection of the virus as to avert impending death; and many similar reports have been made of its powers by our own physicians. The same may be said of its use in malignant and chronic erysipelas. To secure a strong outward circulation, and break up inward congestions, it is of great power in colds, rheumatism, ague, flooding, pneumonia, acute dysentery, and all similar cases. Few such maladies will fail to yield under the action of a vapor bath; and while it can not be repeated so often as the sponge bath, it is much better adapted to cases that do not properly respond to the latter application. The vapor bath also has a powerful influence in certain spasmodic cases, as in lockjaw and general tetanus; and some forms of mania are greatly soothed, and often rapidly restored, by such a bath. This strong promotion of an outward circulation is of the first consequence in all internal effusions, promoting absorption in the most desirable manner in dropsy, chronic abscesses, and similar maladies. An illustration of the remarkable extent to which the vapor bath stimulates absorption, is seen in the pustular eruption which will appear soon after its use in the case of a bubo in the stage of abscess; and this fact also shows that this and the tepid sponge bath should not be used in cases where it would be undesirable to have an internal accumulation of offensive materials distributed through the system. When the vapor bath is given so that the vapor may be breathed, (see above,) it promotes expectoration and diaphoresis more fully than when not breathed; and then will often prove of much service in chronic pulmonary difficulties with tenacious mucous accumulations. Excessive secretion from internal organs, especially if associated with deficient cutaneous circulation and excretion, will be very greatly improved by the vapor bath, as chronic diarrhea and dysentery, diabetes, and passive menorrhagia.

Many other forms of disease might be named in which this measure is useful, and especially chronic maladies with deficient outward circulation; but it seems unnecessary to enumerate them, as they may all be brought under the above general classes. It is of great efficacy in several acute febrile cases, as already mentioned; among which may be named the earlier (but not second) stages of typhus. In all such instances, however, the bath should not be applied till measures have been taken to secure coolness and moistness of the surface; as such a bath brought upon a fevered surface is quite sure to cause such a perturbation in the system as to produce hurried breathing, palpitation of the heart, and fainting. To secure such coolness of the surface, it is usually sufficient to give some relaxing diaphoretic for a few hours, and then to

sponge the body before using the vapor bath. When this does not prove effectual, time must be taken to evacuate the liver and bowels as well as to use diaphoretics. Under all circumstances, it is advisable thoroughly to remove all viscid accumulations from the alvine canal and hepatic organs; as the application of a vapor bath will surely cause such offensive materials to be absorbed and carried through the frame toward the surface, to the prostration of the patient. This is the opposite of the usual practice, which first gives the bath, and then employs evacuants and emetics; but experience will prove that a very decided loss is made by this method in many cases, while the course just advised will be found altogether most effectual in depurating the system and equalizing the circulation, which the vapor bath effects with a power that often is truly marvelous. (See "Course of Medicine," §229.) But while this measure is unequalled in its own large sphere of usefulness, it has been used with entirely too much lavishness, and with too little discrimination. In a great many instances where it has been employed, the milder and less laborious tepid sponge will answer equally well, and should be selected when it is capable of doing full justice to the patient; but the large difference between the powers of a sponge bath and a vapor bath should not be forgotten to the disadvantage of the latter. But there are cases in which the vapor, however suitable on some accounts, would be quite unsuitable on others. Among these may be mentioned the later days of typhus, second stage of pneumonia, and other conditions of decided prostration; too soon after the use of emetics in slender or chronic cases; in all forms of heart disease, and even in cases of feebleness of the heart, aorta, and other central blood vessels; in cases of internal mortification, and all others which come under these several heads. Under circumstances like these, the vapor bath makes too sudden and profound a disturbance of the circulation, to be admissible; and however much some may dispute this assertion, close observation for the last twelve years has convinced me fully that this measure should never be employed in such conditions. And even when these states do not exist, some slender persons of delicate organization are too violently perturbed to employ this bath at all. Such patients usually faint because of the rapid diversion made of the blood from the brain, and feel much prostrated for several days afterward. Though the measure is so powerful for good, it must, like any other remedial means, be kept to its appropriate place, and indiscriminate use of it is a gross abuse of one of the most valuable agencies of the *Materia Medica*.

Local vapor baths may be applied for numerous special purposes, as for sprains, synovial swellings, etc. In such cases, the bath is often medicated by placing volatile agents in the water, as nepeta, marrubium, absinthium, etc. When the general vapor bath is used for rheumatism, it is also often medicated. Sometimes, when the fullest degree of surface stimulation is needed in chronic ague and other cases, stimulating liniments may be applied directly after the bath.

One general rule should be observed in the use of any bath, whether sponge, plunge, pack, or vapor, namely: *Never to employ it less than one hour before a meal, nor less than two hours after one.* A disregard of this rule will greatly interfere with digestion, and produce more harm than the bath is able to do good. And if the stomach contain undigested food, no matter if this have been taken several hours before, the bath should not be used till the contents of the stomach have been thoroughly evacuated.

XANTHIUM STRUMARIUM

CLOTBUR, COCKLEBUR, BURWEED

Description: Natural Order, Compositae. Coarse weeds, found near barn-yards and other rich soils. Stem erect, stout, brandling, rough, from one to two feet high in good soil, from six to ten inches in thin soil. Leaves alternate, on long petioles, dilated-triangular, cut-toothed or even lobed. Sterile and fertile flowers occupying different heads on the same plant; sterile in short spicate racemes at the top of the branches, arranged much as in ambrosia; fertile clustered below, involucre closed so as to form a rough burr that is tough and covered with hooked prickles; the burr half an inch or more in length, ovoid-oblong, two-celled, two-flowered, pubescent between the prickles, with two strong beaks at the summit. This species passes into several varieties, some of which are very common westward.

Properties and Uses: The *leaves* of this ungainly-looking weed are stimulant relaxants, bitterish, and moderately diffusive in action. The profession has scarcely paid any attention to them; but they are among the truly valuable diffusive nervines, and deserve careful consideration. An infusion of an ounce to a quart of hot water makes a mild diaphoretic that will be found of decided value in colic, restlessness, painful menstruation, and even extreme forms of nervousness and actual hysteria. Such an infusion may also be used in measles, and combined with *asclepias* in typhoid and erysipelas; in which maladies it aids a full outward circulation, and greatly relieves the nervous irritability. Cold preparations are equally valuable in nervous affections, and exert a mild tonic impression. From my own use of these leaves, confirmed by the experience of Drs. Tyrrell, Overholt, and others, I feel justified in urging this plant upon the notice of the profession, as one that promises to be a peculiarly valuable nervine.

XANTHOXYLUM FRAXINEUM

PRICKLY-ASH, TOOTHACHE BUSH, AMERICAN PELLITORY

Description: Natural Order, Rutaceae; formerly in the now obsolete Order Xanthoxylaceae. By Gray called *Xanthoxylum Americanum*. Closely allied to the genus *Ptelea*. Generic characters: Shrubs or small trees, beset with stout and short prickles on the stems, and sometimes on the leaf-stalks. Leaves pinnately compound. Flowers dioecious, small, greenish-white; sepals four, five, or obsolete; petals four or five; stamens five; pistils two to five, with their styles conniving. Fruit a thick, two-celled, two-valved, one to two-seeded pod; seeds black, smooth, shining. X. FRAXINEUM: Leaves and flowers in clusters axillary to the branches. Leaflets four or five pairs with an odd one, ovate-oblong, acute, downy when young. Calyx none; petals five; pistils three to five, with slender styles; flowers greenish with a yellow tinge, blooming in May; pods on a short stalk. Pennsylvania westward and northward.

XANTHOXYLUM CAROLINIANUM is a distinct species, most common from Virginia southward, and thence called *Southern prickly-ash*. It is a small and prickly tree, similar to the other, except that the leaves are shining above, the flowers in a terminal cyme and appearing after the leaves, the sepals present, and the pods without stalks. As a medicine, it is probably somewhat stronger than the Northern species.

The bark and the fruit of prickly-ash are medicinal. The *bark* is grayish-white externally, yellowish-white and smooth internally, about an eighth of an inch in thickness, brittle, and comes to market in pieces from one to three inches long and somewhat quilled. When fresh, it is fragrant; when dry, almost inodorous, with at first a sweetish, and afterwards a pungent and warming taste. Diluted alcohol extracts its properties pretty thoroughly, hot water acts well upon it, and eighty percent alcohol completely. The *berries* are gathered with the capsules, the latter being more decidedly medicinal than the seeds. These capsules are two-valved, brownish and dotted externally, yellowish-white internally, oval, an eighth of an inch long, containing a volatile oil, and of an extremely warming aromatic taste. Strong alcohol acts on them readily, water to only a limited extent.

Properties and Uses: The *bark* possesses a moderate quantity of relaxing power, associated with an excess of stimulation; acts rather promptly and diffusively; and leaves behind a warm impression, with an acceleration of the capillaries and smaller arterial circulation. The circulation, skin, salivary glands, and lymphatic system feel most of its influence; the serous and mucous tissues, and the kidneys, also being acted on. It is much more pungent and heating than zingiber, and much less so than capsicum; yet it is suited only to languid conditions, and should not be employed when the stomach is irritable. It increases the flow of saliva quite actively, and is excellent in dryness of the mouth and throat in low states of the system; and is a good associate of hydrastis and capsicum as a gargle in scarlatina and diphtheria. A warm infusion favors full outward circulation, and is of service in all cases of capillary stagnation with blunted sensibilities, as recent colds, obstructed menstruation from exposure, colic from exposure, and as an associate with asclepias in typhoid fever cases where the extremities are cold and the patient is listless. The profession scarcely values it as it deserves in these connections. In sub-acute and chronic rheumatism, it is an agent of the most excellent qualities; and may be used in warm

infusion for acute cases, especially in company with *cimicifuga*, or in cold preparations with such articles as *cimicifuga* and the berries of *phytolacca* for chronic cases. As a general stimulant, to arouse sensibility and arterial action, it may be associated with suitable tonics and alterants in the treatment of syphilis, mercurial poisoning, dropsy, agues, and hepatic derangements. Externally, the powder is a valuable application for malignant and phagedrenic ulcers, indolent chancres and buboes, and similar low conditions; and the tincture is of use in mildly stimulating liniments. Some value it in paralysis, especially of the tongue; and it is of service for mild cases, and as a wash to the mouth and over the glottis in loss of voice. From five to twenty grains of the powder may be used three times a day. An ounce of the crushed bark to a quart of hot water, makes the common infusion; of which a fluid ounce may be given at intervals of one or two hours. Large doses give a feeling of nausea, and may cause an unpleasant burning in the stomach of a person at all sensitive; whence it is usually better to repeat medium doses at moderate intervals. This bark is an ingredient in the new officinal Composition Powder. One part of leptandrin and four of xanthoxylum bark, in suitable doses every four hours, are peculiarly valuable in all bilious diarrheas.

The *berries* are quite fragrant, of qualities similar to the bark, but much more diffusive and transient in action. They are also stronger and more exciting than the bark, less relaxant, and more likely to irritate the stomach and leave the skin a little hot and dry. They are used for the same general purposes as the bark, but for proportionately lower conditions. Secondary syphilis and chronic rheumatism are the maladies for which they are best suited, as a pungent and prompt stimulant to combine with relaxant alterants. Their tincture was at one time highly lauded in cholera, both as a stimulant and antispasmodic; and also in flatulence and chronic diarrhea. While it is a preparation of undoubted service under some circumstances, its intensely heating character is many times unacceptable in such cases; and even in cholera, where the patient is vomiting and the stomach is irritable, no preparation of the berries is acceptable, but on the contrary is likely to add to the nausea. The bark is equally good with the berries, in cholera; but is open to the same objections in the same class of cases. Dr. J. King tells of a patient having nearly lost his life, in cholera, by using a tincture of the bark instead of the berries, and connects with the bark an idea of unsafeness; but this is a nonsensical story, and is a childish tale to be told by a man directing the use of aconite, veratrum, prussic acid, and strychnine. The *tincture* of the berries is made by macerating three ounces of the crushed fruit for ten days in a pint of seventy-five per cent. alcohol. It is very pungent, and has a somewhat resinous taste. Dose, ten to twenty drops, in water or sirup, every four or two hours, as needed. The *aralia spinosa* is sometimes confounded with the Southern prickly-ash, but is a much milder and less heating article; and its berries especially are more gentle than those of the xanthoxylum. A portion of the indiscriminate laudation bestowed by some upon xanthoxylum berries, undoubtedly belongs to the fruit of the above *aralia*.

Pharmaceutical Preparations I. *Tincture*. Crushed bark of xanthoxylum, six ounces; macerate for two days with diluted alcohol, transfer to a percolator, and treat with diluted alcohol till fourteen fluid ounces have passed; express the dregs, filter, and add enough diluted alcohol to make a pint. This is a much stronger preparation than the ordinary tincture, which is made of four ounces of the bark simply tinctured in a pint of alcohol, and contains too much spirit for the amount of medicinal strength obtained. Dose, twenty drops to half a fluid drachm. It is rarely

used alone, but may be added to sirups designed for rheumatism or syphilis. When xanthoxylum is to be used in liniments, it should be tinctured on absolute alcohol.

II. *Xanthoxylin*. This is a powder of the resinous class. By one method of preparation, it is precipitated from a concentrated tincture, after the manner of podophyllin. By another method, it is obtained as an alcoholic extract, as in the case of cypripedin. The latter process most fully represents the qualities of the bark, and may be used in doses ranging from one to four grains.

III. *Cholera Sirup*. The bark of xanthoxylum enters into a great variety of preparations designed for cholera, severe colic, and sudden congestion and inward recession of blood. Among the best of these is the following, furnished by Prof. J. E. Roop: Xanthoxylum bark, root of Jamaica ginger, bark of myrica, hydrastis, cypripedium, geranium maculatum, bark of rhus glabra, capsicum, each, two ounces. Macerate these for two days in a quart of diluted alcohol; transfer to a percolator and add warm water, reserving the first pint that passes; exhaust the drugs with water, evaporate to three pints, and dissolve in it three and a half pounds of sugar. Filter the first product, and add to this sirup ; also add four fluid ounces of tincture of myrrh, and ten drops each oils of peppermint, cinnamon, and anise. Dose, a teaspoonful to a tablespoonful, according to circumstances. See a preparation at zingiber.

ZANTHORHIZA APIIFOLIA

YELLOW ROOT

Description: Natural Order, Ranunculaceae. A shrubby plant from one to two feet high, in close clusters, found by mountain streams in Pennsylvania and southward. Bark smooth, bright yellow within, and the wood and long roots also yellow. Leaves compound, on long and tumid or half-clasping petioles, of one to two pairs of pinnae, smooth ; leaflets two to three inches long, ovate, cleft and toothed. Flowers in drooping compound racemes, quite small, dull purple, polygamous; sepals five, spreading; petals five, smaller than the sepals, on a claw; stamens five or ten. Fruit two pendulous and narrow pods to each flower, one seeded. Blooming in early spring.

Properties and Uses: The root and the inner bark of this plant are intense yet not unpleasant bitters, of the moderately stimulating class, and forms an admirable though little used tonic. It is closely allied to hydrastis in color, taste, and action; and is usable for the many purposes to which that admirable remedy is applicable. Though classed by Rafinesque and others as the equivalent of frasera, it is a far stronger agent than it.

ZINGIBER OFFICINALE

GINGER

Description: Natural Order, Zingiberaceae. Root a perennial rhizoma, creeping, thick, flattish, branched, covered by a dry and shriveled coat. Stem annual, erect, three or four feet high. Leaves alternate, lance-linear, taper-pointed, smooth, sheathing far down upon the stem. Flower-stalk springing from the root to the height of three to six inches, bearing the flowers closely spicate toward the top, each flower subtended by a broad-ovate bract, and imbricated so as to give the spike a coniferous appearance. Calyx wanting; corolla deep-purple, tubular, extending beyond the bracts, with a three-parted limb. Stamen and pistil single. Fruit a roundish and one-celled capsule. Cultivated extensively in tropical Asia and Africa, the West Indies, and America.

The root or rhizoma is the part used, and comes to market in jointed branches called *races* or *hands*. After being washed and dried in the sun, the thin epidermis is usually scraped off, but sometimes it is brought to market with the coat on. Softish roots are preferred to those that are hard or flinty, and the light-colored to those that are dark. The finest and most highly prized qualities come from Jamaica; and are quite light-colored and very pungent. The African ginger, though often classed among the poor sorts, is really one of the best; its races are plump and short, yellow with a reddish-brown tint, cut soft and bright, and of a more agreeable though less pungent flavor than the Jamaica. This is the kind now most abundant on the American market, and to a good quality of which I give my personal preference. Barbadoes ginger is in flat and moderately light races, with the corrugated epidermis on; Malabar and Bengal varieties are generally hard and dark. All contain a moderate quantity of a pale-yellow and volatile oil, lighter than water; and a soft and yellowish-brown resin.

Properties and Uses: Ginger *root* is one of the most pleasant of all the stimulating aromatics, and deserves to be valued as one of the most reliable diffusives of the *Materia Medica*. The Jamaica variety is strongest and most biting, the African more relaxant and antispasmodic. When chewed or taken in powder, it increases the flow of saliva and warms the stomach, and may be used in dryness of the mouth and as a good stomachic. The warm infusion promotes gentle and warm perspiration, favors an outward arterial flow, increases the mucous flow of the lungs and bowels, and relieves flatulence, internal congestions, and light spasmodic tendencies. Speaking especially of the African species, it is one of the mild yet most effective of the warm infusions of its class in recent colds, pneumonia, acute and sub-acute dysentery, and all other febrile and inflammatory cases requiring a sustaining diaphoretic. For all such purposes, it is most commonly associated with *asclepias* or a similar relaxant; and is one of the prominent Physio-Medical remedies in all cases requiring aid to equalize the circulation and sustain the nervous system. Its influence in sudden nervous fatigue and prostration is excellent; and it may be used in small quantities with cathartics to obviate nausea and griping. Sometimes it is added to alterative and tonic preparations, when it is desirable to have a milder stimulant than even *xanthoxylum* is. Combined with *cypridium*, *lobelia*, *cimicifuga*, and other nervine relaxants, it secures good antispasmodic results. It may be used in enemas, with demulcents, for a prompt diffusive. For infusion, two drachms of African ginger is sufficient for a pint of boiling water, though it is customary for most works to direct twice that strength. From one to four ounces of

this may be given at necessary intervals. Externally, it is a good associate with nymphaea or prunus in ulcers of a moderately indolent grade.

Pharmaceutical Preparations: I. *Tincture.* Crush two and a half ounces of ginger, and tincture for fourteen days with a pint of seventy-five percent alcohol. Express, filter, and add enough alcohol to make a pint. Or the root may be macerated in alcohol for two days, then treated by percolation, using a pint of the menstruum, expressing the dregs, filtering, and adding enough alcohol to make a pint. If diluted alcohol is used, the tincture is liable to become muddy after a few weeks. Dose from ten drops to a fluid drachm. Used as a carminative, and as a valuable adjunct to bitter and cathartic mixtures. The officinal United States method employs four ounces of the crushed root to obtain one pint of tincture by percolation, and is usually called *Essence of Ginger*.

II. *Sirup:* Evaporate two fluid ounces of ginger tincture to one fluid ounce; rub it with two drachms of carbonate magnesia and one ounce of sugar, gradually add one pint of water by trituration, filter, melt into this one and a half pounds of sugar at a gentle heat, and strain while hot. This is the elegant method of the U. S. P. The common practice mixes one fluid ounce of the above tincture with seven fluid ounces of simple sirup, but the preparation is neither so clear nor so palatable. It is used as a flavoring vehicle, especially for fluid extracts. Dose, one to four fluid drachms.

III. *Fluid Extract.* “ Take ginger in fine powder, sixteen troy ounces; alcohol, a sufficient quantity. Moisten the ginger with four fluid ounces of alcohol, introduce it into a cylindrical percolator, press it firmly, and gradually pour alcohol upon it until twelve fluid ounces of tincture have passed. Set this aside, and continue the percolation until twenty fluid ounces more of tincture have been obtained, evaporate this to four fluid ounces, mix it with the reserved tincture, and filter through paper.” (*U. S. P.*) Dose, ten to thirty drops in water. An *oleo-resin* is obtained by treating the root with ether and then with alcohol, and evaporating. It is a thick, dark fluid, very intense in action, of which a single drop may be triturated with a drachm of sugar and given as a dose.

IV. *Cholera Tincture.* Zingiber, myrica, caulophyllum, liriiodendron, each, four ounces; myrrh, four drachms; capsicum, one drachm. Treat by percolation with diluted alcohol till two quarts pass; and add, by trituration, twenty drops each of oils of peppermint and anise. I used this with good advantage in the cholera epidemic of 1867; and also value it in colic from sudden exposure. Dose, one to three fluid drachms, in any suitable infusion.