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AMPLE ILLUSTRATIONS OF PRACTICE

IN ALL THE

DEPARTMENTS OF MEDICAL SCIENCE,

AND VERY

COPIOUS NOTES OF TOXICOLOGY,

SUITED TO THE WANTS OF MEDICAL STUDENTS, PRACTITIONERS, AND TEACHERS.

A NEW EDITION, REVISED AND ENLARGED.

BY

THOMAS D. MITCHELL, A.M., M.D.,

Professor of Materia Medica and General Therapeutics in Jefferson Medical College, and formerly Professor of Chemistry, Materia Medica, and Theory and Practice in the Medical College of Ohio, Transylvania University, and the Kentucky School of Medicine; Author of "Elements of Chemical Philosophy," &c. &c.

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TO THE

Medical Profession

IN THE

UNITED STATES OF AMERICA,

AND

ESPECIALLY TO HIS FORMER PUPILS IN THE SOUTH AND WEST,

THIS VOLUME

IS

VERY RESPECTFULLY DEDICATED

BY

THE AUTHOR.

PREFACE TO THE NEW EDITION.

It is said that nobody reads a Preface, and whether this be read or not is immaterial. It is written chiefly to say that the author has carefully revised the work, and brought it down fully to the present time. As a consequence, the bulk of the volume is augmented, a circumstance altogether unavoidable. He has added his own experience on various points, and the best testimony of the great world of physic, with the design of putting a book of real value into the hands of students and practitioners. Theoretical notions, which are but too often of mushroom stability, have been almost entirely eschewed, and the book is therefore chiefly a volume of facts, quite as reliable as any to be furnished by the profession anywhere. He gives it to the public, not as a perfect production, but as an humble contribution to the medical literature of the United States. Designed as a book of reference for teachers and practitioners, it will be found to contain a vast amount of facts which cannot be found in any other volume. To the student who listens to a course on Materia Medica under any of the methods of classification, it will prove a useful help, as all the articles ordinarily brought to notice are presented in detail.

It is believed that every valuable new application of an old remedy, as well as the desirable uses of agents

claimed to be new, down to the date of this prefatory note, are here presented so as to set forth their real or apparent worth.

The careful reader may detect a few errata, but they are so unimportant that it was not deemed necessary to point them out in a separate notice.

We have taken more than ordinary pains with our Index and Table of Contents, so as to aid the reader in what we regard a matter of importance. Since this edition has been passing through the press, we have more than once sought for articles in the index of the most elaborate treatise on Materia Medica now extant, without being able to find the object of our research at all. In truth, a book with a defective or erroneous index loses half its value, in our estimation.

PHILADELPHIA, *October* 1, 1857.

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INTRODUCTION TO THE FIRST EDITION,

WITH EMENDATIONS.

THE work now offered to the medical public contains the substance of the author's lectures on Materia Medica and Therapeutics, as delivered in the Medical Department of Transylvania University, in eleven successive winters. His uninterrupted researches into the various sources of information, aided by his own experience, have enabled him to embody a large amount of practical information, which he regards equally reliable with any other stock of knowledge to which practitioners have access. And if, in some sense, the present performance may claim to be superior to other books on the same topics, the difference will be found to consist, chiefly, in the fact that the author has given to his work a much more *practical* character, and has fitted it the better for the daily reference of those who are engaged in the practical duties of the profession. This remark refers not only to ordinary practice, but to the right management of the more common cases of poisoning.

But there is still another point of difference between this and other books of Materia Medica and Therapeutics, which some may not approve. I allude to the small amount of dry details on the natural, botanical, and chemical history of articles to be found in this work. It has always appeared to me to be unnecessary, and actually uninstructive, to swell a volume to an inconvenient bulk by the statement of facts that not one in a thousand will take the trouble to read. I have, therefore, purposely excluded a great deal that some have seemed to think essential to the structure of a treatise on this department of medical science, preferring to fill the pages with really useful, practical matter, of every-day interest in all parts of the country. On the same principle, several articles have been briefly noticed that cannot be found in other works; as, for instance, *Depuration* and *Elimination*, so ably explained and applied by Drs. Todd and Golding Bird.

The arrangement of the work is exactly after the manner of the author's lectures. When he commenced the task of teaching in this department, he hesitated whether he should adopt some system of classification, or treat the articles on the strictly alphabetical plan. He knew that the late Professor Eberle had adopted the latter, in his lectures on Materia Medica, in the Medical College of Ohio, and this was in the nature of authority; and the more he studied the history and facts of classification, the more entirely was he satisfied that it was not the best plan either for the teacher or the pupil. He discovered that the highest authorities, even after adopting a system of classification, were forced to concede its defects, and the utter impracticability of constructing a perfect system. He felt, too, that the alphabetical arrangement had a decided advantage in respect of new remedies, which could not be classified without a reasonable delay to test their powers, while they could most naturally fall into their proper position in the alphabet.

After an experience of eleven years in the use of the alphabetical arrangement, the author is compelled to affirm that it seems to him, in every view of the case, the best plan for the study of Materia Medica and Therapeutics. It not only meets the case of all additions to the stock of remedial agents, but it allows more ample scope and range in the investigation of all old articles. He has found it quite important and instructive to teach under one head, as *opium*, all that is worthy of note concerning that medicine, in all its varied relations; far better to dispose of it thus than to treat of it under the separate and distinct classes usually named in the books.

On no point is the author more thoroughly satisfied, than that the pupils taught by him after this plan are as fully informed on all the points that merit study as they could be if instructed on the classification method; if there be a balance either way, it is decidedly in favor of the alphabetical arrangement. He has been in the habit, occasionally, of quizzing the pupils under the several heads of the classified Materia Medica, and they have been found to be as familiar with the subject as if that method had been chosen by the writer rather than the other.

Any one who will patiently study Dr. Headland's account of some six or eight systems of classification, as it may be seen in his excellent book on the action of medicines, not excepting the Doctor's own plan of classifying remedies, I think will perceive that this thing of putting remedies into classes is environed with innumerable difficulties. After giving details to illustrate his *Hæmatica*, *Neurotica*, *Narcotica*, *Sedantia*, *Astringentia*, and *Eliminantia*, he has sixty pages to account for the action of agents that this new and comprehensive plan failed, as he admits, to explain

satisfactorily. Among these are *Cod-liver Oil*, *Iodine*, *Quinine*, *Colchicum*, &c. &c., which put all systems of classification at utter defiance, just because no one yet fully understands their *modus operandi*. The plan adopted by the author of this work gives him what the other does not, viz.: ample, theoretical, elbow-room; and it is, in point of facility of study, vastly preferable, both for public teachers and pupils in attendance on lectures.

Having hinted at the plan of classification by Headland, as we find it in the last edition of his book on the action of medicines, (1857,) we may as well introduce a brief view of it here, regarding it, as we do, as the best yet submitted to the profession.

CLASS I.—Hæmatics or Blood Medicines.
DIVISION 1.—Restoratives, as iron in anæmia.
DIVISION 2.—Catalytics,* as mercury in syphilis.

CLASS II.—Neurotics or Nerve Medicines.
DIVISION 1.—Stimulants, as ammonia.
DIVISION 2.—Narcotics, as opium.
DIVISION 3.—Sedatives, as hydrocyanic acid.

CLASS III.—Astringents, as tannic acid.

CLASS IV.—Eliminatives, as cantharides and croton oil.

If we ever change our present purpose, this plan, slightly modified, will be selected, as the basis of our public teaching in this department.

Having thus briefly assigned my reasons for preference of the alphabetical arrangement, it is proper to say a few words on the *modus operandi* of the articles of Materia Medica. And we confess, most candidly, that we know very little on this subject,—almost nothing that merits the title of accurate and demonstrative. In our judgment, very many points in this relation, deemed by many as settled, are yet, fairly and literally, matters to be determined. The profession has been too self-confident, and is yet to be shorn of some of the imaginary honors it has worn for years.

Very many considerations appertain to a full estimate of the action of remedies in the cure of disease which call for very careful notice. In attempting to analyze these, we are apt to be influenced too much by attachment to some favorite system or theory; and whenever our efforts are conducted under such feelings, we rarely elicit the truth.

We remark, further, that there seems to be a pretty general

* This term gives the idea of breaking up, or destroying, or greatly altering morbid matter, so as to be ready to be carried out of the body by the *eliminatives*.

agreement on certain points which attach to such an investigation. Thus, it is held that some agents exert a direct influence on what we call the solid fibre; that others act primarily on the nervous system; that others enter the general circulation and so influence the quality of the blood; that others undergo decomposition in the stomach as preliminary to their full action; that others gain their appropriate results on the principle of revulsion; while a very few seem to depend wholly on chemical agency for whatever they accomplish.

In regard to the first link in this chain, viz., the direct action exerted by some medicinal agents on the living system, we remark that these agents do sometimes set up actions that are, apparently at least, purely local at the first. We do not mean to say that, after this purely local effect, there may not be developed another, in virtue of sympathy, or rather by reason of nervous relationship. Certain astringents, taken into the stomach, or thrown into the rectum, have a direct influence on the animal fibre, producing corrugation or actual condensation. To a certain extent, this is just as obvious as the action of astringents in the process of tanning. Every boy has felt this to be so when he has incautiously undertaken to eat some half-ripe persimmons.

On the principle just adverted to, we often employ astringents in the treatment of diarrhœa which may owe its continuance to simple relaxation of the alimentary canal. The tissue of the part of the intestines more immediately implicated is subjected to a positive physical alteration, and that is, primarily, the appropriate operation of the remedy. If, by this local action, a more healthful state of the particular part is established, its nervous associations will, as a consequence, be more in accordance with the phenomena of health. All such remedies, therefore, exert the simplest, most unmixed kind of agency; so much so, indeed, that some have called it a mechanical action. But in this they err manifestly, since no mere mechanical action can be conceded in a body whose every movement is directed by vital laws. Every action being essentially vital, all the results must be vital also.

But there are remedial operations of a much more complex nature, and, therefore, far less easy of solution. This is specially true of all medicines that act primarily on the nervous energy or system. And here we are forced to employ terms which, confessedly, we do not fully comprehend. What mean we by nervous energy? All that we can reply is, that it imports that peculiar faculty of the great system of nervous matter (including the brain and spinal marrow) on which is founded the well-known susceptibility of the animal in respect of impressions of every grade and kind. A thousand facts assure us of this susceptibility, and as it must have a basis, we fix it here, and suppose we are right. This

nervous energy is believed to be extremely subtle, so as to resist mathematical demonstration altogether, and yet environed with facts wholly inexplicable apart from the dominant influence of this principle. Thus, a medicine is put into the stomach, acts on that organ, and almost immediately an obvious result is noticed at some distant point, or perhaps the entire system feels the shock. The sixteenth part of a grain of tartar emetic taken into the stomach, though not, perhaps, felt by that organ, will, in a moment, cover the cutaneous surface with perspiration. This result, so often witnessed, depends on the propagation of a peculiar influence through the medium of the nervous energy or power. We have no other mode of explanation to meet the case. If remedies, whose operation extends beyond the stomach too speedily to allow of a passage through the blood, do not depend for action on a nervous medium, we are unable to perceive to what else it can be fairly attributed. Conceding this connection, it is not difficult to understand how impressions are propagated to distant parts, so as to involve the whole system. Modern investigations into the intricacies of the nervous system have shown, with tolerable clearness, how impressions may be communicated along certain sets of nerves, while others remain unaffected. In this way, we learn the cause of those associated changes that are of simultaneous occurrence in parts remote from each other. All the nerves of sensation originate in a common medullary tract,—in the spinal marrow and brain; a similar medium of communication unites the nerves of motion or volition, and a third, those of respiration. Now, if an impression be made on a nerve belonging to any of these sets of nerves, it is carried to the whole set to which the affected nerve belongs by the common medium. Thus, if a violent pain be in the great toe, as in gout, we know that a full dose of opium will allay, perhaps annihilate it. No one thinks that the opium is taken up by the absorbents, and carried by the blood-vessels to the great toe, in order to make its impression there. If, perchance, any one can be found who cherishes such an opinion, most assuredly he is welcome to all the profit of such a notion. We think the opium acts on the sentient extremities of the gastric nerves of sensation; that the peculiar effect there induced is carried to the connecting tract of the spine and sensorium commune, and thence to the seat of suffering. Here is obviously, then, an action almost, perhaps quite, simultaneous in some of the nerves in parts very remote from each other; and this fact is well established by associated impressions so often observed in the progress of disease.

As further illustrative we give the following case:—A patient labors under distressing palpitation, and on applying the hand over the cardiac region, a violent beating is detected. The case

may have been hastily examined by some one who pronounced it to be real heart disease. But, on a very careful observation of accessible points, you perceive that the heart is not diseased, its structure is not at all involved. You find the stomach to be at fault, and you justly conclude that the distress complained of in the region of the heart has a gastric origin exclusively. What is to be done? The heart and stomach occupy different regions. How then can it be that the heart suffers in any sense because of primary gastric disorder? We reply, in the use of professional parlance, that the heart sympathizes with the unhealthy state of the other organ. In this view of the case, we apply our remedies not to the heart, but to the stomach. In truth, we have no remedy that can directly influence the heart, as we can and do influence the stomach. We aim, therefore, at soothing the morbid irritability of the stomach, and this being accomplished, the heart becomes tranquil, regains its wonted natural action.

In our judgment, the cases last cited are valid proofs of the action of remedies through a nervous medium, apart from the concurrence of absorption into the mass of blood. But we have yet another case, which, while it proves satisfactorily that some medicines may affect the system through the blood as well as through the nerves, also evinces that they do sometimes produce their effects wholly apart from the process of absorption. An adult takes a full dose of rhubarb in the customary way, and is purged in due season. If you examine his urine, you can detect the rhubarb there; and the inference is justly made, that the medicine has traveled through the circulatory system—that of course it was taken up by the absorbents. But apply a strong poultice of rhubarb to the abdomen of a child, and in due season you get the same kind of purgation that was realized in the adult; yet the rhubarb cannot be found in the urine. That the medicine has truly purged the child, is undoubted; yet it has not traveled in the route of the circulation, nor has it permeated the walls of the abdomen. How has it acted, if not by a nervous medium? It will not do to say that the action was merely mechanical, or the effect of increased temperature in the poultice; else why not purge the child as certainly by a cataplasm of bread and milk?

As a further illustration, we cite a well-known experiment performed by Dupuy. He divided the eighth pair of nerves in a horse, and introduced into the stomach two ounces of nux vomica, with no bad result. The same quantity, given to a similar horse with the nerves untouched, induced violent tetanic convulsions, and in a short time death. The inference is irresistible, therefore, that many remedial agents exert their force on the economy through a nervous medium, aside from absorption.

We know that Headland, with others, insists on the fact, ascer-

tained by experiment, that medicines pass through the circulation with vast rapidity, and that these supposed cases of action through the nervous system are all effected by the flowing blood. His language is, "There is no poison, whatever, which acts so quickly on distant parts that the circulation cannot previously have had time to conduct it thither." Dr. Blake found that a chemical substance traversed the entire circulation of a horse in twenty seconds.

In the statement and illustration of the foregoing position, we do not pretend to deny that medicines are absorbed and carried through the circulation, and thus exert their power. We know that experiments have been made in proof of the position that, after all communication was severed by the knife, the blood-vessels divided, and the circulation maintained by quills to which the ends of the vessels were secured, a poison inserted under the skin of the severed limb induced all its usual deleterious effects in the animal. Here the result flowed from absorption and admixture of the poison with the blood.

But it may well be demanded, who has ever yet accounted for the different actions of remedies on nervous structure? How is it that opium contracts the pupil, while belladonna dilates it? How does digitalis induce its special action on the heart? What is the *modus operandi*,—not by conjecture, but in reality? It is utterly impossible to answer. And yet some in the profession talk as confidently about these, and others of like character, as if the problems were quite as obvious as that two and two make four.

In whatever way the nervous communication of which we have been speaking takes place, there are three surfaces on which impressions may be successfully made, and thence propagated to other parts. The first includes the *stomach and alimentary canal;* the second is the *skin;* the third is the *organ of smelling*.

That the stomach is very largely supplied with nerves, and is highly irritable, is a fact known to every one. Its cavity throughout is endowed with the power of receiving and diffusing impressions, and hence it has been called the *great centre of sympathy*. Hence the advantages growing out of the medium it offers for operating on parts remote. We give medicine, frequently, with a view to action on distant parts, which make no sensible impression on the stomach itself, although we make it the medium of operation. But if the stomach be the subject of diseased irritation, it is exquisitely susceptible to the impression of remedial agents, and sometimes becomes a focus in which morbid impressions are concentrated from other parts.

The large intestines, moreover, possess a vast amount of nervous energy, derived from nerves connected with the great sympathetic; and from impressions made on their extensive surface

by medicinal agents, an impulse is imparted to the system at large nearly in the manner, though not with the same force, we notice when the stomach is the organ first acted on. Hence we throw with safety much larger portions of medicine, and more acrid articles, into the rectum, than we are permitted to place in the stomach. Owing to similarity of surface, so far as nervous energy is concerned, we get the same results, in kind if not in degree, from articles thrown into the rectum as from the same articles put in the stomach. Indeed, there are cases in which it is decidedly better to administer remedies by the rectum than by the mouth. Sometimes the stomach, from its great irritability, will not bear a medicine that will give the result desired when passed into the rectum, and without at all annoying the stomach. It is often necessary to resort to this method, as for the administration of laudanum, assafetida, &c. &c.

We have already hinted at the profusion of nerves distributed on the surface of the body, in consequence of which it is endowed with a large amount of sensibility; and although the cuticle, which has no sensibility, be interposed between the true or sensitive skin and any medicinal substance that may be applied to the surface, yet the skin is readily excited, and through it a sympathetic action is imparted to the rest of the system. Hence the ease with which impressions are made on the surface by medicinal agents. Notwithstanding the palpable nature of this truth, some sensible men have denied the efficacy of this mode of treatment, because they rejected the doctrine of cuticular absorption. But from much experience in the management of infantile patients, I learned abundantly the facility of operating on the entire system by remedies applied to the surface. We have already spoken of the efficacy of rhubarb, applied to the abdomen of young children; and other cases which occur to the reflecting mind. It is not necessary to look to cutaneous absorption for an explanation of the action of any remedy applied to the surface. The infinitude of nervous filaments spread out in all directions will amply account for all the effects we observe.

The third and last medium to which we referred for the reception of impressions made on the nervous system by medicinal agents, is the *organ of smelling*. This is dependent on the first and fifth pair of nerves spread out on the Schneiderian membrane, whose extensive surface is admirably suited to this object. We are all aware how readily some persons are sickened by offensive odors, while others who have lost the sense of smelling are unaffected by contiguity with such objects. The influence of odors on the whole system, through the organ of smelling, is not sufficiently appreciated. Not a few agents exert their influence on the nervous centres through this organ, that have been sup-

posed to act by pulmonary absorption. Dr. Rousseau's experiments with persons blindfolded and the nostrils plugged, excited a good deal of interest in Philadelphia thirty-five or forty years ago. He affirmed that assafetida, camphor, &c., put into the mouths of such persons, and chewed, were not distinguishable from bread. He also declared that the vapors of alcohol or laudanum might be inhaled without effect for a long while. Dr. R. believed that the organ of smelling was essential to the legitimate action of all these agents.

Making all reasonable allowance for the well-known enthusiasm of Rousseau, his experiments forcibly teach the importance of the lining membrane of the nose as a surface on which to make medicinal impressions. We also understand how devotees to snuff deprive themselves of an important medium for the administration of remedies. The man who plasters his Schneiderian membrane with impervious coats of this article loses one avenue, at least, by which remedies should find an entrance to the system.

That medicines may be absorbed, and travel in the circulating mass to all parts of the body, and exert their peculiar energy on the general system, few will deny. Three ways have been named for such conveyance, viz.: *Absorption from the intestinal canal, absorption through the skin, and absorption through the lungs.*

Very decisive proofs have been furnished, to show that medicines are absorbed from the intestinal tube. Thus, if a person take a salt of iron, or prussiate of potash, we detect either in the urine in a few hours. Here it is obvious that these articles travel, unchanged in their essential properties, throughout the course of the circulation; and, in order to get into the blood, they must needs be absorbed. It is well known that the extensive surface of the intestinal canal abounds with absorbent vessels, ready to take up articles carried there from the stomach or rectum, and thence to convey them into the mass of blood.

In like manner, articles of food are absorbed from the intestinal canal, and the animal vigor is thereby preserved. Thus, patients have been supported for months, who could not have been nourished by the mouth in consequence of extensive stricture of the œsophagus, by means of nutritive clysters. The same thing has been done in respect of very young children, who for weeks were prostrated with irritability of stomach that forbade the introduction of nourishment by the mouth. If food can be made to enter the system thus, what can prevent the access of medicines by the same route?

Touching the absorption of medicines by the skin, we have little to offer of a satisfactory nature. That the true skin is plentifully supplied with nerves and absorbents, is undeniable. Its resemblance, in this and other particulars, to the mucous lining

of the intestinal canal is so striking that anatomists have regarded the latter to be only a prolongation or extension of the former, modified to a due adaptation to the functions of the part it covers. But while the mucous membrane of the bowels is protected only by its appropriate secretion, the true skin is covered with the cuticle, which would seem to be placed there to obstruct the action of external agents, although, as we have seen, remedies applied to the surface are often decidedly efficacious through the inherent nervous energy. This is quite another thing from the absorption of medicines.

The advocates of the doctrine of cuticular absorption have been numerous; but it is not our purpose to enter into details touching their researches. We are inclined to think, from all the investigations we have been able to make, that absorption by the skin is restricted to very small surfaces of the body, and by no means extending to the entire skin. During the period of my attendance on medical lectures, a pupil from Georgia, who was regarded as a little "cracked," determined to prove, most conclusively, the doctrine in question. To this end he had a vast hominy bath made large enough to receive his body. He had long been familiar with the nutritive property of hominy, and believed he could be sustained by the absorption of it through the skin. He entered the bath like a genuine inquirer after truth, having arranged matters so as to keep his head entirely above the nutritive semi-fluid. I need not say that the experiment failed, for the poor fellow became distressingly hungry, and had abundant assurance that he could not be sustained in that way.

There can be no doubt that medicines may find their way into the system, in an undecomposed state, by being absorbed or conveyed through the lungs. Many experiments have been made, showing clearly that volatile substances may and do enter the system by this route. We are not certain that decomposition ever occurs in medicines that enter thus, nor is it at all necessary that such a change should occur. All such substances are carried into the lungs by the atmospheric air, which serves as an appropriate vehicle; and although the latter must be decomposed to subserve the purposes of respiration, it by no means follows that the volatile medicines conveyed by it into the lungs must undergo a like change. In fact, the occurrence of such a change might work serious mischief. There are absorbents in abundance opening on the mucous membrane of the bronchial tubes which readily take up all such volatile matters for the purpose of conveying them into the circulation. In this passage they often stimulate the nervous system powerfully, and sometimes produce an influence on the body as real as if they had been taken into the stomach.

That medicines may be, and are, decomposed in the stomach is abundantly evident. After the decomposition, some of the constituents may be detected in distant parts of the system, or in some of the excretions, or they may act specially on the nervous system. There is proof that the coloring matter of some bodies is eliminated by the agency of the stomach. Thus, after an individual has taken rhubarb, a few drops of a strong solution of potash added to the urine will throw down a lake color, proving the presence of the coloring matter of rhubarb in the excretion. So also the coloring matter of madder is detached, and may be seen in the bones, giving evidence of its passage through the circulatory system.

It is more than conjectural that vegetable medicines are decomposed as alimentary substances are; and although they may sometimes make their impression on the nerves of the stomach prior to any radical change, yet it is no doubt true, as a general principle, that decomposition precedes the full development of medicinal energy, in virtue of which the active principle is separated from the digestible matter that it may act directly on the nerves of the stomach or find its way into the circulation. In this way we may rationally account for the length of time that often elapses, after medicine is taken into the stomach, before its operation is realized. For instance, a dose of ipecacuanha will ordinarily require thirty minutes, and occasionally a longer time, to act as an emetic, and the same is true of other articles. The delay is owing to the envelopment of the active principle of the medicine in some foreign or comparatively inert body—as wax, gum, starch, ligneous matter—which renders the digestive process necessary in order to a proper separation.

But the decomposition of medicines in the stomach is not peculiar to vegetable matters. Salts, into whose composition vegetable acids enter, are subject to like change. The acetate of potash is separated into acetic acid and potash, the former being digested, and the latter entering the circulation to be conveyed out of the system by the kidneys. There can be no doubt that the decomposition is effected by the vital powers of the stomach, and that the active principle thus eliminated acts directly on the stomach, extending its influence by nervous sympathy to distant parts of the system; or, that it is absorbed and carried in the course of the circulation to those organs on which its appropriate action becomes more apparent, whether it be diuretic, sudorific, or expectorant.

Besides the decomposition of medicines by the vital forces, a like change is effected by chemical agency. The acetic and muriatic acids exist in the stomach in variable quantities, derived chiefly from the quality of the food, and also dependent on the

state of the stomach. Pepper and spices generally augment the quantity of these acids. Superabundance of these is a prolific source of that morbid state of the digestive organs which constitutes dyspepsia. Suppose a patient, thus affected, takes some alkaline carbonate, as the bicarbonate of soda; chemical action instantly ensues in the stomach between the carbonate and the acids present. If acetic and muriatic acids be there, two salts will result, and carbonic acid gas will be thrown off by eructation.

Some remedial substances are absorbed unchanged, and afterwards undergo decomposition while in the blood-vessels, or when they reach one of the secreting organs, and operate on the nervous system by one or more of their components. We are aware that no demonstration can be given to establish this view of the case. But there are certain results following the administration of remedies which admit of no other solution. Thus, we believe that mercury, in the form of protoxide, is absorbed and goes into the circulation undecomposed; that, after its constitutional impression is apparent, it is actually decomposed. If a piece of gold be carried in the pocket of a person under mercurial influence, it becomes obviously whitened, as though it had been rubbed with fluid mercury. It is also well established that fluid mercury has been found in bones, liver, and other parts of the human body. Similar phenomena have been noticed in connection with the protracted use of nitrate of silver; the metallic silver having been found even in the pancreas, according to Mr. Brande.

The action of these remedial agents, commonly called *counter-irritants*, or *revulsives*, demands a passing notice. Every one has observed the operation of this class of curative means, which probably had its origin in what we usually denominate a mere accident. An injury, more or less grave, has established a running sore, and this has effectually cured an old cutaneous disease, simply by changing the seat of irritation, or by concentrating morbid action in a focus. It is recorded of a female who labored under incipient pulmonary consumption, that she was terribly burnt on the entire front of her chest. This casualty eventuated in her recovery.

Keeping in view such indications as these, we seek to remove painful diseases by setting up a new action in a healthful part, and thereby transferring the old morbid action from its original seat and eventually eradicating it from the system. Thus we cure inflammations of the throat and fauces by irritants applied to the neck; thus we relieve and cure inflammation of a membrane within the chest by exciting a temporary though severe inflammation on the surface. Nor is this kind of action confined to cases like those just named. We cure a distressing headache

by active purgation, which really involves the same therapeutic principle.

The last mode of action of medicinal agents to be noticed is almost, if not altogether, *chemical.* Thus, when pure or caustic potash is applied to the skin, the vitality of the part is destroyed, and a new compound is formed with the animal matter. The fatty substance combines with the potash, and a saponaceous compound results. The action thus far is purely chemical, and lays the basis of a powerful counter-irritant operation. The action may be entirely chemical, as when magnesia is taken to correct gastric acidity. The acid of the stomach is made to disappear by reason of the combining power of the remedy.

The general effects of medicinal agents on the vital solids and fluids, and on the animal functions, next claim our attention. In the use of the term *vital* or *living* solid, we mean to refer to the ultimate fibril of the organic tissues,—cellular, muscular, and nervous. We suppose that the change of condition in an organ, as effected by a medicinal agent, is the result of impressions made by such agent on this fibril. This may not be very definite. But how can we get a better idea while our acquaintance with the ultimate structure of the solids remains imperfect? We know that the heart's action is increased soon after alcohol enters the stomach. Here is positive increase in the motions of organized matter effected by an agent not absolutely contiguous. We cannot solve the phenomena except by supposing that the alcohol exerts an influence on the nervous fibrillæ of the stomach, which causes more or less change in their condition and which is followed by corresponding change in the contractile fibres of the heart; or that alcohol enters the circulation, and reaches the tissues of the heart directly, producing the result independently of nervous communication. Now all this is based on mere hypothesis, so far as solution is concerned, for we cannot demonstrate the nature of the fibres spoken of, nor the changes they undergo. The conclusions we draw grow out of the well-known and uniform effects of a dose of alcohol. These are sense of warmth in the gastric and thoracic regions, increased action of the heart, and accelerated momentum of the blood, as inferred from the state of the pulse. Now, to every remedial agent acting thus, we give the name of *stimulant;* while to all means whose use is followed by diminished action, or reduction in the momentum of the blood, and a lowering of animal temperature, we give the name of *sedative.* And, as all remedial means act primarily on the living system so as to reduce or elevate, we infer that all may be included in these two classes, as respects their primary effect. That there are few *direct* sedatives, is conceded; yet none will say that venesection may not prove directly sedative, nor that cold may not act in the

same way. Very many articles operate as *indirect* sedatives; in other words, the first impression of an active stimulant having subsided, a state of indirect debility follows, and this is called a *sedative* effect. In this way, opium and alcohol may be indirect sedatives, although they are, in the first instance, direct stimulants. But in either case, we are warranted in the belief that coincident with the medicinal effect is a change of some sort or other in the living solid.

The action of remedies on the living solid is often much influenced by a state of disease. Thus, a person unaccustomed to the use of brandy in health may swallow a pint or more in a day, in the form of milk punch, in a state of prostration, induced by excessive purgation, and not feel the stimulus in the smallest degree, excepting as a restorative both to the bowels and to the general system. Less than half as much brandy, at another time,* would completely inebriate the same individual. And, further, the stomach, in health, will receive and tolerate a hundred articles which could not be tolerated if gastritis were present. Disease induces an augmentation of local sensibility, by reason of which medicines seem to act with unwonted power; while, at other times, it appears to reduce the sensibility so as to blunt and render null the energy of remedial appliances. The latter is illustrated in the failure of opium to impress the stomach of an old drunkard laboring under delirium tremens; and the former in the promptness with which the same remedy acts on the same person after the free use of emetics has roused the gastric sensibility to a point above the natural standard. In the one case, twenty grains may sometimes prove inert; in the other, a single grain may lock up the system for hours in a most salutary sleep. Who, for a moment, can believe that, in all these opposite results, the living solid is unchanged, and passive as the block of marble under the mason's chisel!

The effects of remedies on the living fluids are more important, perhaps, than the action of the same on the living solids. The blood is, unquestionably, the most important of the animal fluids; and it is so, mainly, because all the other fluids are formed out of it. Varieties in these, at different times, are traceable to as frequent variety in the blood itself. This fluid, being formed out of chyle, whose quality must needs vary more or less with the food whence it is formed, must be liable to great and frequent changes. We do not pretend to affirm that the essential character of the

* The author realized this fully in his own person, in the year 1846, at Carrolton, on the mouth of the Kentucky river, where he was detained with a most exhausting attack of *cholerine*, for which he swallowed, in a brief space, as much brandy as would have inebriated him, perhaps a whole week, in full health. He never drinks brandy, nor any of its associates, when well.

blood can be destroyed in a living system while the powers of vitality are fully at work; yet we have no doubt that changes or modifications may occur which at one time may give rise to disease and at another exert a most salutary tendency.

The remarks just made in respect to the blood are applicable to the secretions and excretions. Every one is aware of the peculiar odor of the urine after partaking of asparagus; and Dr. Franklin's mode of preventing that odor, by swallowing a few grains of white turpentine, is also familiar. All this is explicable on the influence imparted to the circulating blood, and conveyed to the kidneys, unless we solve the whole by reference to the acknowledged sway of the nervous energy. That alterations in the sensible properties and actual constitution of the secreted fluids may depend on, or be influenced by, some new action in the organs themselves, is quite probable. But how can it be known that this supposed new action is not the result of some previous action on the mass of blood? All this, to be sure, is conjecture; but we are at liberty to weigh probabilities, and thence make the best inference we can, in the absence of clearly demonstrative proofs.

The *animal functions* feel, very sensibly, the influence of medicinal agents; and as this is a subject of much practical importance, we will devote a few moments to its consideration.

The connection between the tissue of an organ and the functions of that organ is obvious. If the tissues on which medicinal agents operate be in a state of comparative disease, the function will be more or less interrupted or impaired. If any unusual impression be made on the nervous tissue of an organ, the result will almost invariably be a modification of the function, and this is what might naturally be anticipated. This result is common to all the organs, whether they relate to the motions of the body or the faculties of the mind; and a careful attention to the changes or modifications effected by medicinal agents affords the chief means of ascertaining the proper therapeutical action and value of remedies. We should be careful not to confound modification of function resulting from medicinal action with those that flow from natural causes alone. Hence, too, the need of distinguishing temporary modification of function, which may happen independently of mechanical agency, during the administration of remedies. For it is well known that palpitation of the heart, cough, and convulsion, may cease soon after a medicine is administered, and yet these salutary changes may not depend on the article given, in the least degree. Hence the frequent erroneous inferences made by physicians, leading to the assumption of credit for skill and tact where none was due.

We know, further, that medicinal agents exert a decided in-

fluence on the vital functions, and thence effect changes in the condition of the diseased organs,—a fact the proof of which rests on careful observation, showing that the same effect is always observed to follow the administration of the same medicine. Such is at least the general rule.* Let the following illustration suffice. The liver is found to be defective in its secreting function, and we prescribe the blue pill. This passes into the circulation, exciting the whole glandular and capillary system, stimulating the languid pori biliarii, which are said to secrete the bile from the blood of the extreme branches of the vena portarum, thus renewing the secretory function and giving it a more healthful quality. The remedy, being continued a little longer, stimulates the orifices of the common duct, the liver and pancreas, so that the bile and pancreatic juice flow freely, and the process of chylification is restored to its normal state. The general nutrition of the system is soon manifestly improved, the stomach and other organs are invigorated, while the flow of bile into the intestines restores their regular peristaltic motion and consequent evacuation. Now these results occur with such uniformity as to warrant the inference that has been already named.

It is important to keep in mind the difference between the *physiological* and *therapeutic* action of a remedy. Thus tartar emetic acts physiologically when it evacuates the contents of the stomach; but the therapeutic effect may reach to the head, in the relief or cure of headache. The physiological action of a cathartic is to excite the peristaltic motion of the intestines and cause due evacuations; but the therapeutic action may be the improvement of the digestive functions, or the relief of the eyes or head, or whole system. The physiological action is dependent on the almost immutable and constant influence of a given medicine on the organic tissues, and is liable to little diversity. The therapeutic effect is modified by peculiar conditions of the body, and by the circumstances attending the disease, to subdue which the remedy is directed. It sometimes happens that the full physiological effect is not obtained, even after a full dose has been given; yet there is always an approximation thereto. Thus, if a full dose of ipecacuanha should fail to vomit, it will almost always nauseate, and thus prove that it has made an impression on the organ. Hence, if a physician be correct in his pathological view of a case, he may make a pretty correct calculation as to the therapeutic effect, from the greater or less energy of the medicinal agent on the organic tissue.

From what has been said of the *modus operandi* of medicines, the following inferences may be deduced: 1st. That the cure of disease by remedial agency does not depend on any specific influence, and that the terms in common use, as antiphlogistic, feb-

rifuge, &c., are only conventional, or the result of common consent, and merely serve to announce a secondary result, flowing from the appropriate action of medicinal agents on the vital solids and fluids. 2d. That remedies may influence the general habit by an immediate impression on the stomach and alimentary canal, either in their entire form or in a state of decomposition. 3d. That medicines may affect the general constitution of the fluids by entering the circulation; and these changes are not necessarily dependent on any kind of chemical influence. 4th. That medicines taken into the circulation and carried to remote parts, either entire or decomposed, may there exert their peculiar energies. In doing this, there would seem to be, although we repudiate the doctrine of specifics, a kind of elective affinity or selection, so as to direct the physician to employ one article for evacuating the bowels, another for exciting a copious perspiration, and the like. With here and there an exception, growing out of circumstances not easily explained, these effects follow the medicinal administration with so much regularity that we hesitate not to say not only *what* the effect will be, but *when* it will be.

Doubtless we have yet very much to learn in respect of the various circumstances that modify the operation of remedial agents. We know, certainly, that many conditions favor and produce this modification. Thus, peculiar conformation of body, difference of sex, of climate, of temperature, of diet, of habit, &c., as these relate to individuals; the customs, superstitions, and political relations of society, the state of the mind, the temper, the intellectual powers, all may exert a modifying influence.

No one doubts that what we commonly call "a man's constitution" is very much under the influence of peculiar bodily conformation. What is fully and precisely meant by this phraseology we cannot easily determine so as to convey definite ideas. In fact, it is not practicable to do so, always, if ever, from the nature of the case. Yet facts may help to illustrate our meaning. Thus, Julius Cæsar was uniformly seized with epilepsy on the eve of a great battle, although his courage was above suspicion. Not one in the army, save the leader, was thus affected. We say, therefore, that Cæsar had a peculiar constitution, resulting from some unusual, though unperceived, bodily conformation. His nervous system was, beyond doubt, susceptible of intense excitement from special causes. That Lord Bacon fell into a state of syncope at the moment the moon had passed its full, is assignable to the same principle. It is reported of a lady who had ceased to nurse for a long time, that, on hearing a child cry, a copious secretion of milk filled her breasts.

It is a truth too often observed to be doubted, that no state of the bodily frame so powerfully modifies the operation of medicines

as that which renders the nerves exquisitely susceptible of impressions. This condition may be the consequence of original conformation, or it may be the product of disease. It is on the same principle, that the mind is said to control so absolutely the action of many remedies. Cases in point will occur to the recollection of every reader. Let the following serve for illustration:—A lady was laboring under an affection of the bowels, attended with severe pain and obstinate costiveness. She was bled, put into a warm bath, freely plied with cathartics, anodynes, &c., without relief. The case was perplexing, but the physician soon learned that the patient labored under a settled conviction that she could not be relieved by any other than her old physician, who resided many miles off. As he was supposed to understand her constitution better than any one else, the friends determined to gratify her. The old doctor was called in, and although he did not change the treatment at all, the bowels were soon freely moved; sweet sleep followed, and in a few days the patient was well. It is not pretended, however, that the same result would not have followed if the old doctor had not been obtained. Temperaments and idiosyncrasies have a great deal to do with what we call the *constitution*. Nor can it be doubted that the original variety of these, as well as subsequent modifications, have much to do with peculiarity of bodily conformation. All the temperaments have their peculiar and special distinctive features, and are identified with certain external marks or expressions of countenance, organs, &c. What it is in the living fluids or solids that constitutes these diversities is undetermined; and yet it cannot be questioned that there are real grounds of diversity.

Idiosyncrasy, although it cannot be ascertained by an inspection of exterior signs, as temperaments may be, is pretty certainly recognized by a very attentive examination of the constitution, and in no other way. The derivation of the word simply indicates a *peculiar composition;* but this does not fully reach the merits of the case. And in order to become conversant with the idiosyncrasy of a patient, the physician must be constantly on the watch, to seize on every peculiar development that may arise in the course of medicinal administration. Individuals who evince idiosyncrasy in regard to sounds, or tastes, or smells, in a state of health, are apt to manifest something of the same nature in reference to the use of medicines.

Something like idiosyncrasy is occasionally manifested in the pulsation of the heart and arteries. Bonaparte's pulse, it is said, never exceeded forty-four in the fullest health. Heberden gives the case of a woman, aged fifty, whose pulse was always intermitting, and this, too, independently of peculiarity of structure, as dissection finally proved.

What constitutes idiosyncrasy, what is its basis, where its location? Can we analyze it? That it depends on some peculiarity of the nervous system is, perhaps, certain; yet we cannot prove it to be so. Nor is it important to be able to define its origin or nature; and yet it is very needful to ascertain not only its existence, but its peculiarities, in the same person, and in different individuals. Some patients are seized with a fit of asthma the moment a particle of ipecacuanha is brought in contact with their persons. This is not conceit, nor hypocrisy, but a veritable reality, which we call idiosyncrasy. The lesson taught here is never to prescribe ipecacuanha to a patient of this description. The same principle of action extends to other remedial agents, and to various articles of food. Some persons cannot eat cucumbers, nor even sit at a table where they are served; and the same is true of certain kinds of cheese. Much could be said of the influence of age and sex in controlling the action of medicines; and the considerations are of great value. But they are so obvious to all, that it is not necessary to enter into details. The power of *custom* or *habit* is much more extensive and influential, and to it we shall devote a few remarks.

The ability acquired by custom or habit to endure extremes of cold and heat, is familiar to all classes of society. In fact, there is scarcely a condition, however unnatural, that may not be made endurable, on the same principle. In virtue of it, the Siamese, as we are told, become fond of rotten eggs, and digest them readily, and without any sort of disadvantage. The fetid gum obeys the same law, and though at first detested, can at length be carried in the pocket, as if it were an article of confectionery. In the same way we account for the influence acquired over most of the functions of the animal economy.

The power of custom or habit over the operation of medicinal substances is of great value in a practical point of view; and hence claims special attention. Hence it is that the same kind of medicine, exhibited daily in the same dose, soon fails to display its wonted energy. Precisely thus is it with intoxicating drinks. He who takes his half-gill of brandy every day for two weeks will, at the end of that time, call for more. The dose must be augmented, or the desired impression will fail. Yet the original properties of medicine and of the brandy are unaltered, and the condition of the parts with which they come in contact may be very little changed. Many persons, by the use or abuse of opium in gradually-increased doses, reach a point when it is almost incapable of affecting them in any quantity.

It is on the very same principle that some persons become proof against offensive odors. The operatives in bleaching factories are often benefited by a chlorinated atmosphere, in which

the proprietors cannot remain comfortably for the space of five minutes. Baron Haller was never so much at home, nor so little annoyed, as when engaged in the dissection of dead bodies; yet the fetid perspiration from the feet of a visitor put his good humor to the test more than once. I knew an old female who had followed the occupation of laying out the dead for more than thirty years, who declared that no sensation was more agreeable to her than that of handling a corpse. These, and similar facts, assure us of the vast power of habit or custom to modify and even control the action of medicines; we are taught thereby the necessity of ascertaining the habits of patients before we prescribe an article from which we anticipate important results. If the physician is called to a man laboring under disease attended with severe pain and constant wakefulness, who is in the habit of using opium freely, this latter fact must be ferreted out. It would be almost, perhaps quite, impossible to benefit him by the same medicine in any practicable dose; and yet it might not be difficult to relieve him by substituting some other narcotic in its place.

Climate has also a share in the modification of medicinal action and energy. No doubt a part of the influence ascribed to climate belongs to custom or habit. The slender and delicate Hindoo, who lives entirely on vegetable food, is not acted on by medicine as is the Esquimaux, who gorges himself with the flesh of the seal and the blubber of the whale. Climate may have something to do with all this; yet we cannot but believe that custom contributes to the result.

Still, we cannot doubt the power of climate to modify the action of medicine, as well as the essential nature of remedial agents. Englishmen and Irishmen who settled in the vicinity of Philadelphia forty-five years ago, when intermittents and remittents were almost universally prevalent, could not be purged with the same doses that acted promptly on old citizens. Dr. Reynolds, in a paper published many years ago in one of our medical journals, declared that he could not cure an Irishman of ague and fever, who had lately arrived and located in what is called "The Neck," without employing three or four times as much Peruvian bark as sufficed in the cases of Americans long settled in the neighborhood.

Then, too, climate often affects the quality of the remedy. This is true of colchicum, digitalis, conium, and other articles, which nearly lose their peculiar properties in certain localities. Hence we are told that small doses of narcotics act with more power in Naples than larger ones do in England. And we may learn, too, from such facts, why immense doses of narcotics have so often failed to do serious harm.

The operation of medicines is variously affected by the mind,

and this can be ascertained apart from any attempt to investigate the nature of mind. When we talk of mind in this relation, we mean just what is generally understood by the term. Every one has witnessed, more or less, the mutual influence of mind and body. The facetious author of "Tristram Shandy" has forcibly expressed the idea, in his comparison of soul and body to a coat and its lining. "If you rumple the one," says he, "you must certainly rumple the other."

What are sometimes called the *passions*, in contradistinction from the *emotions* of the mind, are held to operate differently, the former being regarded as *sedatives*, the latter as *stimulants*. The depressing agency of the passions is often observed in men who are sorely harassed in their business operations. The stomach often feels the disturbance, in the deterioration of the gastric juice; the digestive powers flag, and presently dyspepsia or indigestion is complained of. In some persons, the depressing agency fastens on the bowels, and the man is annoyed with disagreeable intestinal irritation. Sorrow, fear, terror, all tend to like results.

On the other hand, joy is confessedly a stimulus, and frequently a very powerful one. The whole system often realizes its influence for good. When excessive, however, it may operate prejudicially, as other stimulants often do. Occasionally, a sudden outburst of joy has destroyed life almost instantly. Sophocles died the moment he was crowned for composing a tragedy. Dr. Mead testifies that more men went mad, in the time of the South Sea bubble, in consequence of making vast fortunes, than from being ruined by the speculation.

Notwithstanding these and other fatal consequences growing out of excessive joy, it is most certain that when its stimulus is brought to bear on the human economy in moderation, and appropriately in all respects, it acts as a very desirable, gently-exhilarating cordial. As such the physician is bound to use it in furthering the usual efforts of his noble art.

Confidence is eminently important in the administration of remedies, and is frequently an essential element in professional success. The effect of confidence between patient and physician has often exerted a most happy reciprocal influence. The patient, placing implicit reliance on the skill of his physician, takes his prescriptions with unwavering faith in their efficacy. The physician, assured that such is the state of his patient's mind, feels that the disease he is contending with is shorn of half its danger. And if all this be so, how pernicious must be a lack of confidence between parties such as these?

The "*medicine man*" of the North American Indians, whose exploits are so graphically delineated by Mr. Parker in his jour-

nal, published a few years ago, effected nearly all he hoped to accomplish by availing himself of the confidence of his patients. And the astonishing success of *bread pills* in the cure of diseases held to be almost beyond the reach of art, is accounted for on the same principle. This, too, lies at the foundation of nine-tenths of all the wonderful exploits of mesmerism, homœopathy, and hydropathy. I know a most respectable and influential minister of the Gospel, who, though a very intelligent and well-informed man, was a warm advocate of the powers of the *infinitesimal* system of practice. It so happened that he was taken, as he believed, very ill, soon after retiring to bed, and, as he feared, without a particle of his favorite medicine in the house. Some domestic remedy was administered, but with no good effect. His wife, who understood her good man's constitution very well, and who had no love for homœopathy, told her husband that she would make diligent search for some of those little invisibles of which the parson was so fond. She set about forthwith to prepare the wished-for medicine, using in the process a little sugar and flour and so forth. The resemblance to the genuine article was capital; and presently the overjoyed wife returned to the sick chamber with the treasure. The confiding husband, not doubting that he was once more about to enjoy the delight of his heart, swallowed the portion with avidity, and presently fell into a sound sleep which was not interrupted until the clear light of morning burst on his vision. "Why, wife," said he, "I never had such a delicious night's rest in my life. I love homœopathy more than ever."

Some forty-five or fifty years since, a man who was known as the Dutch Root Doctor was the lion of the day in Philadelphia and the region round about. He poured all his medicine, for all sorts of patients, out of the same huge vessel, but excited interest and confidence by making numerous inquiries, noting down the name, sex, age, and disease of each patient, and labeling the bottle furnished to each accordingly. A clergyman of high distinction, and so liberally educated as to be professor of belles lettres, dismissed one of our most learned and respectable physicians, who had been treating a daughter for pulmonary consumption, and put her under the care (if that term be not a misnomer) of the Dutch Root Doctor. It need not be told that the scene soon closed. There was confidence enough at work in this instance, but it was in the *wrong* place, and altogether *out of* place.

The last controlling influence to be named in connection with the operation of medicines, is the variable condition of the body in the progress of disease. My meaning will be sufficiently explained presently. It is easy to conceive that a variety of circumstances, in the progress of disease, may conspire to render a me-

dicine of but little advantage at one time that is obviously useful at another period. Thus it was remarked long ago by Sydenham, that, although an active cathartic may do good before an ague and fever is checked by tonics, yet if it be administered directly or soon afterwards, the ague will, in all probability, be reproduced. The reason of all this is abundantly clear.

A blister may be very proper to arrest febrile action; but if it be applied when the system is much above or much below the blistering point, it does positive mischief, or fails entirely to excite action in the cutaneous vessels. If bleeding or purging be interposed, the blister will produce the desired effects. So, also, of the use of opium in dysentery. It is a good or bad medicine according to circumstances. If proper depletion be first resorted to, and the bowels freely opened, an opiate will act well. If these preliminaries be neglected, an opiate will do mischief, excepting in the advanced periods of the disease. The governing maxim in this, and in all other diseases, should be to treat the case not in reference to the name of the disease, but according to the existing state of the system as developed by the pulse, skin, tongue, countenance, the excretions, &c. &c. For want of attention to this cardinal principle in medicine, our books are filled with contradictory statements touching the efficacy of almost every important article of Materia Medica. While physicians all over the country have their panaceas and stereotyped prescriptions, we know of none. It is a settled principle with us, that every case of disease has to be treated according to its own character, and that a remedy or plan which might suit very well now would not be proper six months hence in a disease called by the same name and regarded by many as exactly the same. As the nature of diseases is a subject of constant change in many respects, we are precluded from the adoption of any uniform plan of treatment. We are, therefore, vastly more dependent on sound judgments than on retentive memories in the successful discharge of professional duty. Yet how many practitioners are there who seem to have no more use for judgment than if they were born with the entire lack of this important element in the mental constitution! They appear to regard the human system as a mere machine, moved only by external appliances, independently of the vital forces that modify and control all its actions. This subject has interest enough to justify a copious volume dedicated to its exclusive consideration.

The reader may have anticipated a full history of the principles of *homœopathy*, as related to the *modus operandi* of remedies. It is our purpose, however, to notice the subject with all possible brevity. There is so much of the inexpressibly ridiculous in the peculiar vagaries of Hahnemann that it would be a waste

of time to enter into details. Hippocrates had adopted the position that *contrary diseases are cured by contrary remedies;* and as the German innovator felt himself called upon to direct his efforts at the great source of medical truth, he chose for his motto the direct opposite, viz., that *similar diseases are cured by similar remedies.* Another peculiarity of this dreamy system is the *pathogenetic*, or *disease-producing power* of medicines, in virtue of which it is assumed that a medicine, in order to be able to cure a disease, must have the power, in augmented doses, of causing precisely the same disease. Thus it is asserted by Hahnemann that he induced fever and ague in his own person by taking large doses of Peruvian bark; "and we all know," says he, "that bark given in small portions is the grand remedy for intermittents." In like manner, he avers that the common itch may be set up by very large quantities of sulphur, while in moderate quantity it will infallibly cure the itch. And, surely, all this looked very much like a fair and honest statement. But the celebrated Andral resolved to test the position thus supposed to be established; and he therefore performed a series of experiments which resulted in the total disproof of Hahnemann's plausible statements.*

The practice of this deluded man has been called *infinitesimal*, because it is fairly inferable, from all he has said, that doses divided and diminished *ad infinitum* are thereby augmented in efficiency. What else can be deduced from fluid mixtures holding in solution a hundred-millionth part of a grain in every sixty drops; or from the boasted value of the millionth of a grain of common salt; or from the devotion of thirty-five printed pages to show the mighty efficacy of the millionth part of a grain of charcoal? The almost infinite increase of power, resulting from unlimited trituration and dilution, is a feature of the system equally ridiculous, and yet it is insisted on with unyielding tenacity.

* The disciples of Hahnemann occasionally prove false to their cherished infinitesimality, and feel constrained by the force of circumstances to concede the folly of the system. A few years since, the wife of a clergyman in this city was under the care of the Magnus Apollo of the small-dose practitioners. The case was of long standing, and, no doubt, the patience as well as medical resources of the doctor underwent a severe trial. A few weeks prior to the lady's decease, her husband, looking sideways at the paper on which his physician was writing something as the result of long study in the easy arm-chair, discovered one or two noted articles of the so-called allopathic school. Taken by surprise at this strange procedure, he paused in his walk to and fro, exclaiming, "Why, Doctor, are you not prescribing articles belonging to the old school of physic?" To which it was responded that he had actually exhausted all his own stock, and felt disposed to try a little allopathy. "Oh, sir, if that be the case," said the parson, "I prefer to select my own physician, and therefore you may withdraw. I sent for you as first in homœopathy, but now I shall call for the first in allopathy." This fact is undeniable. Besides, there are scores of individuals in Philadelphia who by turns, as the whim moves them, vibrate from homœopathy to allopathy, not once, but often.

Were the position true, that the strength of a fluid mixture was augmented by dilution, then, beyond all doubt, an ounce of laudanum poured into the head of the Allegheny should narcotize every individual who drank of the water of the Ohio, down to where it empties into the Mississippi; and the fish, too, of that noble stream, could not fail to be destroyed by the poison.

But while we condemn, as we do, the childish nonsense of the almost invisible doses of Hahnemann, we are free to censure with unsparing denunciation the opposite extreme, as we and others have witnessed it in the South and West. And preposterous as have been the delusions of the infinitesimal system, it merits a passing commendation for the good it has accomplished, in wholly abolishing, or greatly abating, what has been termed the *mammoth-dose* practice. The tablespoonful doses of calomel, we fondly believe, have been administered for the last time; and we doubt not that he who would speak of them fifty years hence would forfeit, in some measure, his standing as a man of truth.

In the compounding of medicines the apothecaries' weight is generally employed in this country. We give the usual tokens for a pound and its diminutives.

1 pound,	or ℔i,	or 12 ounces,	or 5760 grains.
1 ounce,	or ℥i,	or 8 drachms,	or 480 "
1 drachm,	or ʒi,	or 3 scruples,	or 60 "
1 scruple,	or ℈i,	or . . .	20 "
½ scruple,	or ℈ss,	or . . .	10 "

The following are among the more important abbreviations commonly employed in writing prescriptions:—

Ci, or cong. i, or congius 1, or 1 gallon,	contains	8 pints.
Oi, or oct. i, or octarius 1, or 1 pint,	"	16 fluidounces.
℥i, or oz. i, one ounce,	"	8 fluidrachms.
ʒifl., or one fluidrachm,	"	60 drops.

Gr. i, denotes one grain.
Grs. ij, denotes two grains.
M frequently stands for drop.
Minim " "
Gtte., goutte, gouttes, drop, drops.
Cochleare magnum, a tablespoonful.
" minimum, a teaspoonful.
" medium, a dessertspoonful.

Possibly some of my readers may be disposed to say that this book should have been called a Dispensatory. But, having the christening in my own hands, it has seemed good to me to give it the title it bears, and, as I think, most appropriately. If a Dispensatory be not a work on Materia Medica, why is it made a text-book by professors, who teach this department of medical science?

The fact is too palpable to be misunderstood by men of sound common sense, that a good Dispensatory cannot be a bad exhibit of Materia Medica; and it is equally manifest, that a well-digested work on Materia Medica and Therapeutics, even though alphabetically arranged, cannot be a serious hinderance to the study of the teachings of a Dispensatory. Vastly fond am I of judicious and real distinctions; but I confess that I have no special regard for a distinction that hardly implies a difference.

MATERIA MEDICA AND THERAPEUTICS.

In conformity with the plan marked out in the Introduction, I am to speak of the various means resorted to for the prevention, palliation, and cure of disease,—saying as little as may be desirable touching their botanical, natural, and chemical history, but dwelling on their therapeutical and toxicological relations so fully as not to exhaust the patience of the reader and yet to win his interest in the subject. And, as this is to be done in the order of an alphabetical arrangement, it will be expected that I shall conform to custom, and name first in the series the well-known source of the familiar article called *Burgundy pitch*, viz., the Abies Excelsa, a species of pine. It is clearly of no importance to dwell on the peculiarities of this tree, because our business is with the pitch, and not with the vegetable source of it. Nor is it needful to consume time with any special description of the product named, since everybody is familiar with it.

My chief reason for noticing it here refers to its very extensive use during the prevalence of Asiatic cholera in the West. That disease may revisit this country, and hence the importance of attending to the prominent traits of domestic as well as of scientific practice that obtained during its prevalence.

How the use of pitch plasters originated I know not; but it is certain that many thousands were manufactured in various sections of the country, and worn as a preventive of the dreaded malady. No doubt the application of them to the epigastric region was based on the general belief that the disease commenced in the stomach, and that by irritating the skin over that organ the evil would be averted. Nor will I say that such may not have been the effect of the plaster in some cases; yet I felt confident that the remedy not unfrequently accelerated the morbid development. In persons of high nervous irritability, the irritant action of the pitch on the skin served only to augment the nervous disquiet of the patient, and thus tended to give rise to the

diseased action which the application was designed to prevent. Cases of this kind came under my notice in 1832; and, therefore, as soon as I could learn that a man of the above temperament had a plaster over his stomach, and found him exceedingly anxious and fidgety, my advice was promptly given for its removal, and with good effect.

The Burgundy pitch plaster is often of service to females who complain frequently of weakness and some pain in the lumbar region. It gently stimulates the surface, excites a pleasant glow, and gives a mechanical support to the parts. It may be made more irritant by mixing with the melted pitch a small quantity of powdered Spanish flies, and thoroughly incorporating them. Half a drachm of the flies to an ounce of pitch will make a proper mixture.

Many of the plasters made in 1832 were spoiled in the hasty efforts to prepare enough to meet the demand. The pitch was actually decomposed, and its adhesive and other properties thus destroyed by the intensity of the heat employed. Care should be taken to heat the ladle or pot in which the pitch is to be melted no further than to cause its complete fluidity, and this can be effected without altering its color essentially. It should be poured out on soft sheep-skin, or Russia sheeting, or thick paper, and instantly spread over the surface uniformly with a gently-heated spatula.

Absynthium. *Wormwood.*—The tops and leaves of the *Artemisia absynthium.* This plant is named here because it can be had in almost every part of the country, and is therefore cheap and well suited to many persons. It is a good tonic, and is esteemed by many as an *anthelmintic.* It may be given in cold or hot infusion, or decoction, or powder of the dried leaves, or in the shape of extract. The green leaves, gathered when the plant is mature, should be dried in a well-aired loft, and not by exposure to the sun. In the latter case its volatile oil is dissipated.

Acaciæ Gummi. *Gum Acacia. Gum Arabic.*—This is a spontaneous exudation from the bark of the *Acacia vera* of Africa, the gum of the *Mimosa nilotica*, and the *Sant* of the Egyptians. It is a low tree, of a hard, withered aspect, the stem being covered with a gray bark. As the gum exudes, it is semi-fluid, hardens by exposure, and does not lose thereby its transparency. As we get the article, it is inodorous; but when first collected it has a faint, peculiar smell. It is stated as a singular fact that the bark of the tree yielding this gum is quite astringent. On this account it has been employed in India in the process of tanning. The cherry and the plum tree barks, that yield a gum almost tasteless, are also astringent.

The best quality of gum Arabic has a very pale straw color, breaks with a vitreous fracture, is transparent, inodorous, insipid, and feels quite viscid in the mouth. It is generally received in this country in small, round, irregular lumps, of easy fracture. Analysis shows it to contain bi-malate and muriate of lime, muriate and acetate of potash, and some other matters.

Dealers in gum Arabic are familiar with two sorts that are often found in the same bale, and it is important that all purchasers, and especially physicians, should know something in this relation. The genuine gum has the properties already specified, while the gum senegal, so often in its company, is a dark-colored, yellowish-brown substance, with a rough or corrugated surface. The lumps of this variety are much larger and more globular than those of the pure gum, and very hard to break and pulverize. The pure gum is much more easy of solution in water than the senegal; it is also soluble in solutions of the pure alkalies, in lime-water, and the vegetable acids. It is insoluble in alcohol, ether, and oils. A few drops of solution of protonitrate of mercury added to a solution of pure gum, give a beautiful peach-blossom color. A solution of gum senegal treated in the same way, is changed to a bright red that becomes turbid in a few hours.

It is said, also, that if pure gum Arabic be rubbed with tincture of guaiacum, a blue color is evolved, changing gradually to a pale green, and finally to a deep blue. This is held to be the best test of the difference between gum and mucus. Alcohol added to a solution of gum Arabic causes a flocculent precipitate, but it coagulates mucus.

A concentrated aqueous solution of gum Arabic may be kept a long while, unless the weather be very hot, in which event it will ferment. A weak solution ferments speedily, and acetous acid is developed. Nitric acid changes pure gum into mucus or saccho-lactic acid.

The specific gravity of gum Arabic is 1.4. It is composed of oxygen, carbon, hydrogen, and nitrogen, so that it may be called, really and truly, a nitrogenized substance. The *nutritive* properties of the gum are well known, however much some theoretical men may have talked to the contrary. The poor natives of Hindostan consume it largely as an article of diet. I have known patients to subsist on it for months, and without any obvious loss of bulk or health. Some writers have actually denied that the gum can thus be employed, affirming that its bad effects on the tone of the stomach are soon developed. But in Haselquist's Voyages the story is told of a caravan of Abyssinians who would have starved but for the discovery of a stock of gum Arabic among their merchandise. On this a thousand persons subsisted for two months, and with no injurious results. In times of great

scarcity of food of the more ordinary kind, whole towns have been sustained by it. It is quite true that dogs soon perish if fed on gum exclusively; but it must be borne in mind that they are carnivorous, while man is an omnivorous animal.

Gum Arabic is properly classed with *Demulcents*, because of its softening, sheathing, soothing qualities. Dioscorides speaks of it as blunting the acrimony of various remedial agents, and we all know its power to sheathe the mucous coat of the stomach from the action of poisons. The demulcent property is further seen in its use in *gonorrhœa*, *dysentery*, *strangury*, *catarrhs*, and in *tenesmus* from any cause. The thicker the solution is the more obvious is its demulcent quality.

The solution of gum Arabic is often very useful as an enema in the *diarrhœa* of infants; but the irritability of the rectum is sometimes so great as to require the addition of a few drops of laudanum. As a general rule there is too little gum Arabic added to chalk juleps, which are so frequently administered in *diarrhœa* dependent on relaxation and debility. In place of two drachms to six ounces of fluid, a half-ounce may be usefully added. This quantity will more certainly insure a perfect mixture, and more effectually blunt acrimony, and so protect the mucous membrane of the bowels from greater derangement.

The most recent application of the solution of gum Arabic is to *burns and scalds*. The solution is applied by means of a soft brush over the whole surface, and this is repeated until a complete coating is secured. I have no doubt it will prove a good expedient, and should be tried whenever the article is at hand, just at the moment when such an accident occurs. It seems to me that its action is not unlike that of *Collodion*, which article the reader can consult. (See *Edinb. Med. and Surg. Journal*, Oct. 1842.)

In compounding oleaginous prescriptions, and occasionally those of a resinous quality, we can hardly dispense with gum Arabic. It is just such a bond of union as opposite articles like oil and water seem to call for. We commonly resort either to the powder or mucilage of the gum for this object. Independently of this auxiliary, it would be difficult to prepare a neat castor-oil mixture, or one that would be readily swallowed. If you triturate the oil with a good deal of sugar, you cannot combine the mixture with water so as to make a homogeneous mass; but if you employ gum Arabic also, there is little or no embarrassment.

The foreign books of practical medicine very frequently show us prescriptions containing the *mucilage* of gum Arabic, while in this country the *gum* is generally named, or rather its powder. The mucilage is readily prepared by adding four ounces of the fine powder of the gum, very gradually, to a pint of boiling water, and then rubbing the whole until perfectly blended.

When gum Arabic is adulterated with cherry gum, as is sometimes the case with the powder, it is not easy to form a good mucilage. Owing to the presence of *cerasin*, the proximate principle of cherry gum, it will be ropy. The surest way to obtain pure powder of gum Arabic is to pick out the best pieces of solid gum and reduce them by active trituration.

ACETUM. *Vinegar.*—This is the well-known product of the acetous fermentation, and needs no description.

Common vinegar was in use, as a remedy, very many years ago. It was once a popular means of arresting the *diarrhœa* and *night sweats* of pulmonary consumption. Here its effect depended on its astringency and tonic power. It has also been long in use as a cooling drink in *fevers*, and in *urinary affections* attended with a white sediment, consisting mainly of phosphate of lime and ammoniaco-magnesian phosphate. Its astringency makes it a good addition to gargles, and even alone it is often a good wash for the throat. It is also frequently applied externally, as by sponging, in various *febrile affections*. Injections of cold vinegar are given successfully in cases of *uterine hemorrhage*. Generally speaking, the undiluted vinegar is employed in these cases.

Vinegar saturated with common house salt has been very beneficial in *dysentery* and *scarlatina maligna*. A large tablespoonful of the mixture is added to four of hot water, and of this the patient should take a tablespoonful, as hot as may be, every two or three minutes, till the whole is consumed. Mr. Atkinson, surgeon, of Westminster, England, speaks well of the use of vinegar in the treatment of *arthritic rheumatism*. He was led to try the remedy in cases in which colchicum and alkalies had totally failed, and especially when the digestive organs were evidently enfeebled and atonic. The patients had constant pain after eating or drinking, no matter how digestible the articles might be in other persons. The cases were chiefly old persons, or those of middle age injured by dissipation. The common prescription was the following:—

℞.—Acid acet. ℥i;
Tinct. jalap ℈i;
Tinct. cort. aurant. ℥i;
Misturæ camph. ℥ss.
Mix and take twice a day.

The quantity of acetic acid may be reduced or enlarged, according to its effects.

I have had no doubt that, in these cases, the alkaline treatment had actually induced that state of atony which favors the secretion of depraved acid matter, and that the acid prescription

proved a happy tonic to subdue the gastric debility. (See *Lond. Lancet*, 1847.)

At a meeting of the "French Academy of Medicine," held in November, 1849, two cases of strangulated hernia were reported by Dr. Poggioli, in which the return of the bowel was effected by the internal administration of vinegar.

One of the oldest applications to *burns* and *scalds* is common vinegar; and in lieu of other means it deserves a trial. It is said to give prompt relief, but it is desirable to continue the application for several hours. A brewer by the name of Cleghorn found it so uniformly successful that he wrote a volume on its merits.

In preparing the spiritus mindereri, vinegar is often employed, and very properly. The only objection to it here is the discoloration of the mixture, growing out of the impurity and dark color of the vinegar, which can be readily met by substituting distilled vinegar or acetic acid.

What is called *Distilled Vinegar* is a purer article than the common vinegar, because the process of distillation does not send over the grosser and more impure particles. Its properties are the same as those of common vinegar.

Acetic acid is a still purer product, and is variously obtained. It is the radical acid of vinegar, and of course is much more concentrated. It is colorless, transparent, and fragrant, and is a better article than common or distilled vinegar for making prescriptions. Its therapeutic properties, however, are pretty much the same as those of ordinary vinegar. In addition to the properties alluded to, acetic acid is held to be a *vesicant*. If the strongest acid be applied to the skin by means of compress and bandage, it will induce vesication. The time requisite will vary, according to individual peculiarity, from fifteen minutes to an hour. It is also possessed of *escharotic* power. Thus, if *corns* or *warts* be pared close with a sharp knife, the remaining excrescence will be removed in a few days or weeks by the daily application of the strongest acetic acid.

Pyroligneous acid is another form of vinegar that deserves notice. It is obtained by the destructive distillation of wood, has an empyreumatic or burnt smell, and is of a dark, tarry color, unless purified by a second process. From this acid, thus obtained, a very large quantity of acetic acid is procured by saturation with lime and the subsequent decomposing energy of sulphuric acid.

In addition to the properties usually assigned to vinegar, this acid is decidedly *antiseptic*, and as such has been much employed in medical and surgical practice. The pure article, or diluted

with a fourth part of water, applied to an offending surface, corrects the odor, and sometimes destroys it entirely.

One of the earliest uses of pyroligneous acid was in the treatment of *excoriated nipples*. Dr. Bucharest introduced the practice, and directed the acid to be mixed with an equal quantity of the white of egg. The mixture should be brought in contact with every part of the excoriation by means of a small camel's-hair pencil, and repeated morning and evening.

Tinea capitis has also been successfully managed by the use of this acid, the scabs having been removed by the application of a soft bread and milk, or mush poultice. The acid is then applied to every part of the diseased scalp with a short shaving-brush. Two or three applications have sufficed, where attention was paid to the general system. This is absolutely essential, in all efforts to cure skin diseases wherever located. Indeed, the cases are not few in which these affections have yielded to constitutional measures, unaided by local appliances. And the reason why some cases continue to be troublesome for months and years is simply the neglect of the general system, while the physician tries every prescription that has been advised, for the *local* affection.

Dr. Babington speaks in high praise of the good effects of pyroligneous acid as an application to common *ringworm*. The daily use to the part, for a week or ten days, has generally sufficed. Here, too, it is often necessary to correct the condition of the digestive organs by emeto-cathartics.

We spoke of the antiseptic powers of this acid, and remark that this property led to its use in *scarlatina maligna*. An ounce of the acid, four ounces of water, and a half ounce of simple syrup, constituted the mixture, which was employed as a gargle as frequently as was practicable. The offensive odor of the ulcerated throat is thus corrected, and healthful action promoted locally as well as in the general system. Dr. Barth, of Nuremberg, introduced this practice; and it is often a good one, and merits more attention than it has yet received.

A word as to the poisonous nature of vinegar, acetic acid, and pyroligneous acid, will not be out of place. All may exert a poisonous influence. The actual result will depend very much on the peculiarity of each case as to constitution, habits, &c. Whenever an amount of suffering is realized so great as to warrant the suspicion of poisoning by either of these agents, magnesia should be given freely, suspended in water or milk and water. The design is to neutralize the acid matter, and thus to arrest its injurious action. The stomach-pump may be employed, at the same time, with advantage.

In addition to what has been said of the injurious agency of

vinegar, we may add that its tendency to produce leanness is proverbial. Nor are we prepared to say that all young girls who take it, to subdue obesity, are seriously injured by it. It is proper, however, to quote the following case, recorded in the *London Medical Gazette*, vol. ii. 1838–9:—

"A few years since, a young lady, in easy circumstances, enjoyed good health, was very plump, had a good appetite, and a complexion blooming with roses and lilies. She began to look upon her plumpness with suspicion,—her mother being very fat, and she afraid of becoming like her. Accordingly, she consulted a woman, who advised her to drink a small glass of vinegar daily; the counsel was followed, and the plumpness soon diminished. She was delighted with the success of the remedy, and continued it for more than a month. She began to have a cough, but it was at first dry, and regarded as a cold, that would subside. But, from being dry, it was presently moist. A slow fever came on, with difficulty of breathing; her body became lean, and wasted away; night sweats, with swelling of the feet, succeeded; and a diarrhœa terminated her life. On examination, all the lobes of the lungs were found filled with tubercles, and somewhat resembled a bunch of grapes."

In addition, we may add that various writers have asserted that the long-continued use of vinegar, in full doses, will set up chronic diseases of the gastro-intestinal mucous membrane. Morgagni says he knew it to induce a scirrhous state of the pylorus, with fatal issue.

Medical men should be fully aware of these statements, and be prepared to give proper advice. It is as important to know how to prevent poisoning as to arrest its march or palliate its consequences.

There is but one well-authenticated case on record, so far as I know, of the fatal action of acetic acid swallowed in large doses, and that is detailed by M. Orfila. The following statement shows that very large quantities of vinegar will also set up the symptoms of irritant poisoning. It is taken from the *British American Medical Journal.* The subject was a widow, with four children, who took, as near as could be ascertained, over a pint of common vinegar. The reporter states that she had been low-spirited for two or three days in consequence of a sore disappointment, and then adds as follows:—

"When I saw her, about three hours after she had taken the vinegar, she was in bed, covered with a cold perspiration, and trembling from head to foot, and apparently alarmed at everybody and everything about her. Her breathing was very laborious and hurried; her countenance perfectly wild, and the pupils dilated; the tongue was dry and cold; pulse ninety-six

and full; the abdomen much distended, with extremely acute pain at the *scorbiculus cordis*, so much so that the slightest pressure there caused her to shriek out. She did not know any one about her, not even her own children; nor had she any recollection of anything that had happened from the time of taking the vinegar, which was about eleven at night, not even of her having gone to bed, which she was the last in the house to do. About one o'clock the inmates were all awakened by her shrieking for cold water, of which she had drunk an enormous quantity before I was called to see her. There was not any pain, heat, or constriction of the throat or fauces, but there were slight efforts to vomit. Having procured some sulphate of zinc, I gave her two scruples in a cup of water, which soon produced full vomiting with great straining. I had then to leave her, but ordered full and repeated doses of carb. magnesia till I could see her again, which I did about six hours after, and found her much relieved, and only complaining of headache, which left her after the operation of a dose of castor oil. Two days after she was taken with a slight attack of continued fever, but is doing well."

Acidum Benzoicum. *Benzoic Acid. Flowers of Benzoin.** This acid is seen in white, shining scales, inodorous when pure, but generally having rather an empyreumatic odor. The taste is pungent, and of a bitterish sweetness.

Benzoic acid is readily obtained from *gum benzoin* by heating the powdered gum on a metallic plate and preventing the escape of the vapors by means of a paper cone. The acid adheres to the inside of the cone.

The gum has been employed occasionally in medical practice. The fumes arising from the heated powder are inhaled advantageously for the relief of *colds*, and sometimes this expedient has been thought beneficial to persons laboring under *pulmonary consumption*. The same use of the gum has been successful in a case of *aphonia*, as we learn from *Braithwaite's Retrospect*, part xvii. p. 93. Asthmatics have been frequently relieved by the same kind of inhalation.

This gum is the product of the *styrax benzoin* of the Island of Sumatra, and is extracted by means of incisions into the bark of the tree.

The benzoic acid (or flowers of benzoin) enters the composition of the tinct. opii camphorata (paregoric or asthmatic elixir) partly because it augments the expectorant quality of the medicine, and partly because it improves the sensible qualities of the compound. It is unquestionably a good ingredient.

* Benzoin enters largely into the composition of Pagliaris's mixture for the arrest of hemorrhage. (See art. *Hæmostatic.*)

The chief use of benzoic acid in practice is in diseases of the urinary organs. In the *Medico-Chir. Review* for October, 1842, we find an account of its successful exhibition in urinary disorders, with frequent desire to make water, and a sandy and mucus sediment in the urine. These cases are seen most commonly in old men who labor also under enlargement of the prostate gland. The prescription usually employed is thus :—

℞.—Acid, benzoic ℥i;
Copaibæ ℥ss.
Mix, with addition of the white of an egg, and add the mixture to
Mist. camphorat. ℥vij.

The dose is two tablespoonfuls three times a day. In *Ranking's Abstract*, No. 6, p. 209, is a case of *incontinence of urine* in a girl aged fourteen, cured speedily by this acid. Two drachms were made into forty pills, four of which were taken night and morning. The acid is, therefore, held to be *diuretic* as well as *expectorant*. Dr. Ure read a paper before the *Royal Medical and Chirurgical Society*, to show the value of benzoic acid, in twenty-grain doses, to prevent the formation of concretions in gouty subjects, especially those which are apt to be located in the joints and bursæ. (*Braithwaite*, part iii. page 56.)

A preparation called *benzoin water* has been praised, for an irritable state of the mucous membranes in all cases where there is tendency to *earthy deposits*, and especially when such deposits consist chiefly of *lithic acid*. This water is made of benzoate of potash, biborate of soda, of each fifteen grains, bicarbonate of potash half a drachm, and sixteen ounces of distilled water, well mixed, and carbonic acid gas forced into it. (See *Med.-Chir. Rev.*, April, 1844.)

Acidum Carbonicum. *Carbonic Acid.*—We do not intend to notice the chemical history of this agent, excepting incidentally. It abounds in nature, combined and uncombined, and is largely evolved by all breathing animals. We take large quantities of it into the stomach in porter, cider, beer, and other drinks; and its peculiarly grateful qualities in the stomach are well known, in reference to the use of Seltzer water and all highly-carbonated drinks. The insipidity of water after boiling is owing to the expulsion of its carbonic acid gas; and when porter is said to be flat, it is so because its carbonic acid gas has escaped. All our effervescing draughts owe this property to carbonic acid, and we form them readily by adding to a watery solution of a bicarbonate (soda or potash) a small quantity of lemon juice, or vinegar, or tartaric acid.

Carbonic acid is an active ingredient in yeast, that has been so successfully employed in *low fevers*. A tablespoonful of fresh yeast given every hour not only calms the irritable stomach, but

acts as a gentle stimulant to the whole system. The *yeast poultice*, applied externally to foul ulcers, acts in part by reason of its carbonic acid. Two or three tablespoonfuls are mixed with an ordinary poultice of bread and milk, and applied night and morning, or oftener. It is decidedly antiseptic and stimulant.

A writer in *Tilloch's Magazine*, vol. i., affirms that carbonic acid gas thrown up the rectum has been a very valuable remedy in fevers which he designates as *putrid;* the injection being aided by the internal use of Peruvian bark. More recently, carbonic acid gas has been injected into the vagina, for relief of *dysmenorrhœa*. The gas was conveyed by means of a flexible tube into the vagina, from a bottle of water highly charged with the gas. The bottle was dipped into hot water, and the stop-cock of the tube turned so as to allow the gas to escape. Pereira reports a very interesting case of a lady cured by this remedy, which is supposed to act as a direct sedative.

Many years ago Dr. Priestley applied carbonic acid gas to *irritable ulcers*, with happy results. In 1795 Ingenhouz announced that a stream of the gas directed on an open *cancer* very materially relieved the pain. In *phthisis pulmonalis*, with great irritability of the lungs, diluted carbonic acid gas, taken by inhalation, often acted as a palliative, and it deserves further trial in this relation.

The inhalation of carbonic acid gas formed in the combustion of charcoal in a close apartment, is a frequent cause of fatal asphyxia. In addition to carbonic acid gas there is also evolved a considerable quantity of carbonic oxide gas, both of which act prejudicially. The burning of the charcoal not only consumes nearly all the oxygen of the atmospheric air, which is essential to animal life, but this pernicious result is magnified by the formation of non-respirable gases, not only not diluted, but rather concentrated. Persons actually dead, under this influence, present the following appearances, viz., livid spots over the body; the tongue protruded and grasped by the teeth; a sleep-like aspect, resembling that of a person in a profound slumber; congestion of the cerebral vessels, amounting to apoplexy, attended frequently with effusion into the ventricles of the brain.

When life is not extinct, the body should be carried out of the room to the open air, cold water dashed over the surface, external irritants applied to the extremities, and the lungs inflated with common air or diluted oxygen gas.

Acidum Citricum. *Citric Acid. Lemon Acid.*—It is sometimes called concrete acid of lemons, and salt of lemons. It is found in the squill, cranberry, whortleberry, &c., but most abundant in limes and lemons. In the squill and some other vegetable substances the acid exists in a combined state, and hence a diu-

retic action results which is not observed in the use of the free or uncombined acid.

Citric acid is prepared by adding powdered chalk to lemon juice to saturation. The resulting compound, viz., citrate of lime, is decomposed by sulphuric acid, which unites with the lime and sets the citric acid free. This latter is then decanted, evaporated, and crystalized.

Pure citric acid is semi-transparent, slightly deliquescent, and hence to be kept in close vessels; the taste is intensely sour, rather acrid, and even somewhat caustic. With care it can be kept for an indefinite length of time.

A solution of citric acid and water, equivalent to lemon juice, may be made by dissolving nine and a half drachms of the solid acid in a pint of water. This preparation answers equally well with lemon juice to make effervescing draughts. The carbonated alkali is decomposed, a citrate is formed, and carbonic acid gas evolved. The following is a very convenient and efficient mixture for the relief of nausea and vomiting:—

℞.—Bicarb. sod. or pot. ʒss;
Aquæ ℥i.

Mix, and add a tablespoonful of lemon juice, or fifteen grains of citric acid dissolved in a tablespoonful of water. Free effervescence ensues, and the mixture should be swallowed instantly. The copious evolution of carbonic acid gas in the stomach relieves the nausea promptly.

The high price of citric acid, contrasted with the cost of tartaric acid, leads to adulteration. The fraud can be detected with a little difficulty. Dissolve a drachm of citric acid in a tumbler of water, and the same quantity of tartaric acid in another. Add to both a strong aqueous solution of potash, and the difference will soon appear. The potash added to excess to the citric acid gives no precipitate; with the tartaric acid it forms a copious white precipitate, which is cream of tartar or bitartrate of potash.

Citric acid has long been regarded as a useful preventive of *scurvy*, and is also employed as a curative agent in the same disease. Blane and others think the pure acid less valuable in this regard than the juice of the lemon, because the latter contains vegetable mucilage, which is absent in the citric acid.

Large doses of lemon juice have been successfully employed in the treatment of *fevers*, as the reader will learn by reference to the article *Aqua*.

I name another use of citric acid or lemon juice which may seem to some persons a little paradoxical, viz., for the cure of *acidity of stomach*. I have proved its efficacy in my own person,

and also in the cases of others. After having tried all kinds of antacids in vain, I have found strong lemon acid to give very prompt relief.* The explanation is thus: a depraved state of the mucous membrane lining the stomach, dependent on loss of tone, is one of the sources of acidity. The atony must be subdued and overcome by an appropriate tonic. This is often found in the lemon acid or juice.

Since the preceding remarks were written, I have met with a similar statement from the pen of Dr. Tracy, of Ohio, in the *American Journal of Medical Sciences*. Like myself, he was long troubled with gastric acidity, and, after vainly trying all ordinary means, was cured by lemon juice. I stated the practice in my lectures on Materia Medica several years ago, and noticed the fact, also, that persons with stomach and bowel derangement depending on excess of acid were sometimes accidentally cured by draughts of sour buttermilk.

The following mixture is a very good one for making lemonade for invalids when lemons cannot be procured:—

Take powdered citric acid, an ounce and a half;
White sugar, a pound;
Oil of lemon, five drops.

Rub these well together, and the mixture will keep for years, if moisture be excluded. A teaspoonful dissolved in a pint of water will instantly make a good lemonade.

The essential oil of lemons has been employed in the treatment of *subacute ophthalmia*. The oil, applied by dropping into the eye, or the juice forced out of a lemon-skin into the eye, or the aqueous solution of citric acid, will frequently meet the case. This practice was first noticed in the *London Med. and Phys. Journal* for July, 1833. The action is, probably, *counter-irritant*, and often useful in abating the severity of *pruritus*.

Hospital gangrene has been successfully managed with lemon juice and chlorine. Jobert was the first to employ this compound. Roux afterwards tried it in the Hôtel Dieu. Lemon juice is first dropped into the wound, and a pledget of lint soaked in chlorine water placed over it. In a few days the parts present a clean and healthy aspect. (See *London Lancet*, Oct. 1845.)

Pure citric acid, or undiluted lemon juice, taken in pretty large doses, may develop poisonous symptoms, especially in those who have the gouty diathesis. Severe spasms are often thus excited, which call for the immediate exhibition of a solu-

* And now, seven years after the above was given to the press, it is my surest method of relief, for gastric discomfort, to bite off the end of a lemon, and suck occasionally from it, so as to consume the whole in a few hours.

tion of bicarbonate of soda or potash. The acid is thus instantly neutralized.

ACIDUM GALLICUM. (See *Galls.*)

ACIDUM HYDROCYANICUM. *Hydrocyanic Acid. Prussic Acid.*—The present correct name grew out of the well-ascertained composition of the acid, viz., hydrogen and cyanogen. The old name had its rise in the fact that Prussian blue, or some of the prussiates, contained this acid. It exists in many vegetable substances, and gives them their peculiar and valuable properties. The bitter almond, peach kernels, peach leaves, wild cherry, &c., contain the acid. Laurel water was known, a long while ago, as a poisonous article, and it was employed as a remedy in pulmonary consumption before it was known to contain a particle of Prussic acid.

Pure hydrocyanic acid is colorless, but it is apt to acquire various shades of blue and green by careless keeping, especially by leaving the bottle open. Light alters the acid in this respect, and hence it should be kept in tight and opaque bottles. The strong acid is characterized by an evident peach-blossom odor, and this is frequently observed in dissecting bodies after the fatal action of the acid.

The vapors, as well as the acid itself, are injurious. The mere inhalation sometimes induces severe headache, nausea, and vomiting. One drop of pure acid will speedily kill a large dog, if placed on the tip of the tongue or in the canthus of the eye.

What is called the *medicinal acid*, and sold as such in the drug stores, will keep longer than the concentrated kind; but both are liable to spoil. Various methods are in use for preparing the acid, all of which depend on the union of cyanogen and hydrogen in the proper proportions. It is not needful to detail them here. One may suffice, and we select it because it is the easiest process we know of. Dissolve, in a suitable glass vessel, two ounces of ferrocyanide of potassium (prussiate of potash) in eight ounces of pure water, and add an ounce and a half of sulphuric acid previously mixed with four ounces of pure water and allowed to cool. Place the whole in a retort and gently distil, collecting the product in a receiver kept cold by means of iced water. In the process some water is decomposed whose hydrogen joins some cyanogen of the ferrocyanide to form hydrocyanic acid. The oxygen of the water unites with some of the potassium to form potash, which combines with the sulphuric acid to form sulphate of potash.

The acid so obtained retains its qualities very well, and it is procured at little cost. It is a weaker acid than that which is got by the use of the cyanide of mercury.

We have noticed the difference between the *medicinal* acid and the concentrated acid in regard to preservation. But it must not be supposed that the former is of uniform strength; and every practitioner should bear this in mind. So great is the variety on sale that no precise or specific advice can be of use to the purchaser. On this account it is absolutely necessary, on procuring a fresh bottle, to begin with the minimum dose. A case is reported in which this rule was neglected, and the patient was killed by the first dose from the new supply, although she had been using the acid for several days. We are unable to decide the actual strength by the specific gravity test, and the method of Dr. Ure is too troublesome to be resorted to by most practitioners. That gentleman found that two equivalents of real acid dissolved exactly one equivalent of peroxide of mercury; of course, the weight of peroxide necessary to saturate the acid is four times greater than that of the acid itself. Hence, on adding any given weight of the mercurial to hydrocyanic acid till it can dissolve no more, we learn precisely how much real acid is present by dividing the weight of the peroxide taken up by four. This is a simple experiment.

We hinted at the effect of inhaling the acid, and may add that Dr. Reid saw a vigorous young man so much injured by smelling some diluted acid that the bottle fell from his hand and he remained insensible for nearly an hour.

Even the very dilute form of Prussic acid, as it exists in the cordial, *noyeau*, has more than once operated as a poison to a certain extent. In forming noyeau, the confectioners employ peach kernels largely, and these are known to contain the acid. In one of the oldest French books of pharmacy a syrup of peach leaves is spoken of as exceedingly valuable as an *expectorant;* and it is altogether probable that modified hydrocyanic acid was the efficient agent.

The acid, taken in large portions, kills with terrible rapidity. The case narrated in *Hufeland's Journal*, of a very large and powerful man falling dead instantly on swallowing the contents of a drachm vial, is often spoken of. He had been guilty of some violation of law, and, fearing its penalty, provided himself with the poison, which he swallowed the moment he was arrested. Dr. Thompson gives the case of a dog, so large as to be with difficulty placed on his lap for the purpose of fixing a drop or two on its tongue. The animal was dead before it could be put to the floor. So rapid is the fatal action that it can be detected in the blood in thirty-six minutes after it is swallowed—so says Krimer.

The poisonous action is not confined to the animal kingdom, but extends also to vegetables. The phenomena observed in

animals are somewhat peculiar. Thus, although vitality instantly ceases, the eyes continue open and seem to be animated as if life remained; and, although sensibility be entirely gone, on opening the thorax the heart is seen to beat feebly, and if the abdomen be opened some peristaltic motion is perceptible.

The symptoms of poisoning by Prussic acid are materially different from those which accompany the operation of other poisons. Stupor, numbness, sense of weight at the top of the head, yawning, drowsiness, vertigo, dimness of vision, flagging pulse, vomiting, hiccough, palsy of the extremities, and dilated pupils. The respiration is sometimes but little altered. In addition, the *death shriek* is named by some as a symptom that is almost invariably present just before death; but this is a fallacy, and entitled to no weight. In nine fatal cases, as reported, the alleged death shriek was not an attendant symptom. The smallest fatal dose of Prussic acid on record was nine-tenths of a grain of the anhydrous acid. The largest dose, with recovery, was two grains of the same acid.

Oil of bitter almonds and cherry laurel water act in the same way. Dioscorides poisoned wolves with oil of almonds, and a noted alchemist killed himself with laurel water to avoid detection and mortification.

Previous to a notice of the practical uses of hydrocyanic acid it is proper to speak of the therapeutic properties of *peach-tree leaves*, which contain the acid in a modified form. I regard this as decidedly the safest and best exhibition of hydrocyanic acid.

In the *Edinburgh Med. and Surg. Journal* for 1838, Dr. Anthony has published some excellent remarks on the medicinal application of the peach leaf. He regards it as decidedly *sedative*. He employed an infusion of the leaves in the *irritable stomach of remitting fever*, but does not name the mode of preparation. An ounce of leaves to a pint of water would answer; and the best plan is to bruise the leaves in a mortar, and pour the boiling water on the mass and let the mixture stand for an hour. The adult dose is a tablespoonful every half hour, or oftener. The fourth dose generally allays the symptoms, quenches the burning thirst, &c. Such is the relief afforded that the patient asks for a repetition of the dose, notwithstanding its unpleasant quality. Dr. Anthony applied the leaves remaining from the infusion on the epigastrium, in shape of poultice, with good effect. Dr. Slaughter, of Georgia, assured me that he relied very much on this infusion in the treatment of southern fall fevers, because of its anti-emetic property.

The same infusion is reported to have arrested vomiting

promptly in two cases of *cholera*, and to have been very serviceable in *cholera infantum*. Dr. Dugas found it a good medicine in *pertussis;* he gave a pint of the infusion daily in small doses.

Decoction of peach leaves has been very efficient in *urinary disorders*, more especially in *suppression of urine*. Dr. Bishop, of Kent, (England,) relates his experience with this medicine in the eighth volume of *Medical Facts*. He formed the decoction by adding an ounce of the leaves to a quart of boiling water, and reduced the whole to a pint by simmering over fresh coals. Of the strained liquor a pint was taken daily, and in from twenty-four to thirty hours the urine passed freely.

Touching the therapeutic uses of medicinal hydrocyanic acid we have not much to say that is very satisfactory. In its early history it did vast mischief, because it was made a kind of panacea, and was exhibited with very little discretion. Indeed, it is not hazarding too much to affirm that it did vastly more harm than good. And it is never a safe remedy excepting in the hands of very judicious and experienced practitioners. In addition to the variable strength of the acid, the fact of its floating on the surface of water has made it an unsafe medicine for general use. Its levity requires the shaking of the bottle before a dose is administered.

The dose of the medicinal acid for an adult is from one to five drops. It is best to begin with the minimum dose, and to increase gradually as circumstances may require. Sweetened water or a little syrup will answer very well as a vehicle for its administration.

Dr. Thompson speaks favorably of this acid in the treatment of *asthma* and *hooping-cough*. In the latter he regards it as the main dependence after free vomiting and purging. He insists on milk and vegetable diet, and the maintenance of a regular temperature in the patient's chamber. Dr. Marshall Hall, in his work on the *Practice of Medicine*, confirms the statement of Dr. Thompson. He regards asthma as a morbidly excited state of the true spinal nerves, and, believing that hydrocyanic acid acts by subduing that condition, he holds it to be one of the most prompt remedies. Dr. Dickson, in his book on the *Unity of Disease*, says that two drops of medicated hydrocyanic acid with a drachm of tincture of lobelia, added to the same quantity of infusion of roses, is one of the most effectual remedies that can be given for *asthma*.

Hydrocyanic may be regarded as especially fitted to influence the reflex spinal system, and by this means to allay *convulsive cough* and quiet spasmodic movement. It is very useful in *gastrodynia*, and appears then to act locally on the painful and

irritable nerves of the stomach.—Headland's *Action of Medicines*, p. 278.)

Notwithstanding the high laudation of this acid in *pulmonary consumption*, I am very sure, from much observation, that it has done vast mischief and seldom if ever any real good. It has often induced severe stricture of the chest, hemorrhage, and other untoward results.

One of the best uses of the acid is for the relief of high *irritability of stomach.* Elliotson has called special attention to its value in this regard. One or two doses, of a drop or two each, will frequently suffice to arrest a very distressing *vomiting.* It has been spoken of, also, as useful in some of the forms of *puerperal mania.*

In *pruritus* of the genital organs, in both sexes, a foreign journal declares that no remedy is comparable with this acid, in the proportion of ʒiss to ℥vj of strong alcohol, to be applied twice or thrice a day. From five to fifteen days will suffice to test its efficacy. It is well worth a trial, for the affection is an exceedingly troublesome one, and very difficult to control.

For the perplexing and almost intolerable *itching of erysipelatous* and *erythematous* eruptions, Dr. Thompson declares that no expedient is so salutary as a lotion of Prussic acid. This may be made by adding one or two drachms of the acid to a pint of water, to be applied three or four times a day. The strength of the lotion can be safely increased to suit special cases. Another lotion of the acid is employed by Thompson, made thus:—

℞.—Acid. hydrocy. ʒij;
Acet. plumbi gr. xvi;
Alcohol ℥ss;
Aquæ ℥viij. Mix.

This may be applied several times a day, and will generally arrest the itching, while it tends also to promote healthful action of the skin. It is employed not only in erysipelatous affections, but in those herpetic diseases which give so much annoyance by reason of the almost insufferable itching. I have found it a very useful lotion in my own person.

In all the cases of cutaneous diseases noticed, the acid is thought by many to act only as a sedative; but as it often sets np a new action, it is also held to be a counter-irritant.

A mixture has been employed advantageously as an expectorant, prepared with a drachm of the acid in a pint of pure water, in which an ounce and a half of white sugar has been dissolved. It is called the *hydrocyanic acid pectoral.* Care should be taken to shake the vial well before dispensing the mixture, as the acid will otherwise float on the surface.

It is well to name the use of the acid to destroy *tape worm*. It was employed successfully in the case of a child three years old, from whom some portions of the worm had passed. While straining to evacuate, some four or five inches of the worm were forced out beyond the verge of the anus, when the acid was instantly applied. The worm made violent efforts to recede, but it was speedily killed and an ell and half quickly expelled.

Dr. McLeod, an English physician, has recorded the fact, as witnessed by himself, that salivation and ulceration of the gums resulted in three cases from the use of the acid. This must be a very rare circumstance, as no one else has made mention of it.

The proper method of managing a case of *poisoning* with hydrocyanic acid next claims attention. And the first remark to be made is that no poision calls for greater promptitude. Whatever is to be done must be attended to instantly. True, there are peculiar cases in which the poison acts more tardily, but these are very few. As a general rule, not a moment should be lost by delay.

There is no proper antidote for this poison, in the true chemical sense, excepting *chlorine*. I therefore place it, as do all the recent nad best writers, at the head of the list of remedial appliances. The American "Fire King," as he was called, and similar buffoons in England, swallowed teaspoonfuls of the acid in the presence of their gaping admirers, with entire impunity, because they took proper doses of chlorine water, or other preparations of chlorine. In the same way dogs and other animals have been protected against the poison of the acid, given in fully poisonous doses. Even after the acid was administered, its fatal action was prevented by forcing into the dog's lungs the vapor of warm chlorine water. Orfila, who is fully competent to judge in cases of this kind, bears testimony to the value of the antidote. Its agency depends on the strong affinity of chlorine for hydrogen; it takes the hydrogen of the Prussic acid, and thus destroys its essential nature. If chlorine in any form can be had immediately, and introduced into the stomach and applied to the nose, it promises complete success. But if delay prevent its timely administration, it will be unavailing.

The most convenient mode of exhibiting the chlorine is in the form of the liquid chloride of soda. One or two drachms can be added to one or two ounces of water, and of the mixture a teaspoonful should be frequently given, added to sweetened water. The undiluted liquid chloride, taken up in a sponge, should be applied to the nose, so as to insure the inhalation of the chlorine gas as it escapes. The aqueous solution of chlorine will answer when it can be had.

Chlorine has been objected to because of its poisonous nature,

but this is idle. If we must reject remedies that have poisonous qualities there would be few articles of Materia Medica left that could be available.

In the absence of the chlorides and chlorine water, the *cold affusion* will be found a very useful remedy. It is not antidotal, certainly, though it is capable of meeting many cases of poisoning by hydrocyanic acid very satisfactorily; if so much vitality remain as to render reaction possible, cold water, made more cold by the addition of saltpetre or common salt, will rouse the latent energies effectually. It should be dashed freely over the head and spine and, indeed, the whole surface.

A few words on the *detection* of Prussic acid. It is very important for medical men to be able to determine with certainty the nature of the poison in this and other instances. That none may be discouraged in the effort at detection, it is proper to say that one part of acid mixed with ten thousand parts of water may be detected by the sulphate of iron. To this end add to the suspected fluid a little of the solution of sulphate of iron, and in a minute or two afterwards a few drops of a solution of pure potash, in order to decompose the sulphate and precipitate its oxide. Then expose the mixture to the air, and acidulate with a few drops of hydrochloric or sulphuric acid, so as to re-dissolve a portion of the precipitate. If Prussic acid be present it will combine with the peroxide of iron, and a deep blue will be struck, showing the formation of Prussian blue. Leuret and Lassaigne detected the acid in the folds of the bowels and stomach by cutting them into small pieces and putting them into a retort with some water and a few drops of sulphuric acid. A gentle heat being applied drives over the hydrocyanic acid in form of vapors, which are easily condensed in a receiver by means of ice or cold water. The product in the receiver is easily tested by the addition of a few drops of solution of sulphate of iron.

On opening a body dead from the action of hydrocyanic acid, a strong odor like that of peach blossoms is generally, but not always, perceptible.

The acid has rarely been detected later than seven days after death. Its easy volatility and decomposition insure its disappearance sometimes at an earlier period.

Acidum Hydrochloricum. *Hydrochloric Acid. Muriatic Acid. Spirit of Sea Salt. Marine Acid*, &c. &c.—The name *hydrochloric* is the only correct one, and it is so because it indicates the composition of the acid, viz., hydrogen and chlorine.

The acid when pure is transparent, colorless, emitting fumes when the bottle is opened that have an acrid, suffocating odor. The taste of the acid is exceedingly sour, even when largely diluted with water. We generally see the acid with a yellow tinge,

which is acquired in part from the iron vessels in which it is concentrated, and partly from the presence of some chlorine and nitric acid.

Hydrochloric acid is prepared from the muriate of soda (common salt) by the decomposing power of sulphuric acid, which liberates the acid in form of gas; and this, going into vessels containing water, is readily absorbed by that fluid. When the water is sufficiently charged with the gas, it becomes the hydrochloric acid under notice. It is, however, subsequently exposed to heat to concentrate it. One hundred grains of good acid will saturate one hundred and twenty-four grains of carbonate of soda.

Hydrochloric acid is usually called a mineral acid, and yet it is a natural constituent of animals, especially man, and might, therefore, be called also an animal acid. Owing to the sulphuric acid employed in making the hydrochloric, a slight trace of it may be detected by dropping into it a few drops of muriate of barytes. If the smallest portion of iron be present, it can readily be detected by means of prussiate of potash.

Hydrochloric acid has been employed in medical practice internally and externally. In the undiluted state it has been applied to *warts*, *corns*, and other excrescences, with success. Here it acts as an *escharotic*. It is also an ingredient in gargles for ulcerated sore throat and ulcers of the mouth; and in these cases it acts partly as an escharotic and partly by setting up a new action. It may be employed diluted with water only, or with the addition of honey, which makes it more efficient, thus:—

℞.—Acid. hydroch. ʒij;
Mel. opt. ℥ss;
Aquæ ℥iv.
Misce.

Sometimes we can most conveniently apply the acid on a small piece of sponge fastened to a stick of whalebone six inches long. Brought in contact with *ulcers* of the *mouth* and *throat*, it is frequently an excellent expedient. The *diphtherite* of Bretonneau has been successfully treated in this way.

Injections of very diluted muriatic acid have been resorted to in the treatment of *gonorrhœa;* for this purpose from five to ten drops are added to four ounces of water. But this mixture can hardly be proper, unless depleting measures have been adopted to reduce inflammatory action. Velpeau employed hydrochloric acid to *arrest salivation*. He applied the pure acid by means of a camel's-hair pencil, three or four times a day to the gums and other parts affected by the mercurial action. A pellicle forms on the parts, and the morbid action is arrested, so as to cease almost entirely at the end of two or three days.

Chilblains or *frost-bites* have been very happily treated with

this acid. The frosted parts should be made as clean as practicable, and then the whole surface be covered with the acid applied on a soft brush.

A writer in the *American Journal of Medical Sciences*, vol. xvii., asserts that hydrocloric acid largely diluted with water is an excellent remedy for *colic* induced by red lead; while sulphuric acid is successful in colic from white lead. The naked fact is stated, apart from any explanation.

Hydrochloric acid has long been in use as a stimulant and tonic in *malignant*, *typhus*, and *scarlet fevers*. The usual mode of administration was a mixture of one drachm with four ounces of water, tablespoonful doses being given every hour or two, according to circumstances. Paracelsus employed this acid in what were called in his day *putrid* fevers. When the mixture spoken of is given in *scarlatina anginosa*, it is not only taken into the stomach to affect the general system, but it is also gargled more or less, and so acts, locally, to advantage on the throat.

Dr. Paris and some others hold this acid to be an excellent medicine to prevent the formation of worms, as well as to dislodge them when actually present. The bowels must be well evacuated in the first instance, and then the acid should be given in an infusion of quassia. This compound is evidently a potent tonic, and may act as such, and also by some special quality of the acid itself. My son, Dr. B. Rush Mitchell, of the U. S. Navy, in a paper which appeared in the *Western Lancet*, suggested that worms were formed in the stomach when the natural hydrochloric acid was entirely absent. This is more than probable.

Hydrochloric acid is also exhibited in cases of copious *white sandy deposit in the urine*, depending on excess of alkaline or earthy matter. It acts by neutralizing the latter and establishing an acid predominance. In order to effect this it should be administered for several weeks. When it acts thus it is called *antilithic* and *lithontriptic*. The old doctrine is the doctrine of the present day, touching the entrance of this acid into the blood, not only when employed in urinary diseases, but whenever it is taken into the stomach as a stimulant and tonic.

The usual adult dose of the acid is from five to twenty drops in a wineglassful of water. The *diluted acid* of the Pharmacopœias is made by adding four ounces of pure acid to twelve ounces of water. One of the most agreeable vehicles for the exhibition of the acid is the infusion of roses.

Hydrochloric acid is also *antiseptic*. The dry salters of meat in England always add this acid to every barrel of meat intended for long voyages, because of its preservative tendency.

We notice briefly the *poisonous action* of hydrochloric acid. The acid gas is pernicious to animals and vegetables. Small animals die in it, even when diluted, very speedily. A lawsuit was instituted in Liverpool some years since, in which it appeared that horses, cattle, and men, in passing by a factory where the acid was manufactured largely, were seized with cough and difficulty of breathing. Here is evident irritation of the mucous membranes, and the acid is properly called an *irritant poison.*

The acid, swallowed in ounce doses, is decidedly poisonous. Orfila gives the case of a man thus poisoned, although he recovered under proper treatment. The antidotes are scraped chalk, whiting, calcined magnesia, or soap dissolved in water. A direct chemical union results between the acid in the stomach and these antidotes, and thus the poison is rendered inert. If neither of the articles named can be had, milk, whites of eggs, demulcents generally, may be given freely, after the stomach has been well evacuated.

ACIDUM NITRICUM. *Nitric Acid. Aqua fortis.*—These names are given to an article essentially the same, only varying very much in strength. The strongest nitric acid is the maximum of oxygenation of which nitrogen is susceptible. The pure acid is transparent and colorless. Exposed to the air, it emits suffocating fumes of reddish-brown color. A bottle of the acid unstopped absorbs moisture from the air, and, of course, it is thus weakened. It is exceedingly acrid and caustic, staining the skin of an indelible yellow, and staining clothing in the same way. A fluidounce, weighing eleven drachms and a scruple, will fully decompose an ounce of pure limestone. The pure acid is fifty per cent. heavier than water, boils at 220°, and freezes at 62° below zero.

Nitric acid is made from nitrate of potash by the agency of sulphuric acid, sulphate of potash being formed, and nitric acid liberated in the form of gas. The acid gas is passed into a vessel of water, which readily absorbs the gas and acquires acid properties. When newly made, the acid abounds in yellowish-red vapors, which are easily driven off by heat. Exposure of the acid to light changes it more or less. If a hundred grains of the acid neutralize two hundred and twelve grains of crystalized carbonate of soda, the inference is that the acid is very strong.

A fraction of sulphuric acid may be present in nitric acid by reason of its agency in the manufacture, and this can be readily detected by the muriate of barytes.

We shall notice this acid, as a therapeutic agent, in the following aspects, viz., as an *escharotic*, *epispastic*, *tonic*, *expectorant*, *disinfectant*, and as a *poison.*

As an escharotic it is entitled to more attention than it usually

receives. Its promptitude of action results, necessarily, from its decided power over animal tissue of every kind. Hence it has long been applied to *warts* and *corns*, and other excrescences. In these cases it is best to use the strong acid, because of the density of the parts and their insensibility. Its application to parts bitten by rabid animals is not quite so safe as some suppose. It may stimulate the absorbents to take up the poison, and so accelerate and secure its fatality. To old, foul, indolent ulcers, we may apply it very beneficially. The strong acid clears off the surface and sets up a new and more healthful action. It should be laid on by means of soft lint, or a hair pencil, night and morning, to be followed by a cerate cloth or soft poultice. Welbank and others speak very well of its use in *sloughing phagedenic ulcers*. Some surgeons apply the acid to the ulcerated scalp in *tinea capitis*, first cleaning off the surface with soapsuds or a poultice. Then the acid is brought in contact with the diseased spots by means of a piece of sponge. The strong or diluted acid must be employed according to the state of the parts, the long continuance of the disease, &c. The solution of Sir Astley Cooper, though suitable for many cases of ulceration, would be too feeble, generally speaking, for scalled head. He added fifty or sixty drops of pure acid to a pint of water.

Equal parts of nitric acid and water constitute a mixture that has proved very useful in *ulceration of the gums* and lining of the mouth, as may be seen in *Braithwaite's Retrospect*, part xvi. p. 185. In chronic *ulceration of the ear*, emitting a fetid discharge, a mixture of ten drops of the acid in eight ounces of water will be found very useful in form of injection. A drachm of this mixture thrown into the ear two or three times a day has put a stop to the disease in less than a week.

Some very striking cases of the cure of obstinate *hemorrhoids* are reported by Dr. Massy, Physician to the Exeter Dispensary, in the *London Medical Times* for June, 1849. The application to the tumors was pure nitric acid. A farmer, aged thirty, had been an invalid for years with bleeding piles, which came on gradually, but increased so as to be very troublesome, causing the loss of half a pint of black blood immediately after a stool. The tumor had two bleeding surfaces, and an excoriation nearly an inch square. To move his bowels as easily as possible he took a wineglassful of the following mixture:

℞.—Infus. sennæ ℥vi;
Sulph. magnes. ℥iv;
Carb. magnes. ℥iss.
Mix.

The first application of the acid was made soon after the bowels were evacuated, by touching the bleeding surface by

means of a feather. The spot soon turned white, and was covered with sweet oil. On the next day, the tumor was very much lessened, and bled but little. On the following day, the acid was re-applied, and once more at the end of a week. In a few days the disease was wholly gone, and the patient was able to attend to his business.

Other cases are reported, of like character. (See *Braithwaite*, part xx.)

The *epispastic* power of nitric acid might be inferred from its known action on animal fibre. The blistering property is resorted to only in urgent cases, where it is desirable to make a sudden and powerful impression. On these accounts the acid was employed for the purpose of vesicating, during the prevalence of *epidemic cholera* many years ago, and with obvious benefit, as we learn from the *Edinburgh Med. and Surg. Journal* for Oct. 1830. A mixture of two parts of acid to one of water is applied by means of a soft sponge; and, in order to control instantly its too violent action, a solution of potash (carbonate or pure) should be at hand, to be applied with another sponge or a soft cloth. Vesication occurs in a few seconds, and the cuticle being detached presents a raw surface admirably suited to the purposes of endermic medication or for the application of a fly blister.

As blending the escharotic and epispastic properties, I name the *nitric acid ointment*, which has been a good deal employed in the management of *porrigo*, *scabies*, and to *syphilitic ulcers*. It often very speedily gives a healthful impulse to the parts affected, and thus changes, happily, the character of the morbid action. The ointment is made by adding gradually two drachms of nitric acid to one pound of melted hog's lard. The mixture should be placed over a slow fire, and stirred with a glass rod till ebullition begins, and then set aside to cool. If found too strong for use in any given case, it can easily be weakened by rubbing with more lard. The ointment is of a bright yellow, and quite firm. The acid is decomposed during the process, and the fat oxidized.

The *tonic* powers of nitric acid have been very highly extolled. As the tonic quality generally refers to the internal use, the acid is employed in a diluted state. And here it is needful to say that the term *diluted* acid is not very definite. This is owing to the fact that nitric acid, as sold in the shops, is of variable strength, and consequently the subsequent dilution will present an article having by no means a uniform power. The physician who has a quart of acid on hand will, of course, be able to have a diluted acid of uniform strength until his supply of pure acid is exhausted. One part of acid to nine of water is the usual

manner of dilution, and of such a mixture the adult dose is from ten to forty drops in a tablespoonful of water or in some bitter infusion. I have given it in much stronger solution. Two drachms in six ounces of water make a tonic mixture which can be dispensed in teaspoonful doses added to sweetened water three times a day. In all cases of the internal administration of this or other mineral acids, the teeth should be carefully protected by sucking the solution through a glass tube or a quill, and washing the mouth with a weak solution of carbonate of soda.

Some have objected to the use of dilute nitric acid as a tonic because of its tendency to derange the stomach and to set up ptyalism. But these objections are more theoretical than practical. Others have regarded the acid as antiphlogistic, and thus they suppose it to act in some hepatic and syphilitic affections. But in all such cases the action is partly tonic, at least, and partly alterative.

The tonic action of nitric acid is happily illustrated by Mr. Wilkinson, surgeon, of London, in the *London Lancet* for 1845. He regards it as specially suited to *diseases dependent on a morbid state of the blood-vessels.* We quote as follows:—

"The point to which I wish to call the attention of the profession is, that the virtues of nitric acid are but imperfectly understood, and that in it we have not only a most powerful and valuable tonic, but, I was going to say, almost a specific, in certain diseases kept up by vascular debility. I have no disposition to detract from the virtues of the various drugs and chemicals we so often make available in the treatment of disease; on the contrary, in the hands of a judicious practitioner, one whose genius can at once mark the symptoms as they arise, there is, perhaps, scarcely a single drug in the Pharmacopœia that has not, in some degree, its curative or alleviating properties. Mercury, for instance, which is the sheet-anchor of the physician, would be little else than a deleterious and deadly poison were it not for the vegetable and saline purgatives; to say nothing of opium, antimony, and other remedies, for which the Materia Medica and Laboratory are so justly esteemed.

"I was first led to the trial of nitric acid as an internal medicine by observing its effects when applied externally to ulcers and inflammatory surfaces when the blood-vessels had undergone some morbid change. In varicose veins, if a piece of lunar caustic, the basis being nitric acid, or nitric acid not too strong, be drawn along the distended vessel, it will penetrate the skin, and in three or four days the vein will be reduced in size and the morbid inflammation and pain removed, or at all events considerably lessened. In varicose ulcers of the legs, where the surrounding parts are of a livid or bluish cast, a solution of

nitrate of silver or nitric acid will often cause the vessels to shrink, assume a healthy condition, and ultimately disappear. Of course if any mechanical obstruction, such as pregnancy, exist, or the valves above be diseased, these circumstances must be taken into account, and the cause, if possible, removed. It the liver and kidneys do not perform their office, these secretions must be attended to. The application of bandages is known materially to assist when the patient can bear pressure. In caries of a tooth, if a drop of pure nitric acid be introduced into the hollow of it, the disease is immediately arrested and the pain ceases. I have tried this repeatedly, and almost always with success; but much depends upon the state of the liver and intestinal canal at the time, which, if disordered, tends to keep up the morbid inflammation in the part.

"The inference I drew from these observations was that if nitric acid could be introduced into the system in sufficient quantity, in cases where the blood-vessels were in a debilitated or diseased state, so that the circulation might be in a manner saturated and the extreme arterial and venous branches affected, similar results might be accomplished where a more general and constitutional disorder existed. The following is the first case I selected for trial:—

"Case 1.—E. D——, aged thirty-nine, carrying on the business of a coach-maker in London Wall, in the city, was brought to me in the month of October, 1839, laboring under dropsy of the abdomen, with diseased liver. When he entered my room, he was supported by his friend, Mr. Lester, who came with him. His countenance was sallow and shrunken, his abdomen and legs swelled to an enormous size, the latter resembling in shape the limbs of an elephant. His scrotum hung half-way down his thighs, and the skin of his penis was distended to the thickness of a man's arm. His pulse was small and weak, and beat not more than thirty strokes in a minute. His history was soon told. He had been a constant frequenter of a public house, had been ill about two years with a diseased liver, and then dropsy had supervened about ten months before paying me his first visit. He had been under medical treatment, and taken mercury in small doses, with other remedies, but was now considered by his medical attendants as past cure, and unable, from his weak state, to undergo the operation of paracentesis. His bowels at this time were costive; he passed his urine in small quantities, not more than a tablespoonful at a time. I ordered him six grains of calomel and ten of colocynth, in three pills, to be taken at bedtime. I visited him at his own residence two days afterwards. He had passed two motions, both as black as, and of the consistence of, melted pitch. I desired him to repeat the dose, and saw

him again in two days; he had passed three motions, the first two in color and consistence as the last, but the third was more of a brownish cast, and looser. From his uneasy state and difficulty of breathing, in the presence of Mr. Hunt, apothecary to the Provident Dispensary, I passed a trocar below the umbilicus, and drew off a pail and a half of water. The fluid, on being placed in an iron spoon over a candle, was found to be highly albuminous. I did not examine his urine. Took six grains of hyd. cum creta at night, a drachm of supertartrate of potass, with eight grains of jalap, on the following morning. The evacuation was watery, and contained yellow bile. This was repeated in four days with a similar result; pulse continued the same in frequency, but fuller. Ordered friction over the region of the liver with the palm of the hand three times a day, an hour at a time. I now determined to give the nitric acid, beginning with thirty drops of the dilute every four hours, in a glass of decoction of cinchona. This was increased ten drops per diem till he took two hundred and fifty daily, and continued it for two months. The dropsy had entirely disappeared, and his pulse risen to ninety in a minute, and full. The secretion of bile and urine had returned; he could eat a beefsteak for breakfast, and was ready for another before his accustomed hour for dining, which was one o'clock. In less than six months he was as fat and as well as ever he had been during his life. The most singular part of this case is that my patient afterward returned to his old habits of drinking, but, I believe, not to his former excess. I saw this person three years afterwards; he had no return of his complaint whatever. He took the nitric acid nearly three months. There is one thing here I wish to point out, viz., that in all cases of obstinate obstruction of the liver a large dose of calomel must be given; small doses are worse than useless.

"Case 2.—Thomas P——, aged fifty-two, butler to Mrs. C——, of Montague Square, consulted me in the month of October, 1840, about a large tumor in the throat. The apothecary who attended him told him that it was an enlarged tonsil gland. On making an examination I found a large tumor occupying the left side of the fauces, descending down the pharynx, but its extent in that direction could neither be seen nor felt. It ascended behind the bony palate, and continued its course along the roof of the mouth; below, it pressed down the tongue, and pushed the velum palati diagonally forward as far as the teeth. On one side it was connected to the pharynx by a base as broad as the tumor itself, whilst the other surface came nearly in contact with the opposite side of the throat. The tonsil on the diseased side seemed involved in the disease, but whether it commenced in that gland or lower down does not appear, as he never suspected the

existence of such a companion till it had assumed the frightful size of a turkey's egg. The mucous membrane covering the tumor was tense, and somewhat glistening, of a dullish-red color. It had not the least doughy feel, but was semi-elastic in some parts, whilst other portions of the swelling had a firm, fleshy feel. His countenance was rather sallow, but from his general good health I proposed the operation of removing it piecemeal by ligature, as it was evidently too vascular and in too awkward a situation for the knife. His mistress had sent him to Mr. Lawrence, of Bartholomew's Hospital, who pronounced it malignant, and would not interfere with it. I then proposed that Mr. Liston should see him, when it was agreed to pass a bistoury straight into the tumor and evacuate any fluid that it might contain. A small quantity of straw-colored fluid was evacuated from a superficial puncture, but on the instrument being continued further downward a rush of arterial blood took place and he lost nearly a pint in less than two minutes. Cold vinegar and water and syncope fortunately put a stop to the hemorrhage, and I accompanied him home from the hospital in a coach. In a day or two he had a great deal of irritative fever, the lips of the wound opened, and an excrescence, having a yellowish-white cauliflower appearance, protruded. This kept on increasing in size for six weeks, was hard to the touch, and now of a magnitude between a shilling and a half-crown. His appetite entirely failed him, and he could scarcely swallow fluids of the consistence of arrowroot. The debility of body was now much increased; he had lost all his flesh, his countenance very sallow, and his features much attenuated. The glands of his neck on the side of the tumor formed a chain along the sterno-mastoid muscle as hard as marbles; he was literally skin and bone. Mr. Liston and myself, who daily attended him, now thought that death would soon terminate his existence, and my friend took his final leave. Mr. Aston Key, of Guy's Hospital, was now sent for, and I met him. He pronounced it at once a fungus, that in all probability he had another in his liver, and that the patient would not live four days. Though all hopes seemed now at an end, I observed that he would constantly call for the nitric acid gargle which I had ordered him. I was therefore determined to give large doses of it internally, which I did every four hours, beginning with thirty drops, thrice a day, in a glass of water, increasing five drops each dose per diem. In less than a week the excrescence sloughed and came out; the nitric acid was continued, and he got rapidly well in six weeks. T. P. is still in his situation, in good health, and has been so ever since his recovery, four years and a half ago.

"In justice to that well-known and accomplished surgeon, Mr. Liston, I must confess that without that gentleman's operation

the patient would, in all probability, long ago have been either choked or starved. Without the nitric acid he would most inevitably have sunk.

"CASE 3.—I was consulted in the year 1839, by Mr. W——, an ironmonger, in Crawford Street, about thirty years of age, for an ulcer on the upper part of the ala of the nose. It was first observed about three years before, in the shape of a small pimple, which discharged a watery tumor. He had been under half a dozen surgeons, but none of them could succeed in getting it to heal. I advised him to take five grains of Plummer's pill every night, and Hudson's syrup of sarsaparilla during the day, for a month. At the end of the first week I applied the lunar caustic, which I repeated at convenient intervals, which checked the discharge; and I was in hopes, when the black eschar had separated, that cicatrization would have been completed. I was, however, disappointed. A very thin skin certainly had come over it, but I saw it was soon to be absorbed, which was the case in a week afterwards. Its base being very hard, and his friends alarmed lest it should turn out cancerous, I proposed to dissect it out. The thoughts of the operation frightened him, and he went to Mr. C——, a well-known surgeon in the borough, who advised him to continue what I had before prescribed, probably thinking I had not pushed the medicine far enough. This gentleman applied the caustic more freely; the result was, however, the same. When about six months had elapsed he sent for me, and I removed the hardened base and ulcerated surface, which was a little larger than the section of a large pea. I had some difficulty in getting the wound to heal, the granulations being glassy and ash-colored. A little diluted nitric acid was applied to the wound with a camel's-hair brush for four or five successive mornings. In a fortnight it assumed a more healthy appearance, and it was healed in a month after the operation. It caused little or no scar, the part resembling a pit from the smallpox. It has never again returned. The patient took the nitric acid internally during the healing process.

"CASE 4.—Mr. S——, aged sixty, a tobacconist, an old inhabitant of the Edgeware road, long subject to erysipelas, observed, in the month of September last, a small tumor on the middle of his right eyelid of a dark-red color. It increased in a month to the size of a horse-bean, when he pricked it with a needle, and says he lost about a gill of blood. The puncture soon increased in size, and an excrescence made its appearance which had grown, by the middle of November, to the size of an old English strawberry. In this state I first saw it; he had then a poultice to his eye, which, from its pressure and the tumor together on the globe, had produced considerable inflammation of

the conjunctiva. As he was under medical treatment, I refused to interfere, but considered a poultice, from its weight, at all times a most inapplicable thing for the eye. This was changed for something worse,—namely, a zinc lotion, which produced considerable inflammation both of the eye and eyelid. As the surgeon thought an operation useless, believing it to be the true carcinoma, I was consulted professionally. The tumor was hard to the touch and easily bled, and profusely, considering its size. It was composed of one sac within another, so that when its surface appeared to be about to suppurate it would come off, and the sac underneath make its appearance. The eyelid was swollen, of a dark-red color, and could not be raised by the patient. On opening the eye, there was chemosis of the conjunctiva, the cornea sunken and dull, and two large patches of lymph thrown out. I ordered him a constant application of warm water, three grains of calomel and a quarter of a grain of tartar emetic directly, with a black draught two hours afterward. I saw him again at night; medicine had operated; put a blister behind his ear. He afterward took small doses of blue pill for three or four days, and applied another blister. The inflammation had sufficiently subsided for the nitric acid and bark, which he took a week previous to the operation.

"I performed the operation as follows:—The patient being seated in a chair opposite a window, I stood behind him, and he reclined the back of his head on my breast. Mr. Blizard Power, a student of Bartholomew's, who assisted me, stood in front, and fixed the prongs of a hook I use in the squinting operation just above the tarsus, and put the eyelid on the stretch. With a small scalpel I made a circular incision around the base of the tumor, having only just room for the blade of the knife between it and the cartilage. It was very vascular, and I was obliged to pause more than once that I might see my way clear. As the sac was incorporated into the lid, I took in a little skin with its circumference, and, behind, a few of the fibres of the orbicularis palpebrarum. I got it clean out, but the hemorrhage, considering the small size of the tumor, was almost incredible. The patient lost more than half a pint of blood, and I had great difficulty in stopping it, as I could not use pressure in so delicate a situation, and it was desirable for the oozing to cease; so I dressed the wound simply with a piece of gold-beater's skin. My patient continued the nitric acid for a fortnight afterward, and he got well in three weeks.

"It would require the eye of a very acute person to see where this operation had been performed. There is not the least shortening of the lid, nor even stiffness in it. He says his sight is better than it has been for years, and I am sure his general health is, if

a most excellent appetite is any criterion. I think it will be some time before he has another attack of erysipelas.

"I make it a practice of giving the nitric acid and bark before and after operations for scirrhous breast, in chronic erysipelas, and immediately after the acute stage of that disease; in debility after an attack of gout, and in most nervous diseases; in extreme old age I have found it increase the appetite, raise the spirits, and induce sleep, where opium and other narcotics have tended to keep up the disorder they were intended to remove. In valvular affections, and enlargement of the heart by dilatation, I have found the most decided benefit, especially if the liver performs its office tolerably. Of course, in such cases as the last, a cure could not be expected or even looked for, and I have seen quite enough of digitalis to discard it *in toto*. If the nitric acid is taken for some time, it raises the pulse, renders it fuller, but deprives it of its wiry hardness. It does not destroy the teeth, like the other mineral acids, nor turn them black. I have never seen it produce salivation, but it will cause great redness of the mucous passages, the tongue, and fauces."

After some ambiguous details as to the nature of *hooping-cough*, Dr. Gibb furnishes the *London Lancet* with his experience in the treatment of this disease by nitric acid. He says his friend, Dr. Arnoldi, has treated more than one hundred cases of pertussis with this medicine with the most pleasing results. "Since I began its use," says Dr. G., "I have cured sixty-seven patients, the time consumed averaging between six and seven days,—some as low as two, others protracted to fifteen, days. It is affirmed that the remedy arrests the paroxysms, removes the hoop, and shortens the disease almost as certainly as quinine does an ague. The strength of the dose is not given. But if the dilute acid be composed of one part strong acid to nine of water, (the usual rule,) then a child eight years of age might safely take six to eight drops every four hours, blended with a tablespoonful of the syrup of lemon."

The theory offered by Dr. Arnoldi may go for what it is worth, but the *fact* is infinitely more valuable, if real. It is conjectured that the nitric acid is, *somehow or other*, decomposed by the vital powers, and the oxygen and nitrogen, especially the former, diffused through the whole system. Well, this is one of the *possibilities*, I suppose. The practice was given first in the *London Lancet*, August 12, 1854.

The *nitro-muriatic bath* merits a passing notice, and is fairly to be regarded as a tonic remedy in very many cases, although it may at the same time evince some power as a counter-irritant.

This bath is made, for the most part, by combining two parts of hydrochloric with one part of nitric acid, and adding this mix-

ture to water until it excites a stinging sensation on the hand and arm. To reach this result, about five ounces must be added to three gallons of water. The acid mixture is sometimes called the *nitro-hydrochloric solution;* but there is neither nitric nor hydrochloric acid present in the mixture, both acids being decomposed and chlorine being evolved.

The chief uses of this bath refer to *hepatic* and *syphilitic* affections. Some physicans have been quite extravagant in its praise, whilst others have denounced it as comparatively worthless. Paris affirms that he has seen the bath of vinegar and water quite as potent for the same ends. I am compelled to say that I have never observed any very striking results in favor of the remedy.

Nitro-hydrochloric (nitro-muriatic) acid has been lately used, says Dr. Headland, as a remedy for gout and rheumatism, in spite of the acid state of the fluids in those cases; and he believes it to be a very valuable medicine in both of these disorders. The compound acid must operate in some *special* way.—*Action of Medicines*, p. 223.

Dr. Headland could not have forgotten the large doses of lemon-juice given in the diseases named above, and no one who ventures on such portions has any fear because of the acid state of the fluids. The inference might be made with equal force that citric acid has a *special* action. We regard it as a depurator and eliminator of morbid matter.

A German professor (Ith) advocated a bath made of equal parts of the two acids very decidedly. He says he found it successful in cases of intense *cephalalgia* and *hypochondriasis*, and in *obstinate constipation*. His common practice was to put the legs, up to the knees, in the bath every evening for six or eight days successively. The local effects were slight redness and swelling. The general health was obviously improved.

The *expectorant* power of nitric acid is unquestionable, even in its uncombined form; and the same property is found in all the acids. But it is chiefly in combination that this acid has been found useful as an expectorant. The *nitric lac ammoniac* of Stuart is decidedly expectorant, being specially suited to persons of feeble constitutions. The original recipe is given in the work of *White on Colds*, the American edition of which was edited by Dr. James Stuart, of Philadelphia, (deceased,) and is as follows: —Infuse ʒij of pure nitric acid in a half pint of pure water, and add the mixture gradually to two and a half scruples of the best gum ammoniac. Rub well in a glass mortar until all the gum is dissolved and a homogeneous milky fluid results. The dose is a tablespoonful in six tablespoonfuls of sweetened water every three or four hours.

As a *disinfectant*, the vapors of nitric acid once occupied a high place, because of a foolish act of the British government. The fancied discovery was made by Dr. Carmichael Smyth, and yielded him the neat sum of five thousand pounds sterling, although, in reality, it was not worth a farthing. The infinitely superior powers of chlorine have cast this wonderful discovery into the shade.

The doctrine of *incompatibility* applies with great force to nitric acid. On this subject there is, unhappily, a great amount of ignorance in the profession, which should not be permitted to remain. Paris notices this subject in very appropriate terms, and cites particularly the administration of dilute nitric acid and blue pill, in alternate doses, as a practice by no means unusual. The risk here is the formation of a poisonous salt of mercury. On the same principle of incompatibility, magnesia should not be given to a patient who is taking nitric acid as a tonic. The tonic property would be lost, because a true salt of nitrate of magnesia would result. These may serve as illustrations of a practice that a little study might rectify.

Of Nitric Acid as a Poison.—It is important for every physician to be able to determine that this acid has been the occasion of poisoning. The color it leaves on the skin and on clothing will assist, as well as the peculiar suffocating vapors emitted by the acid. The speediest experiment is made by throwing a few copper filings into a little of the suspected acid, when copious red fumes will be given out, if nitric acid be present. A salt of morphia is reddened instantly by a drop of the acid. We also prove the acid to be nitric by saturating it with potash and evaporating to get a crystaline salt. On the supposition that the acid was nitric, the salt formed must be nitrate of potash. By dividing the salt into two parcels, and casting the one on red-hot coals, we shall be satisfied that the salt is nitre, and hence that nitric acid was present by the deflagration of the salt. The other half of the salt being placed on a watch-crystal, a particle of a salt of morphia carefully laid on it will be reddened by a drop or two of sulphuric acid brought in contact with the lower salt as soon as the glass is heated with a spirit-lamp. The action is to effect the decomposition of the lower saline matter, thus setting its acid free and allowing it to act on the morphia. The latter being reddened is additional proof of the presence of nitric acid. A French journal furnishes the following very delicate test:—Add a small portion of pure strong sulphuric acid to the suspected acid, and when cool add a few drops of a strong solution of proto-sulphate of iron, which will instantly strike a rose or purple color. One part of nitric acid may thus be detected in twenty-four thousand parts of water.

We can also detect the acid in the stains upon clothing. The spots are so permanent that they may be detected seven weeks after the accident. The spots must be cut out carefully, and then boiled in pure water in a watch-crystal or small retort. The solution thus obtained will prove to be very acid to the taste, as well as shown to be so by litmus paper. If the solution be nitric acid the proof can be had by an experiment like the one before detailed, viz., by adding a solution of potash, evaporating and crystalizing.

It is not easy to name any fixed quantity of nitric acid as a dose necessarily poisonous. The force of this remark will be obvious from the mere notice of a fact given in the work of Tartra, published in 1802. It is stated that a female sot in Paris became alcohol and brandy proof, and resorted to aqua fortis as a substitute. So callous had her stomach been rendered that it bore the acid without complaint. As a general rule, the effect of any poison will depend much on the previous habits of the person, the state of health, the fullness or emptiness of the stomach.

The recital of one or two cases of poisoning by nitric acid will be found useful for reference, and as guides to the practitioner. Mr. Arnott has reported an interesting case in the *Lond. Med. Gazette.* A boy, aged thirteen, swallowed nitric acid in mistake for beer, and probably took as much as a dessertspoonful of the acid. He was seen some hours after the accident occurred, and appeared to be suffering from acute laryngitis. Before arriving at the hospital frequent portions of calcined magnesia in water had been given, which were soon ejected by vomiting. From the first he was very cold, and continued so. The operation of laryngotomy was performed by Mr. Arnott, but with little benefit. The respiration was rough and difficult, pulse frequent, face pale, the tongue of citron color; and when roused he made brief replies, which increased his sufferings. He could not put his tongue out, nor swallow. There was great pain all around the throat, for the relief of which leeches were freely applied. The breathing became more and more difficult, and gave a sound like a whistle. In thirty-six hours the case ended fatally.

It is proper to say that the citron-color of the tongue and intense coldness are always present in cases of poisoning by this acid. They are pathognomonic signs.

Another case is given in which recovery ensued, although the man died ultimately of some of the consequences. A man, aged thirty-four, swallowed a wineglassful with the design of killing himself. Spontaneous vomiting soon followed, and of course much of the poison was ejected. Calcined magnesia was given freely, and the patient was depleted by general and local bleed-

ing, which did not prevent the occurrence of intense gastritis. The treatment was persevered in, and at the end of eight days the man was taken to *La Charité*. At the end of three weeks he left the hospital.

The best antidote is, evidently, calcined magnesia. But common magnesia will answer, or the scrapings of whitewashed walls, or any of the alkalies. The design is to neutralize, at once, all the acid in the stomach. A watery solution of soap will accomplish this end effectually, the potash in the soap being the antidote. In the absence of these, milk, starch, broth, gruel, &c., may be tried. An objection has been raised to the use of an alkali, as potash, because the nitrate of potash, so formed, is itself a poison. But this salt is given, as a remedial agent, in quantities ten times larger than the portion formed in the stomach in the use of the alkaline antidote. Let no one, therefore, hesitate to give a solution of soap at once, if neither magnesia, nor chalk, nor old mortar can be procured.

Some have advised the use of the stomach pump, but it is not necessary.

Acidum Sulphuricum. *Sulphuric Acid. Vitriolic Acid. Oil of Vitriol.*—Pure sulphuric acid is a compound of oxygen and sulphur. The strongest commercial acid contains more or less water, and the acid is strong or weak in proportion to this addition. The specific gravity varies from 1.8 to 1.9, and an acid of this strength requires a heat of 590° for ebullition. If a bottle of strong acid be long exposed to the air, the stopper being out, the moisture of the atmosphere is copiously absorbed. On this account the vessel containing the acid should be kept well stopped.

The acid is manufactured on an extensive scale by the oxygenation of sulphur in large leaden chambers, the acid so formed being taken up by water in the bottom of the chamber. The fluid is afterwards evaporated so as to concentrate the acid. If quite pure it is transparent, colorless, inodorous, of an oily consistence, highly corrosive, exceedingly sour even if copiously diluted, and instantly reddening vegetable blues.

The actual strength of the acid can be determined only by its neutralizing power, ninety-two grains saturating one hundred grains of carbonate of soda. One fluid ounce of full strength weighs fourteen drachms. If the bottle containing the acid be closed with cork instead of glass, the acid will be speedily discolored, acquiring a brown or even a black tinge. This tendency of cork is known to quacks, and they avail themselves of the knowledge to impose the more effectually on the ignorant. A miserable creature called at my house many years ago, when I resided in a country village, introducing himself as a poor unfortunate doctor, who had been engaged in a good practice in

some part of Great Britain, but having been overtaken by misfortune, left for this country in the hope of getting a livelihood. He begged me to make him a present of a lancet, as that would help him to a little money now and then for the operation of bleeding. I complied with the request of the poor creature, although he was by no means a deserving object. Some four or five days after a letter came to my address from the same traveling doctor, in which he thanked me most cordially for the lancet, adding a prescription for cancer with which I might "make a fortune." It was simply to blacken sulphuric acid with cork, and call the mixture "*Mitchell's Black Cancer Drop.*"

Sulphuric acid has been frequently employed as an external remedy. It entered the composition of Sir Benjamin Brodie's liniment in the proportion of from one to three drachms of acid to one ounce of sweet oil. The mixture is rubbed smartly on the part, as on the knee or hip, and intended to act as a powerful counter-irritant. It operates, in the first instance, as a rubefacient merely, but by frequent repetition it sets up actual ulceration. *Old indolent ulcers* have also been managed with the strong acid, the surface being quickly cleaned off and a new action set up. A mixture of half a drachm of the acid and an ounce of lard has been successfully employed in *scabies* and similar affections.

The internal administration has been quite extensive. For this end the diluted acid is always resorted to in one of two forms of preparation. These are the well-known *elixir of vitriol* and the acid diluted with water. The former, called also *acidum sulphuricum aromaticum*, is made thus:—

℞.—Acid, sulphuric, three fluid ounces and a half;
Alcohol, a pint and a half;
Cinnamon, bruised, an ounce and a half;
Ginger, bruised, an ounce.

Add the acid gradually to the alcohol, and digest by a very gentle heat for three days in a close vessel. Add the powders, digest for six days more, and strain. The dose is from five to ten drops in half a tumbler of water.

We remark that this preparation is not at all necessary, having no sort of advantage over the more simple mixture made by dilution with water. Brande, Paris, and Maugham give place to sulphuric acid diluted with water, and reject the alcoholic preparation. The following is the mode of preparing the watery solution:—Take strong sulphuric acid, a fluidounce and half, distilled water, fourteen and a half ounces. Mix gradually.

This solution is a very convenient article, and may be given in doses of from ten to thirty drops, in a little cinnamon water.

Diluted sulphuric acid is often preferable to other acids in the

management of *diarrhœa*, *hemorrhages*, *excessive sweating*, &c. &c., because of its peculiar astringency, added to its tonic power. The old elixir of vitriol was Sydenham's favorite remedy in *epistaxis* and *hemoptysis*. A good vehicle for its administration is an infusion of gentian, tansy, columbo, chamomile, or quassia. If the acid induce constipation, it may be given in a small quantity of a solution of sulphate of magnesia. Should griping pains be induced, a quarter of a grain, or less, of sulphate of morphia may be added.

The *London Lancet* and *Medical Times* for 1851 and 1852 contain several papers setting forth the happy effects of sulphuric acid in the treatment of *cholera* and *diarrhœa*. Twenty to thirty drops of the diluted acid in an ounce and a half of water make a dose for an adult, to be repeated every hour. The first dose sometimes induces vomiting, and then it may be better to give the medicine once in two hours, and after a day or two once in three hours. A few days suffice for a cure.

Time was when to name sulphuric acid as a remedy for diarrhœa or any bowel affection would have excited astonishment, owing to the fact that long usage had confided the treatment to a very different class of articles. Now we know that a common diarrhœa may be managed with castor oil or with this acid, that dysentery can be cured with calomel or catechu, while cholera has been subdued by opium as well as by castor and croton oil. In the most obvious case, viz., in simple diarrhœa, both plans are appropriate, *but at different periods of the attack*. Something is formed in the blood which should be excreted: it may be merely an increase of a natural excretion. If it pass not out by nature's effort, we call to our aid one of the *cathartics* named, just to insure the result. That may not suffice because of high irritation in the canal, and because an unnatural flux may be set up there. Then it is that a different sort of article comes to the rescue, which we often name an *astringent*, as sulphuric acid diluted with water, or in the shape of the elixir of vitriol. We are sometimes called in when nature has been evacuating too freely from the bowels, and when a cathartic might be deleterious. Then we succeed, happily, with sulphuric acid. Hence its frequent success in cholerine and profuse diarrhœa. I speak from experience.

In slight *uterine hemorrhage* in feeble constitutions I know of no better medicine than the diluted sulphuric acid given in cold tansy tea. It should be persisted in for weeks. In *Asiatic cholera* this acid was employed by Greenhow, of England, in the following manner:—

> Take of infusion of cloves, six ounces;
> Diluted sulphuric acid, one and a half ounces;
> Tinct. of opium, twenty-four drops.

Mix. Dose, two tablespoonfuls every hour till the discharges are checked, after which the dose is given once in two hours.

The diluted acid is an effectual medicine for the arrest of *profuse perspiration*, especially as connected with phthisis pulmonalis. It should be given at bedtime, in doses of from five to twenty drops, in chamomile tea.

Rather recently attention has been called to the use of *sulphuric acid lemonade* for the prevention and cure of *colica pictonum*. Gendrin directs it to be prepared by adding from one and a half to two drachms of the acid to three pints of water. This quantity should be taken in the course of twenty-four hours; and it is affirmed that thus employed the medicine will cure lead colic in from three to six days. As a *preventive*, two wineglasses of the lemonade are to be taken daily, the body being well washed with warm soapsuds every night. (See *Lond. Lancet*, May 31, 1845.)

Diluted sulphuric acid has been employed successfully in the management of the *itch*, in Prussia. Dr. Schroeder, of Gottingen, says he has cured the disease with it in fourteen days at the farthest, and often in less time. Given to nurses, it is said to cure both them and the children. The formula is as follows:—

℞.—Acid, sulph. ʒi;
Aquæ ʒv;
Syrup, simp. ʒiij.

The dose varies from a scruple to a drachm three times a day, in a wineglassful of pure water. It is said that this prescription is best suited to plethoric subjects. (*Med. Commentaries*, vol. i.)

A case of obstinate *hiccup* is reported in vol. vii. of *Med. Commentaries* as promptly relieved by diluted sulphuric acid. The patient was seventy-three years old, and had resorted to all the ordinary remedies. A mixture of one drachm of the diluted acid and four ounces of mint water was prepared, of which a tablespoonful was directed to be taken every half hour. The first dose caused the hiccup to cease instantly, and a quiet sleep ensued which continued all night. As the complaint returned on the next day, another dose was taken, and there was no repetition of it afterward.

The obviously corrosive action of sulphuric acid on animal structure has led to the belief that the acid never enters the blood. That this is a mistake, however, is manifest from well-known facts. If you give the diluted acid to a suckling woman, the infant will suffer from cramp and colic induced by this agency. But the question is settled by a fact recorded in a German journal for 1828. A woman poisoned herself with strong sulphuric acid.

The last efforts of nature were exerted to give birth to a child, and on dissection sulphuric acid was detected in the cavity of the child's pleura and peritoneum, in the sac of the heart, and in the bladder.

Sulphuric acid claims attention as a *poison*. The great weight of the acid should prevent the accidental swallowing in place of water. But it has often been taken, purposely, to destroy life. It has been poured down the throats of persons asleep, and into the ears. Infants have been destroyed in this way by diabolical nurses. The acid has also displayed poisonous energy in personal combat, in which it has been squirted into the face, eyes, &c. &c. This infernal expedient had its origin in England, but it has been resorted to in our own country also, and special statutes have been enacted against the vice.

Whenever personal violence is done by this acid, more or less of it falls on the clothing, giving it a deep-red stain, and considerably weakening the texture of the fabric. These stains are far from being transient; but, as moisture is absorbed rapidly, the acid or sour quality of the stained spot gradually becomes less obvious. The spots will suffice for proof of the kind of acid for at least fourteen days in ordinary clothing, as we learn from the *Edinburgh Med. and Surg. Journal*, vol. xxxi. Christison detected a sixteenth of a grain of the acid in two small spots on a blanket seven weeks after the accident occurred.

The pieces of spotted cloth should be cut out carefully, and boiled in pure water in a watch-crystal or a very small retort. This being done, let the fluid be tasted, and tried with litmus paper. To a part of the fluid add a few drops of a solution of the muriate of barytes, which will give a copious white insoluble precipitate if the acid be sulphuric.

So terribly and quickly poisonous is this acid that the celebrated Dupuytren was induced to exclaim, "Can a person be saved who has swallowed it?" But recoveries have taken place, and that too in the cases of tender infants.

In all instances of swallowing large portions of sulphuric acid the result must be governed very much by the previous habits, the general health, the fullness or emptiness of the stomach, &c. Hence we account for recovery after a large quantity has been taken, and for death from a much smaller portion. Hence, too, the variety in the symptoms as to severity. The irritation of the stomach and bowels will be much more intense in one case than in another; so will the pains, spasms, &c. vary.

The antidotes are the same as we named for the poison of nitric acid. The external injuries inflicted may be mitigated very much by the copious use of oil. I knew a lad who was employed in a drug store who was seriously injured by the fracture of a

large bottle of this acid. The contents fell on his breast and ran down to his feet. Instantly he sprang from the front door of the shop and speedily got into an open oil cask in the cellar, which was about half full. The oil soon blunted the activity of the acid, and no doubt lessened the evils of the accident. The ulcers induced in this case were exceedingly painful and indolent, and the lad was confined to his chamber for nearly five months. Could an individual meeting with an accident of this kind jump instantly into a river, the dilution would be so vast as to mitigate very greatly the corrosive quality of the poison. But it would not answer to apply water by sponging, or even pouring, unless the operation could be repeated without intermission for some time. A moderate dilution of the acid would develop an intense heat, and thus do harm.

ACIDUM TANNICUM. *Tannic Acid. Tannin.*—This is a peculiar substance largely abounding in gall-nuts in connection with gallic acid. It is a principal cause of astringency in the articles designated as astringents procured from the vegetable kingdom. It can be obtained in an impure form largely from catechu, by solution in water. A much purer article is procured from powdered galls, by the agency of sulphuric ether.

This acid being a very powerful astringent, may be used in lieu of ordinary astringents, and is preferred by some physicians to all others of the class. The Italians have employed it largely in *uterine hemorrhage.* The usual dose is three grains, made into pill with mucilage of gum Arabic or conserve of roses, and given every three or four hours. It has also been used to arrest or moderate excessive perspiration, in doses of from half a grain to two grains at bedtime. Several cases of *diabetes* have been cured partly by the exhibition of tannic acid, as follows:—

℞.—Acid, tannic, ℈ij;
Pulv. opii, gr. ss.

Mix, and divide into three parts,—one to be taken morning, noon, and night, in syrup or made into a pill. The quantity of the acid was gradually increased, daily, with the effect of decided amendment in ten or twelve days.

In chronic *diarrhœa* the following prescription has been employed successfully:—

℞.—Acid, tannic, gr. x;
Cons. rosar. ʒij;
Tinct. opii, 7 drops.
Mix, and take in three doses in the course of a day.

During the late prevalence of *Asiatic cholera* the tannic acid was resorted to with good effect to check the intestinal discharges. But an error was sometimes committed by adding laudanum in

place of a salt of morphia to the prescription. The latter avoids incompatibility. Thus:—

Take of tannin, ten grains;
Sulphate of morphia, two grains;
Aromatic spirit of ammonia,
Tincture of red pepper, each a half ounce;
Camphorated water, four ounces.
Mix, and give to an adult a teaspoonful every hour until relieved.

A solution made by adding five grains of the acid to an ounce of water has been a very serviceable application to *sore nipples*. It should be applied night and morning, taking care to protect the parts against further injury from the operation of sucking. The usual nipple-shield will suffice for this purpose. The same solution is very prompt in relieving *sore mouth* attended with small ulcerations, that often affect the breath badly.

Solutions of tannin have been highly commended in the shape of lotions to the eye for the relief of *chronic* and *acute conjunctivitis*, *corneitis*, &c. &c. The solution of M. Hairion is much stronger than any before used, consisting of one part tannin to three of pure water. He has also employed it in powder and ointment. It is held to be a safe and very successful remedy.

Dr. Lange, of Konigsberg, Prussia, has had large success with tannin in *gonorrhœa*. From a half drachm to two scruples are added to two ounces of water to make an injection, which is to be thrown up the urethra three times a day. The ages of the patients ranged from seventeen to forty-three years, and the disease had lasted several weeks, and even six months. They were cured in from six to nine days. No pain followed the use of this remedy. —*Braithwaite*, xxiii. p. 215; also, part xxvii. p. 162.

Care must be taken to have inflammatory action reduced prior to the use of the remedy in such cases; and it is important to see that the bowels be kept in a soluble state.

In that troublesome affection called *fissure of the anus or rectum*, an ointment made of one part acid and fifteen lard has been employed with excellent effect. The gut having been cleaned out by one or two warm water injections, a portion of the ointment as large as a cherry stone is to be rubbed over the parts once or twice a day. If the disease extend high up, an injection of the acid will be important once or twice a day.

As this disease is not described by many writers, the following brief note will not be amiss:—The rent or fissure is induced by pregnant females, who become very costive and strain severely in order to have a stool. The rent being made, will continue under the repetition of efforts of a like nature, and the edges become callous. Sometimes an aphthous state of the parts is also found to increase the evil. To determine the fact of the pre-

sence of the fissure, the lower bowels are to be injected with warm water to clean the lining membrane. Then, with the forefinger oiled, the patient bearing down, pass it up the rectum, and you will find the rough and hardened condition spoken of about an inch within the verge of the anus. The fissure is seldom more than an inch in length.

ACIDUM TARTARICUM. *Tartaric Acid.*—This acid exists largely in cream of tartar or the bitartrate of potash. To the latter, first boiled in water, powdered chalk is added until all excess of tartaric acid in the bitartrate is neutralized. The resulting compound is tartaric acid and potash, called tartrate of potash. This is decomposed by sulphuric acid, which seizes the potash, forming sulphate of potash and setting the tartaric acid free. This is subsequently evaporated and crystalized.

Tartaric acid is present in the juices of all acid fruits, but most largely in the juice of the grape; and hence the bitartrate of potash spoken of already is formed in great quantities in the process of making and ripening wine.

The chief use of tartaric acid in the practice of medicine is in the formation of *effervescing* drinks. To this end it enters the composition of *soda powders*, so much employed in domestic economy; and it acts an important part also in *Seidlitz powders*.

But the acid has been employed largely in manufacturing what are called *lemonade* powders, and also in preparing *lemon* syrup. In both instances a fraud is practiced, although with little or no injury to the system.

The *lemonade* powders are made of tartaric acid, sugar, and a little essential oil of lemon; but they contain no citric acid nor lemon juice. The *lemon* syrup, as it is called, is made by boiling tartaric acid and water together and adding enough sugar to constitute a syrup. To each bottle nearly filled with this article about five drops of oil of lemon are added, to give the desired flavor.

In very large quantities tartaric acid sets up the symptoms of irritant poisoning. To meet such a case recourse must be had to the antidotes advised in respect of poisoning by nitric acid. A very satisfactory case of the poisonous action of tartaric acid is recorded in the *London Lancet*, vol. i. of the New York reprint.

ACONITUM NAPELLUS. *Aconite. Monkshood.*—This plant is common in the forests in various parts of Europe, and is to be found in this country as an ornamental flower. The leaves should be gathered just before the flowers begin to fade. These are of a dark violet-blue color, large and beautiful. After the seeds have ripened the sensible properties of every part of the plant are lost or greatly lessened. The leaves and tubers should

be cut into slips and dried with care at a low temperature. The roots are not unlike the carrot, only having a dark-brown color.

The fresh leaves have a decidedly narcotic odor when rubbed between the fingers. The taste is at first bitterish, then burning, very acrid and abiding. If the leaf be chewed for several minutes it will excite inflammation of the tongue. The root exhibits the same properties as the leaf, and from it is separated the proximate principle, *aconitina*, a vegetable alkaloid.

The poisonous nature of aconite has long been known, having been resorted to for the purpose of destroying criminals under sentence of death.

Although the leaf is decidedly poisonous, it loses that property by long ebullition. The *British Flora Medica* speaks of a man who noticed a female gathering the leaves of monkshood, and, fearing a serious accident, he inquired what she meant to do with them. The reply was, "I am going to cook them, as greens, for dinner." The man followed her home, watched the process, saw the boiling and subsequent eating by the family without the least perceptible injury. The deleterious property had all vanished under the action of a high temperature.

The absolutely poisonous action of the green leaf, unchanged by heat, is evinced by the following fact:—a person became maniacal, as his friends supposed, from eating the green leaf; a surgeon who was present ridiculed the idea, and even denied that the vegetable was at fault, and to confirm his declaration ate freely of the leaves himself and perished in great agony.

The therapeutic properties of aconite and aconitina are *anodyne*, *sedative*, *diaphoretic*, *diuretic*. Physicians in former times employed aconite in *gout*, *rheumatism*, *secondary syphilis*, *cancers*, *epilepsy*, *palsy*, *dropsy*, &c. Dr. Turnbull called the attention of medical men to it, in several essays, as a remedy for *rheumatic* and *neuralgic* affections. He employed it in two forms, viz., in alcoholic solution and ointment. One grain of aconitina to a drachm of alcohol gave the former, two grains to a drachm of lard made the latter. A small quantity of either is to be rubbed on the affected spot night and morning, and to be continued for a week or ten days.

Aconite is a powerful *anæsthetic* to the superficial sensory nerves. When applied in solution or ointment to the surface of the skin it produces, first, some heat and tingling, which is attributable to a derangement of nervous influence; and this is followed by perfect numbness. It is thus a most valuable topical remedy in *true irritative neuralgia.—Headland's Action of Medicines*, p. 278.

Dr. Franceschi, of Petersburg, Russia, employs the following mixture in *Asiatic cholera*:—

℞.—Tinct. aconit ʒiij;
Tinct. opii ʒiss;
Ext. aloes ʒi.
Mix.

Ten drops are to be taken every morning in a spoonful of Madeira or coffee, as a prophylactic; and when the disease is formed the dose is from ten to thirty drops. How often it is to be given is not stated. (See *London Lancet*, January, 1850.)

It is reported that *traumatic tetanus* has been cured by tincture made as follows:—Take of the root of aconite, dried and powdered, sixteen ounces; and of alcohol, sixteen fluidounces. Macerate these during four days; strain, and add enough alcohol to make twenty-four ounces. The dose is five drops three times a day or oftener.

It is related in the *Journal de Chimie Médicale* for July, 1827, that an old woman had been in the frequent habit of taking a tincture of lovage for some real or supposed malady, and usually prepared it herself. One day her complaint gave her more trouble than usual, and she took an ounce before supper, another after, and a half-ounce at midnight. She died in the course of the night. Not long after this, three of the family took an ounce each of the old lady's cordial, and were taken ill in half an hour. One of them had inexpressible anguish and sense of burning in the throat and stomach, vomiting, purging, tenderness of the epigastrium, and colic, afterward delirium, manifesting itself in loud cries and violent running; but emetics and emollient drinks calmed his sufferings, and in two days he recovered. Another man of weaker habit of body began to stagger, and appeared intoxicated, then was seized with violent vomiting, purging, and acute colic pains, and died in two hours. The third, a young female, complained of a sense of burning and enlargement of the tongue, and then of burning along the gullet to the abdomen; she was soon attacked with shivering, swelling of the face, vomiting, purging, and violent colic, and died in a state of great agitation two hours and a half after drinking the cordial. The bodies were examined, and the only appearance of note was great redness of the inner membrane of the stomach and small intestines. A medico-legal examination having been ordered, M. Degland, physician at Lille, discovered that the tincture had been made of the roots of the *Aconitum napellus*.

As the *alcoholic extract* of the *Aconitum napellus* is sometimes employed medicinally, the following cases will be useful, as a warning at least, and may serve to keep doses within due bounds.

It is given in the *Journal de la Société Royale de Médecine de Bordeaux*, Juin, 1839. A man forty-five years old entered the Hospice St. Andre with a painful rheumatic affection, for the cure of which the alcoholic extract of aconite was directed. He took two grains in the morning and the same in the evening, and on the tenth day the pains were moderated. On the next day, the old stock of extract being exhausted, his pills were taken from a *new parcel*, and although of the same size and weight, they induced, in a quarter of an hour, trembling of the muscles of the thighs, legs, and arms, and darting pains, which grew worse and worse. These were followed by convulsions, continuing for a quarter of an hour at a time. The mouth and throat were extremely hot, and vomiting followed every effort to swallow. In the convulsions the patient was insensible, but this state subsided with the paroxysms, leaving, however, an enfeebled state of the organ of vision. He complained now and then of severe lancinating pains in the head, as if a bar of red-hot iron had been thrust through the brain.

The only remedy said to have been effectual in this case was a strong infusion of huaco, (*Eupatorium huaco*,) which alone remained on the stomach. Vomiting ceased, and a happy reaction was established, followed by speedy recovery.

Another patient in the same hospital, who took also of the fresh parcel of extract after the old was exhausted, died in about four hours.

Willis has the case of a man who accidentally ate some of the leaves of aconite as a salad, and died mad in a very short time. Matthiolus mentions the circumstance of four robbers under sentence of death to whom this plant was given, two of whom, after suffering the most violent torments, were saved by appropriate remedies, but the other two died. One of these became in a few hours idiotic, his face bathed in a cold sweat, with total loss of sensation and then with fainting and spasms, &c. &c.

In the *London Philosophical Transactions* is given the case of a man who ignorantly ate of aconite leaves in a salad. Instantly he was seized with burning heat in the tongue and gums and great irritation of the cheeks. He felt no disposition to vomit, but after drinking a pint of oil and a large bowl of tea he vomited considerably. The symptoms grew worse, and in two hours after taking the aconite a surgeon saw him. Then his eyes and teeth were fixed, his feet cold as ice, his body covered with a cold sweat, his pulse imperceptible, and respiration almost extinct. Some spirit of hartshorn was administered, which induced coughing and vomiting. Then an infusion of the blessed thistle (*Carduus benedictus*) was given till he vomited copiously. After a short interval he had a stool, and the vomiting was re-

newed slightly. His pulse rose a little, and intermitted with great irregularity. A mixture of an anodyne character was then prescribed, and he soon recovered.

In the *Edinburgh Medical and Surgical Journal* we have a statement, extracted from an Italian periodical, showing the fatal action of the juice of the *Aconitum napellus*, taken for the relief of a scorbutic affection. Twelve persons, on the 11th of June, 1840, took nearly two and a half ounces each of this juice in mistake for that of scurvy-grass. The oldest of the twelve, aged sixty, suffered first. His respiration was soon much embarrassed, vomiting came on, and these, with bad treatment, caused his death in a few hours. Two of the company were women, aged fifty-five, and they died in two hours after having swallowed the poison, laboring under convulsions, partial paralysis, and great prostration. The other nine were all severely affected, and would have died if relief had not been promptly afforded. The symptoms in their cases were, great mental and bodily prostration; dilated pupils; the countenance pale, and much altered in expression; vertigo and headache; painful and swollen state of the abdomen; vomiting of greenish matters; some diarrhœa; a sensation of cold; nails of a livid hue; cramps in the legs; pulse small, feeble, and scarcely perceptible.

Emetics were first given to excite vomiting. Then tonics and stimulants, as tincture of canella, rum, and wine, followed, even to intoxication; the limbs were well rubbed with spirituous lotions. Under this course the nine got well.

Dissection of those who died revealed the usual effects of narcotico-acrid poisons, but with more inflammatory signs than are usual. The pia mater and arachnoid membranes were much injected with blood, and a good deal of serous fluid was seen at the base of the brain. The lungs were engorged. The heart was flabby, containing black blood, which distended also the large vessels. The stomach had many irregular injected patches, especially near to the large curvature, and it contained a quantity of viscid ash-gray colored liquid. The small intestines were also somewhat inflamed.

A very interesting case is copied into *Braithwaite's Retrospect*, part xvii., in which it is stated that two and a half grains of aconitina failed to kill, although evidently a poisonous dose. Convulsive vomiting and imperfect hydrophobia ensued, with frightful collapse. The case is reported by Dr. Golding Bird, who thinks that the greater part of the poison was ejected in the repeated acts of vomiting. The hot-bath, mustard poultices, turpentine injections, and the like, were required to rouse the system.

In overdoses any of the aconite preparations will act as narcotico-acrid poisons, setting up, in the first instance, more or less

inflammation of the stomach and bowels, with engorgement of the vessels of the brain and lungs. In all cases of poisoning by aconite, the stomach-pump, or a prompt emetic, should be employed to evacuate the stomach as soon as practicable. Then emollient mucilaginous drinks should be given; also warm lemonade, or at least moderately tepid, to restore the lost tone of the stomach. If there be much and severe pain in the epigastric region, apply leeches or a blister to that spot. If the latter be employed, remove the skin and apply half a grain of acetate of morphia, and repeat in an hour if necessary.

In the *London Lancet* for July, 1856, we find a paper on the *poison* of *aconite*, by Dr. Headland, which embodies all that is important on that subject. After stating cases to show how small a dose of aconite, viz., fifteen drops, has nearly proved fatal, he closes with a brief summary of the treatment. As soon as the poisoning is suspected, a large quantity of animal charcoal should be administered. The aconite is quickly taken up and obstinately retained by this agent. Dr. H. thinks an emetic of zinc should be given after the charcoal, and not in the first instance. Then he advises the free use of brandy and ammonia.

Two extracts of aconite are in use, viz., the common and the alcoholic. The former is made by expressing the fresh leaves moistened with water, having first bruised them in a mortar. The expressed juice is evaporated by a slow heat, constantly stirring it to avoid burning. The dose is one or two grains.

The alcoholic extract is formed by evaporating a tincture made of a pound of aconite and a quart of alcohol. The dose is one-eighth of a grain, in pills made up with liquorice. It is also used for preparing an ointment by rubbing one part of extract with two of lard.

The tinctures are numerous. One has been named already, of very great strength. The U. S. tincture is prepared from a pound of the root and twenty-four ounces of alcohol, digested during fourteen days. The dose is from three to five drops.

Turnbull's tincture is made of one ounce of the powdered root and six ounces of alcohol, macerated two or three weeks. The dose is eight or ten drops three times a day, gradually increased until its effects are obvious. Few patients will bear a larger dose than twenty drops.

The powdered leaves or root may be given in the dose of a grain or two grains, gradually increased. If well selected and properly dried, these will be full doses for an adult to begin with.

The aconitina is thus obtained:—Two pounds of the best root are boiled with a gallon of rectified spirit in a retort with a receiver attached, for one hour. Pour off the liquor and boil the residue again with another gallon of spirit, and with that recently

distilled. Let the same operation be repeated a third time. Express the aconite, mix all the liquors, strain and distil. Evaporate the whole to the consistence of extract. Dissolve this in water and strain. Evaporate with gentle heat to a syrupy consistence. Add sulphuric acid diluted with water to take up the aconitina, and decompose the sulphate so formed by adding liquid ammonia. The precipitated alkaloid is to be boiled with animal charcoal in order to remove discoloration. Frequent washing and drying complete the process.

The aconitina is prepared with a great deal of trouble, and after all is not worth our particular attention. It is quite too energetic to be a safe medicine in the profession at large. The fiftieth of a grain of the pure article nearly proved fatal to an elderly lady.

The aconitic acid is named, but it would be a waste of time to speak of it particularly.

We are well satisfied that the experience of physicians many years ago determined the true value of aconite and all its preparations. We have very many articles that are decidedly superior and more safe; and, although a very old medicine, we have no disposition to erase it from the *old novelty* list of infinitesimals.

ACUPUNCTURA. *Acupuncture.*—The literal import indicates the *prick of a needle.* It is an ancient mode for the cure of disease, which fell into very general disuse and was subsequently revived. The operation consists in the introduction of highly polished needles into any part of the body with a view to cure or relieve. A Dutch surgeon, by name Ten Rhyne, employed needles for the intent named more than one hundred and sixty years ago, and he restricted the remedy, as we now do, to chronic cases.

The length of the needles depends on the depth of muscular tissue of the given part to be acted on, and they may vary from two to four inches. They should be perfectly smooth, of high polish, and furnished with a head or cap of sealing-wax to keep them from slipping in too far. Some physicians have employed needles of gold, platina, and silver, and to these there can be no objection save the cost. The common needle, however, if highly polished, will answer very well. Some employ a *porte aiguille*, or needle-holder, but such a contrivance is not at all necessary.

The insertion of the needle is a very simple operation. The skin being made tense, the point of the needle is dipped in and passed down by a gentle turning and downward motion. The number of needles to be inserted depends on the part affected, the extent of disease, &c. It is better to have too many than too few, and they should be pretty close together. No fixed rule can be stated for the length of time the needles should remain in

the part. It may vary from five minutes to two hours, and occasionally may extend to three days. The operation is sometimes painful, and sometimes almost free of uneasy sensation. The lightest change in the position of the needles will often materially alter the effect. The slightest extraction or the least forcing in will sometimes greatly lessen the uneasy feelings. The operation that gives the least pain often proves to be the most salutary. Some realize a kind of electric shock when needles are inserted; others have a tremulous motion in the muscular fibres. If good is to result at all from the operation it may be looked for soon. This is the general rule.

The extraction of common needles usually gives more pain than their insertion, especially if they penetrated deep and remained in the part a long while. This is accounted for by the rusting or oxidation of the surface, which presents many rough points that give pain as the needle is drawn out. To this disadvantage needles of gold or silver or platina are not liable. In order to extract the needles, rotate gently, pressing slightly on the surrounding skin, and making a gentle extractive effort at the same time. The remedy is held to be perfectly safe.

The *modus operandi* of acupuncture is not entirely understood. It is probably neither more nor less than the establishing of a new nervous impression which is more powerful than the diseased one and withal more salutary. Some have imagined that the result depended on the degree of oxidation of the needles, but it has happened frequently that most benign consequences followed the use of needles that did not rust. Some have thought that the entire operation was a kind of galvanic process, and that the agent was electricity. Doubtless a concentration of nervous power attends the operation, and this may contribute to the salutary result.

Gout, *rheumatism*, *convulsive diseases*, *amaurosis*, *chronic ophthalmia*, *anasarca*, *tic douloureux*, and many other affections, have been successfully treated by this mode of cure. Electricity and galvanism have been conjoined with acupuncture, and hence the terms *electro-puncture* and *galvano-puncture*. The latter is reported to have recovered the speech of a person who had been dumb for the space of twenty-three years, as we learn from the *Phila. Med. Examiner* of May, 1848. For further information touching electro and galvano-puncture, see *London Lancet*, July 29, 1843, and *Bell's Bulletin of Med. Science*, August, 1843.

Adeps Suillæ. *Hog's Lard.*—This needs no description. For all medicinal purposes the fresher and sweeter it is the better. As usually sold it contains more or less salt, which unfits it for various therapeutic uses. To get rid of this foreign matter

pour boiling water on the mass and stir it well; the water will dissolve all the salt and the pure lard will float on the surface.

Lard is employed in the formation of ointments and plasters, and occasionally to make clysters. It has been successfully tried in the treatment of *itch*. The whole surface being well coated with lard, the insect which causes the disease is destroyed speedily. Whatever the theory may be worth, the fact is of some consequence. Some one has truly said that a scruple of real facts is worth more than a ton of theories.

That very troublesome disease, *erysipelas*, has been happily treated by inunction with lard. The intolerable itching is thus speedily controlled, and all the symptoms mitigated. The remedy has been supposed to act chiefly by excluding the external air.

The celebrated ointment of Devergie for the cure of *chilblains* consists chiefly of lard. It is said to be the best remedy for this disease when associated with actual ulceration, and is to be applied night and morning, after careful ablution with tepid soapsuds. The formula is as follows:—

℞.—Adip. suillæ ℥i;
Goulard. ext. xij drops;
Pulv. opii gr. iij;
Creosot. x drops.
Mix.

Dr. Schneeman, physician to the King of Hanover, has published a pamphlet on the efficacy of inunction in the treatment of *scarlatina*. An abstract of this work may be seen in the *London Lancet* for January, 1850, which the reader may consult for fuller details. In place of lard, however, Dr. S. employs a piece of fat bacon, and rubs it cold into the whole surface, so as completely to anoint the entire body. This operation is to be done daily for ten days or two weeks. It is said to relieve the itching and burning of the skin, to allay soreness of the throat, to prevent infection, to make desquamation more easy, and to lessen the risk of dropsy. In a children's hospital, at Vienna, the practice has long been in use. It merits a trial on a large scale in this country.

In the *Southern Journal of Medicine and Pharmacy*, Dr. Pritchard reports very marked success in the use of hog's lard to remove *obstinate constipation*. Calomel, croton oil, Epsom salts, injections, blisters, &c., were tried to no purpose. Half a pint of lard was taken and retained, and as much more on the next day. The abdomen became softer, and the patient was more comfortable. Another half-pint was given and retained without difficulty. Soon after this there was a copious feculent evacuation, and the man quickly recovered.

ADULTERATION OF MEDICINES.—The importance of pure and

genuine articles of medicine is next in magnitude only to the right knowledge for their due administration. Those who will consult the work of Beck on this subject will learn the extent to which the practice of adulterating has been carried in this country. In fact, there is scarcely an article worth a name in the list that has not been fraudulently compounded. And as it is not possible for the practitioner to devote the requisite time to the examination of individual articles, our best advice is to select the apothecary in a town or city who has the highest reputation for honesty, as well as knowledge of his business, and to deal regularly with an individual of that stamp. Touching the prices for medicines, let me say, as the result of some experience and observation, that it is good policy to pay high charges rather than to seek for what are called bargains. The best quality of medicine will ever command the best prices, and it would be strange if it were otherwise. The judicious physician will send his orders for small rather than for large quantities at once. Three or four supplies in the course of a year, from a good house, will secure to him all that he can desire on the score of really good articles of Materia Medica.

Dr. Bailey, a special examiner of drugs, &c. &c. under a late law of Congress, rejected, at the port of New York, *ninety thousand pounds* of articles imported into that city, such as rhubarb, opium, Peruvian bark, jalap, iodine, croton oil, &c. &c., in about six months. Not less than thirty-four thousand pounds of spurious and worthless cinchona bark were subjected to Dr. B.'s inspection, and he gives the most satisfactory reason for rejecting the whole. The article was found to be almost entirely void of the natural alkaloids of the true barks, and therefore to possess no valuable antiperiodic quality. These spurious barks cost about six cents per pound, delivered in New York, while the genuine bark cannot be furnished for less than eighty cents.

I have quoted from the remarks of Dr. Bailey on Peruvian bark for the special reason that no article is so largely consumed in the management of our diseases as the sulphate of quinine. But the researches of Dr. B. prove conclusively that opium and iodine, and other articles regarded as indispensable, are also subjects of the most scandalous frauds.

We cannot but rejoice that so efficient an officer has been employed in this important task, and fondly hope that others equally competent may be assigned speedily to the same laudable investigation.

AGRICULTURE.—We feel no hesitation in placing this item here as a strictly therapeutic agent. We have no objection to be called heterodoxical for saying that we are quite willing to cure the sick without a dose of medicine. That this end can be at-

tained, sometimes, better by working moderately on a farm, or in the lighter toil of a vegetable or flower garden, we know by experience. Shattered in our nervous system severely, in 1854, by a terrible neuralgic seizure in the left hip and down to the toes, we almost despaired of ever being able to display anything like manly physical energy. We eschewed physic almost entirely, and made an experiment with horticulture. The trial worked most happily. And if any one would like to see an exemplification in one person of Headland's classification, copied into our Introduction, he may find it in agriculture and horticulture employed for the cure of neuralgic disease in a patient over fifty years of age. That this remedy is *hæmatic*, or capable of improving the blood, I am quite sure. That it is *neurotic*, or suited to allay all nervous derangement, is not a questionable point with me. And as an *eliminative*, carrying morbid matter out of the system, it is equally efficient.

Now it is not pretended that agriculture or horticulture is an infallible remedy. But it is, beyond doubt, too much neglected. Let it be tried, moderately at first, so as not to fatigue, and never be overdone so as to exhaust the vital force.

ALCOHOL.—This term is of Arabic origin, and was formerly applied to any pure essence. The more common use of the word refers to pure intoxicating spirit. The ready combustibility of alcohol is well known, and the effect of combustion is to convert it into water and carbonic acid. It is one of the fluids that is miscible with water in all proportions. It is exceedingly volatile, and the purer it is the more obvious is this property. We are not aware of more than a single instance in which it was completely frozen, and hence its importance in the construction of thermometers to measure very low temperatures. It is the well-known solvent of pure resins and of articles that contain more or less resin, just in proportion as this ingredient preponderates, and hence its relation to tinctures. When pure it is very much lighter than water.

Alcohol, as such, has never yet been found as a natural, original product. It is always formed by art, and hence is the fruit of man's ingenuity, and never a direct gift of Providence. It results from the derangement of the elementary principles of vegetable matter and the resulting combinations that ensue; hence all sorts of vegetable matter can be made to yield it on this principle. All wines, domestic or foreign, contain alcohol; and Mr. Brande justly remarked that the strength of wine is, truly, alcohol.

It has been erroneously said, more than once, that alcohol is the result of distillation; whereas this process simply separates it from the fluid mass after fermentation has developed this new

principle. The alcohol being lighter than the balance of the liquid, is driven over by the heat employed in the process of distillation. The term *absolute* alcohol means the pure unadulterated article. *Alcohol fortius* is known also by the term *spiritus vini rectificatus*. *Proof spirit* is alcohol more or less diluted with water, and sometimes called *spiritus tenuior*.

On account of its active solvent power the books abound with tinctures, and there has been too great a willingness to exhibit them. But, inasmuch as a large majority of the sots have been made so by the doctors, through the agency of alcoholic medicines, it is the duty of the profession to correct the evil as speedily as the nature of the case will allow.

The introduction of the sulphate of quinine into medical practice has done a good deal to lessen the consumption of alcoholic fluids under the name of medicine. Forty years ago, very many hogsheads of brandy and wine and kindred articles were made vehicles of the administration of Peruvian bark in the treatment of intermittents. A fondness for strong drink was thus established so deeply in the systems of thousands as to put all the efforts of philanthropy to eradicate it to defiance. And though we may, and do rejoice, that nobody, except in very peculiar cases, thinks of curing ague and fever with brandy now, there is still room for reformation. Tinctures are resorted to needlessly in cases which could be managed quite as well, and it may be far better, by powders, pills, infusions, extracts, and aqueous mixtures.

In a case of emergency, where life is at hazard, the physician may and should employ any remedy within his reach. But, in regular practice, under ordinary circumstances, when he can select his means, he is bound to eschew all remedies that have a tendency to fix in the system a ruinous habit that may be lasting as life. The present state of society demands an abridgement (if not the exclusion) of all alcoholic medicines, and it is in the power of every physician to do something in this cause. Most assuredly a wise man will never administer anything like alcohol to a patient who has been intemperate, unless he cannot avoid so doing, as in a case of extremity may happen occasionally. As a general rule, there is no need for such administration, while the hazard is immense.

The question is often asked, even in this enlightened day, "Is alcohol, in any form, necessary to any man in full health?" The reply dictated by the soundest philosophy and common sense is, uncompromisingly, *no*. Captain Ross's history of his second voyage to find the northwest passage proves, beyond the possibility of mistake, that alcohol is not only not necessary in the coldest latitudes, but that its agency is decidedly pernicious. Those of his crew who suffered most in the regions of perpetual

ice were those who could not be prevailed upon to abstain from the use of strong drink. The mercury in the thermometers fell so low that it was actually frozen, and yet the most efficient sailors were those who drank no beverage stronger than water. The temperance ships that have visited all parts of the world and passed through all latitudes have proved conclusively that neither intense heat nor severe cold can be the better endured by the aid of stimulationg liquors. The experience of hundreds of temperance physicians, who never taste alcohol in any shape, is to the same point. Monro, on the *Diseases of Soldiers;* Mosely, on the *Diseases of Hot Climates;* Jackson, Marshall, and many other distinguished physicians, bear corresponding testimony. They assure us that coffee, lemonade, vinegar and water, and the like, are far better for soldiers in hot climates than any sort of intoxicating drink.

Can a man abandon the excessive use of alcoholic potations at once without injury? How frequently has this query been propounded! just as if it had not been responded to by more than a thousand living proofs. A fixed resolution to forego at once and forever the use of strong drink has been, and therefore may be again, potent enough to secure the result. Men adjudged by their neighbors to be entirely ruined, almost outcasts from society, have stopped in their career of intemperance, and ceased to taste the poison, merely because they had publicly taken an oath to abstain entirely for a fixed period.

When a physician is consulted in such cases, under the apprehension that bad consequences may follow, for a time, at least, he should direct the free use of ginger, cinnamon, cloves, in the form of infusion; soups, with plenty of Cayenne pepper, and the like. The milk of assafœtida will also be very proper, and occasionally some of the bitter vegetable infusions.

The safest use of alcohol is for *external* medication, in the form of fomentations, frictions, &c.; but even when thus employed the alcohol should be combined with such substances as will forbid its use internally by those who have a fondness for it. I was once summoned to see a nurse who was supposed to be poisoned. There was no kind of intoxicating drink to which she could have access save a large bottle full of old whisky in which cocculus indicus had been digested for several months. This bottle had been placed on an upper shelf in a closet but little in use, and the liquor was applied in proper season to the purpose of killing bed-bugs. The nurse found the hid treasure and exhausted it. Her last dose was unusually large; it contained the dregs of the berry, and the effect was a narcotic poisoning which called for free vomiting and local irritants to subdue it.

Inasmuch as all, or nearly all, the brandy, gin, whisky, rum,

and wines sold in the country are adulterations, compounded in part of deleterious agents, the physician who thinks he cannot altogether dispense with alcoholic liquor should purchase the purest alcohol that is on sale. The only efficient agent in any of the liquids named is alcohol, and hence the propriety of procuring this in a pure form and diluting it as may be desirable.

Dr. Todd has published the history of eighteen cases of low *typhus fever* treated by the free exhibition of *brandy*, of which about a half-ounce was given every half hour, night and day. It is proper to add, however, that the patients took, also, chloric ether, carbonate of ammonia, and beef tea. Blisters were also employed. The ages of the patients varied from twenty to seventy. Only one case terminated fatally. In the other cases the pulse fell from one hundred and thirty to ninety in less than four days, the skin resuming also its wonted condition.—*Braithwaite*, part xxviii. p. 20.

The external use of alcohol is employed with a view to its rubefacient and refrigerant effects. To insure the former, soak a compress in the alcoholic liquor and confine it by means of a bandage, so as to retard evaporation. If strong alcohol be thus applied, it will not only redden the skin but sometimes actually vesicate. We get a refrigerant result when alcohol is applied to a part laboring under inflammation, without either compress or bandage. Evaporation goes on rapidly, the heat of the part is thus carried off, and the patient is conscious of a reduction of temperature.

In vol. vi. of *Duncan's Medical Commentaries*, the injection of diluted alcohol is highly praised for the speedy and safe cure of *gonorrhœa*. An ounce of the pure spirit is added to six ounces of water, or more, as circumstances may demand. The injection should induce some smarting pain for a few minutes. It should be thrown into the urethra every three hours, or oftener, until the discharge is checked, which will require about a day; after that the injection is employed less frequently. It is affirmed that this treatment will cure the disease in nine times out of ten. The facts and opinions of the writer make it evident that the treatment is really abortive, very much like the action of nitrate of silver.

Alcohol, under all its varied names, has been frequently employed for the cure of *burns and scalds*, and in the way of fomentation for the relief of local pains. The employment in all these instances calls for sound judgment and wise discretion, to adapt the remedy to the existing circumstances.

The very severe *pain* of *gout* in the extremities has been promptly relieved by the application of pure spirits of wine. Dr. Goolden is in the habit of using it in private and in hospital

practice. The editor of the *Times* says he witnessed its almost immediate efficacy in a patient in St. Thomas's hospital, in whom the pains of the foot were agonizing. It is supposed that the alcohol acts by absorption more than by mere evaporation. The mode of application is by a piece of lint saturated with the spirit, laid on the part and then covered with oiled silk.—*Med. Times*, Nov. 12, 1854.

Internally exhibited, alcohol is decidedly a stimulant, and occasionally a very valuable one. Thus, in deep and sudden prostration caused by severe purgation, strong milk punch is speedily restorative. The discharge is checked, and the system invigorated, and all this independently of any sort of intoxicating effect, even though a pint of brandy be swallowed in the course of four or five hours. On the same principle, too, alcohol has been useful, in the form of brandy, in exhausting *uterine hemorrhage* that threatened the extinction of vitality.

When an individual has been poisoned by alcoholic drink, he should be roused, if practicable, by the use of a prompt emetic. If the stomach-pump can be employed it will serve to empty the stomach effectually. Sometimes, however, the jaws are fixed, and it is impossible to open the mouth so as to introduce medicine or anything else. In such cases I have succeeded by laying a poultice of tobacco leaf, soaked in hot water, on the epigastric region. Should the insensibility still remain, the free use of the cold dash* on the naked surface will sometimes be effectual. Flagellation, cowhage, and the actual cautery, have all been applied to the skin with good result. It is said that a teaspoonful of aqua ammonia will speedily put a period to the symptoms of alcoholic poisoning. If there be obvious and alarming congestion of the brain, and the subject be florid and plethoric, it will be proper to open a vein and detract from twelve to twenty ounces of blood.

Notwithstanding all that has been said, and well said on this subject, there are some persons who deny that alcohol and

* During my residence in Louisville, an old inebriate, who was seldom if ever seen in a state of absolute sobriety, undertook to cure a very noisy street drunkard, who planted himself near to the old gentleman's front door, ever and anon vociferating at the top of his voice and so gathering a crowd of noisy boys. He urged the half-insane sot to go away, to no purpose. Then his black man was ordered to bring two buckets full of cold water just pumped out of a deep well. It was midsummer, and the noisy fellow was in his shirt sleeves. In an instant both buckets were emptied into the man's face with all the violence that muscle could impart. After the first sense of semi-suffocation was over the ducked sot was on his feet, cursing most furiously, but evidently almost if not entirely sober. "Oh hush!" said the administrator; "it would have cost you twenty-five cents for not half so good a bath at *Caspari's Bath-house*." The cure was prompt and effectual. I am not sure that the *modus operandi* lies within any branch of *Dr. Headland's classification*.

strong drinks are poisons; and we feel disposed, therefore, to present what we regard as the pith of the evidence on this point. Is alcohol, in all the forms of its *beverage-use*, a *poison?*

In attempting to decide this matter let it be borne in mind that if we can show, on good authority, that alcoholic drinks do produce results similar to those which mark the operation of acknowledged poisons, our end is gained. If, in addition, its deleterious influence can be shown to be greater than that of common poisons, the cause we advocate will be found to have acquired strength.

Christison, Orfila, Sedillot, Beck, and all authors of note on toxicology, class alcohol with the *narcotico-acrid poisons.* Not only pure alcohol, but its varied forms of mixture in common use are all shown to be decidedly deleterious to the human system. The above, and many other writers, confirm the declarations of Rush and Trotter, made fifty years ago. The authority of these two distinguished men is entitled to great respect.

As it is also to our purpose, we quote the following remarks from the celebrated work of Dr. A. T. Thompson, on *Materia Medica and Therapeutics*, page 207:—"It may be reasonably asked, however, of what benefit is even the temperate use of ardent spirits to a healthful individual who requires no additional excitement either of his mental or corporeal energies? To this question no satisfactory reply can be offered; and, notwithstanding the universal propensity of the human species for intoxication, and the ingenuity exercised in obtaining means to effect it, yet ardent spirits can be justly regarded in no other point of view than as either a medicine or a *poison.*" *Combe on Digestion*, pages 280 and 285, is to the same point substantially.

Orfila, in his *General Toxicology*, vol. ii., mentions the case of a soldier who died instantly after drinking eight pints of brandy for a wager. Christison has the case of a man who stole a bottle of whisky, and, fearing detection, drank the whole of it. He died in four hours with symptoms of pure coma.

Very recently I had intelligence of a lad ten years of age who secretly drank from a whisky bottle, in imitation of his father, who was at work in the field. The sudden silence of the boy attracted the notice of the parent, when a wild, fixed gaze was discovered, that denoted something wrong. The father called the boy by name but in vain, and in less than an hour he was dead. How much of the liquor he drank is not known. Many similar facts could be adduced if necessary.

Other cases are detailed, in which the fatal results were more slowly developed, being preceded by delirium, insensibility, spasms, convulsions, apoplexy, &c. &c. These diversified operations of the poison—all, however, tending to the same sad

issue—are very similar to what is often noticed in the action of opium, arsenic, and the like. These latter given in large doses kill speedily; if the dose be smaller the effect is procrastinated to hours, or days, or even months, as I have known in reference to the poison of arsenic, and as will be more particularly noticed hereafter. If arsenic fail to spend the whole of its poisonous energy on the stomach and bowels, and should happen to impress morbidly the nervous system, we discover paralysis of the extremities, which, extending its sphere, at length pervades the whole system, and the victim perishes miserably after months of severe suffering. Others in the same family may have died in a few hours from the same cause, owing to the violent action of the poison on the primæ viæ. But would any one doubt that the results in all the cases flowed, as a natural consequence, from the *poison* of arsenic? The same reasoning is equally applicable to all the forms of alcoholic drink.

The following cases will serve to illustrate still further the effects of alcohol on the human system. They may be found in the *London Lancet*, vol. i. for 1839–40.

"A man who had previously enjoyed very good health swallowed by mistake about eight ounces of alcohol 50° above proof. He dropped instantly on the floor in a state of insensibility. In a few minutes a medical man saw him, and found him to be exceedingly cold, with the respiration calm, the pulse nearly gone, and lips blue. His wife refused to have the stomach emptied, but gave him some purgative pills. He continued in the cold insensible state for about eleven hours, at the expiration of which he opened his eyes, gazed around, and inquired how he got home from work. During the eleven hours he passed no urine or feces; but on regaining sensibility the bowels were moved, the evacuations being pitch-like. He went to work on the following day, and remained apparently well for about three weeks."

Here we see how very rapid and violent is the action of a full dose of strong alcohol. We learn, also, that although the patient seemed to recover, the foundation for serious and perhaps incurable disease was thus laid.

"At the end of the three weeks referred to he was so unwell as to apply to an apothecary, who gave him an emetic and a cathartic, after whose operation Dr. Bird found him with pupils widely dilated, with pale countenance, pulse one hundred and twenty, appetite good, and inclined to be drowsy. There was no paralysis, and yet he was not able to follow his trade. Dr. Bird thought the case bore some analogy to delirium tremens, and a variety of treatment was resorted to, but without effect. Up to the date of the report, about five months, the man con-

tinued to be unwell. The points of interest in the case were, 1. The sudden effect of the alcohol. 2. The apparent recovery at the end of eleven hours, and continuance of that state for three weeks. 3. The obvious decline of health after that date, and the apparently incurable condition of the patient."

In the same report (Westminster Medical Society, 1839) we have the case of a lad, aged sixteen, who for a wager drank a pint of gin. He shivered and became insensible, and was so found by the surgeon who arrived very soon after the accident. The pupils were dilated, there was no pulse, and the extremities were cold. The stomach-pump was applied and a large quantity of spirit removed. The boy remained insensible for twelve hours, and then slowly recovered. From that period, however, he exhibited marks of feebleness and disease, and was a burden to his family.

But the deleterious influence of alcohol goes even farther. It reaches the very deepest recesses of the moral as well as the physical nature; poisons not only the fountains of life, but the springs of intelligence; and transforms the man into a nondescript, to compare which with the harmless beast would be an unmerited degradation of the latter.

Plutarch's Morals, published in 1718, at London, has these remarks:—"They usually prove wine-bibbers and drunkards, whose parents begot them when they were drunk; wherefore Diogenes said to a stripling, somewhat crack-brained and half-witted, 'Surely, young man, thy father begot thee when he was drunk.'" And Burton, in his celebrated work called *Anatomy of Melancholy*, remarks,—"If a drunken man gets a child, it will never, likely, have a good brain." The reasoning connected with these reflections is too copious for our present purpose, but suffices to show that alohol is the most pervasive of all poisons and the most ruinous by far to society.

Orfila has demonstrated that if alcohol be injected into the cellular tissue its poisonous quality is as plainly developed as when it is passed into the stomach. Injected into the cavity of the chest it appears to be equally energetic.

Some have supposed that alcohol poisons by its influence on the brain through the medium of the nerves, without first entering the blood. Others think that it actually finds its way to the circulating mass very speedily, although it is not assimilated with the vital fluids. Every one knows that the breath is soon impregnated with the odor of spirits, and that the smell remains for a considerable length of time.

We have referred to the diversified operation of alcohol, dependent on the strength of the fluid, the habits, health, idiosyncracies, &c. of the patient, all which may exert a modifying influ-

ence. Hence the well-known fact that some men may be intoxicated with a single glass of brandy and water, while others will be scarcely affected (not obviously at any rate) by ten times as much.

Superadded to the appropriate effects of this poison is the agency of season in insuring the fatal result. Thus, in very cold weather the intoxicated man may perish by the conjoined influence of reduced temperature sooner than under more favorable circumstances. He is exposed, also, to other accidents, which under different contingencies might be tolerated, but which tend to aggravate the condition resulting from the alcoholic poison and to accelerate death.

Beauprè, in his excellent work on *Cold*, tells of a fête given under Potemkins's administration at Petersburg, in Russia, by a farmer-general of distilled spirits, in which from fifteen to eighteen hundred persons, who committed too great excesses in spirituous drink, perished miserably from cold in the streets and squares of that capital. (Page 130.) And, further, that the soldiers who got drunk on the retreat from Moscow fell asleep, in spite of all efforts to rouse them; the cold, and narcotic effects of the alcohol overpowered them.

One of the most frightful effects of the poison of alcohol is the disease known to physicians by the name of *delirium tremens*, which frequently terminates in death. Indurations of the liver, jaundice, dropsy, inflammation of the kidneys, scirrhous pylorus, a thickened and callous state of the whole stomach, contraction of that organ, aneurism of the heart and great blood-vessels, hemorrhage from the lungs, mania, epilepsy, spontaneous combustion, all result from the deleterious action of alcohol on the animal economy. It impairs the integrity of every living fibre, and infuses its pestiferous influence into every atom of the organized fabric.

The *morbid appearances* induced by alcohol, as developed by post-mortem examinations, are exceedingly various, as might be expected. The mucous coat of the stomach is found inflamed more or less, or highly congested, or ulcerated, or in a scirrhous state, and sometimes actually cancerous. These results depend partly upon the length of time the victim has been addicted to the use of strong drink and partly on constitutional peculiarities. In some cases the stomach presents no unusual appearance; and this is especially true where the quantity taken is so large as to kill in a few minutes. The narcotic influence is exerted on the brain, from the stomach, without sensibly impressing the latter. The brain is often found to exhibit proofs of extravasation, yet this is not a uniform occurrence. Where a predisposition to congestion of the brain previously existed we would expect to meet with such extravasations more or less extensively.

On opening the stomach of a victim to this poison, you may expect to find some of the liquor, if the quantity taken was large and death speedily followed. In such cases the poison could not all be absorbed during life, nor could it pass off by reason of volatility, unless the examination was postponed too long. Generally, the strong smell of the liquor will indicate its quality, and with other previous information may decide that point satisfactorily. If there be any doubt that an alcoholic liquor is present in such a case, collect the fluid contents of the stomach and subject them to distillation from the vapor bath. The product will be a mixture of water and alcohol, from which the former can be detached by frequent agitation with perfectly dry carbonate of potash. This will leave the alcohol of sufficient purity to dissipate all doubt as to its nature.

Dr. Christison doubts the correctness of reported facts of diluted alcohol found in the ventricles of the brain, although asserted by several very respectable physicians in different parts of the world. But his reasons for being skeptical do not carry with them, to my mind, the slightest force. He might as well, at this time of day, set aside the conceded position that spontaneous combustion has been the fate of more than a hundred drunkards, and these scattered over the globe, by his notion that the liquor must coagulate the blood if so inflammable a fluid, as is alleged, pervades the whole body. But to me it would appear much more strange that some few, at least, of the great army of drunkards should not have every living fibre so thoroughly saturated with that which for years has been their principal meat and drink as to be susceptible of instantaneous combustion, in the manner so often heralded in the newspapers and scientific journals.

What has been said, thus far, of alcoholic drinks was predicated on the notion of their purity, or rather their freedom from adulteration. Under the most favorable circumstances we have seen something of their dire effects; but how must these be aggravated by the scandalous tricks of manufacturers, that are now as notorious as the use of the article? Brandy, rum, gin, wines, beer, porter, &c., are all the subject of constant frauds, and the adulterations are made a matter of scientific study. The most acrid vegetable and mineral substances, as copperas, alum, cocculus indicus, cherry laurel water, and many other poisonous matters, known and concealed, are employed to convert common whisky into real French brandy, Holland gin, Jamaica spirits, &c. &c. So by various admixtures unsaleable wines are converted into genuine *Oporto* to such an extent that, according to the best statistics, nearly twenty times more casks of Port wine are on sale in Great Britain annually than are manufactured at Oporto. The same fraud is also perpetrated with *Madeira*, only

to a much greater extent, so that probably not one in every hundred casks called by that name and sold in this country contains a drop of the genuine wine. The following extract from an official document speaks for itself:—"Vast quantities of wine, in imitation of the produce of all the wine-growing countries, are manufactured at Cette and Marseilles, and sent by collusion to Madeira, and thence, after being branded with the usual marks of the genuine Madeira vintage, are re-shipped to this country. And frauds to the same extent and in the same way are perpetrated in the manufacture of Port and other wines. A single fact may give some idea of the extent to which these frauds are carried on in England. According to the custom-house books of Oporto, one hundred and thirty-five pipes and twenty hogsheads of wine were shipped to Guernsey. The same year there were sent from Guernsey and landed at the London docks two thousand five hundred and forty-five pipes and one hundred and sixty-two hogsheads, all reputed to be *genuine* Port! So largely is this nefarious traffic carried on that one man in France has been known to ship to this country one hundred thousand bottles of wine a year, professedly Champagne, but which was not the produce of the Champagne districts. Genuine Champagne is never sent out of France for less than about seven dollars per dozen. But that which affects to bear the marks of the genuine is a drug often at two dollars."*

ALIMENTARIA MATERIA.—The old division of Materia Medica embraced two grand features, viz., *Materia Medica*, or things purely medicinal, and *Materia Alimentaria*, including all the articles regarded as alimentary or dietetic. We have no desire to enlarge on this latter feature. It is proper to say, however, that every kind of food that is capable of assisting the processes of animal respiration and animal nutrition is entitled to the appellation of alimentary. It was once affirmed that gum Arabic did not come under this category, although it is an historical fact that a very large body of *Arabs* subsisted on it, and on such water as they could procure, for more than two months. So, more recently, it has been contended that coffee and tea, though in such universal use, were not alimentary, because they did not contribute to sustain the animal vigor. But if Liebig has proved anything at all he has conclusively shown that *gum* is one of the elements of respiration, and therefore aids that process materially. And it is made equally plain by the analyses of Liebig and Pfaff, Jobst and Martius, that coffee and tea are highly nitrogenized compounds, each containing in every hundred parts

* A wealthy citizen of Philadelphia, who has been almost half a century in the liquor business, was asked by a friend how much of the so-called *French* brandy sold in this city was genuine. The reply was, "*Not more than one-tenth.*"

about twenty-nine of nitrogen, fifty of carbon, five of hydrogen, and sixteen of oxygen, and therefore decidedly alimentary.

We are well aware that peculiarities of constitution and the influence of habit may exert a very perceptible control on the effect of certain articles of food. Still the general law holds good that diet, to be truly alimentary, must conform very much to the elementary structure of the animal tissues and the nature of the more important functions. The common sense of mankind in all countries seems to have carried out this grand principle instinctively as a law of Nature, of which Liebig's discoveries are only humble interpreters. If the present work were a treatise on *Food*, it would be gratifying to pursue the subject into its details; but this is not our purpose.

Allium Sativum. *Garlic.*—This is too well known to need a description. It is one of the articles that serve to illustrate the power of habit. The English universally detest it. The Russians, Poles, Spaniards, Portuguese, the Jews everywhere, relish it in every form. The active properties reside in a volatile oil, easily separated by heat. So penetrating is the odor of garlic, that if a poultice be applied to the soles of the feet the odor will exhale from the lungs and the taste will be perceptible. The flesh of fowls, their eggs, as well as milk and butter, are liable to be impregnated by it.

Dioscorides advised garlic as a remedy for *tapeworm*, for *venomous bites*, *coughs*, *obstructions of the urine*, &c. Celsus employed it to prevent the paroxysms of *ague*. Sydenham used it as a rubefacient to the soles of the feet in persons laboring under *confluent smallpox*.

One of the oldest uses of garlic is to the spine of young children affected with *hooping-cough*. The expressed juice mixed with sweet oil, or alone, has been employed for this end, and the practice obtains now in some parts of our country. Garlic is also an ancient remedy for *deafness*, and it certainly has a decided advantage over many costly nostrums. It may be serviceable, and probably will do no harm.

A syrup of garlic, made by adding white sugar to the juice of garlic and gently simmering the mixture, is often beneficial to old *asthmatics*, by promoting expectoration and removing stricture of the chest.

The very worst mode of administering garlic, though quite popular in some sections of the country, is in gin and whisky, for the cure of *worms*. A much safer and better practice is to rub the garlic to a pulp with as much sugar as can be incorporated with it. The mixture is readily taken by young children, and is frequently efficacious.

The *diuretic* property of garlic is manifest by its internal and

external use. A few cloves bruised with a little hot vinegar and laid on the pubic region will generally excite a discharge of urine in young children. The expedient is simple and efficient.

A clove of garlic cut in two pieces and the fresh surface applied to a spot *stung* by a *wasp* or *bee* will promptly allay the irritation and abate the pain. It acts very much as liquid ammonia when used for the same end.

The dose of garlic juice for an adult is a tablespoonful, which may be repeated frequently, alone or mixed with syrup. In excessive portions it induces gastric irritation, hemorrhoids, headache, fever, &c.

From what has been said it is obvious that the therapeutic properties of garlic are various, viz., *stimulant, expectorant, tonic, diuretic, anthelmintic, rubefacient.*

ALLOPATHY. From *allos* and *pathos, other disease.*—This term has been regarded as referring to any medicinal agent capable of curing a diseased action by setting up another of a different kind. In this view of the term, the *infinitesimals*, usually styled homœopathic doctors, designate the regular practitioners by the title of *allopaths*, or allopathic physicians. The title is exceedingly inappropriate, because it covers but a small portion of the ground occupied by the regular practice. Every well-instructed physician does much more than attempt to cure by counter-irritation, or by setting up one action to remove another. Very frequently we give emetics to a patient already nauseated, with the view of restoring the natural functions of the stomach. And the daily use of *alteratives* to bring about a gradual change in the fluids and solids is a very different thing from pure allopathy. It is very important to *understand* the *terms* of medicine, when we repeat them as we do household words.

ALOES.—The inspissated or dried juice of the spiked aloe (*Aloe spicata*) is the same with what we usually call aloes. A good deal of uncertainty hangs over the natural history of this medicine, and therefore we shall not consume time in an attempt to investigate the matter. Some have alleged that all kinds of aloes come from one source, and that the diversity found in commerce is owing to differences in the manner of collection. The island of Socotra, in South Africa, affords much of the article known as *Socotrine* aloes. The spiked aloe-tree grows there spontaneously, and yields the drug in large quantity. The full-grown and mature leaf of the tree is cut off by a clean incision, whereupon the juice flows freely. It is collected in proper vessels and gradually dried by moderate heat. When sufficiently inspissated it is poured into casks or skins.

The usual commercial varieties are the *Cape*, *Socotrine*, and

Hepatic aloes. The *cape* variety is abundant and cheap, has a shining, vitreous appearance; a strong and unpleasant odor when fresh, and more of a tinge of green than the other kinds. The *Socotrine* variety is the one generally employed in medical practice, and yet it is by no means certain that we always exhibit it when we intend to do so. It has a more agreeable odor than the other sorts, with more aroma, and a less unpleasant bitter taste. The best Socotrine aloes should have a reddish-brown color, break with easy fracture, and the powder should be of a bright golden color. What is called *hepatic* aloes is supposed to resemble the liver in point of color, or to be of a deep yellowish-brown. It has very little aroma, and is more unpleasant than the other varieties. Its powder is of a dull olive-yellow. It comes chiefly from the West Indies and Bombay. The *fœtid*, *caballine*, or *horse* aloes, most probably got from the dregs of all the other kinds, is employed as a medicine for inferior animals.

The general properties of all kinds of aloes are alike. They have in common an abidingly bitter taste, and all are cathartic. They contain bitter extractive, resin, and albumen, and, according to Braconnot, a *peculiar* principle. They yield their properties to water, cold or hot, to alcohol, strong or diluted. Hence watery solutions, as well as tinctures, may be employed.

The solution of aloes in the alimentary canal is accelerated by admixture with alkalies or soap. These alter the medicinal property a little, but lessen the irritant quality.

We may very properly speak of aloes as possessing *tonic*, *purgative*, *emmenagogue*, and *anthelmintic* properties. The *tonic* power is not often resorted to, because we possess articles fully equal, and indeed superior, that are far more agreeable. Yet it is certainly capable of exerting a decidedly *tonic* influence in doses of from a half to one grain, taken twice or thrice a day, in a pill or in any convenient way. Its bitterness is the basis of its tonicity; while the mild action exerted on the bowels, by removing offending matters from the intestines, actually increases the tonic effect.

As a *purgative* or *cathartic* we give this medicine more frequently than for any other purpose. And as some diversity has obtained in regard to the mode by which this article effects purgation, it is needful to say a few words specially on that point. It was supposed, from the well-known fact that it acts chiefly on the lower end of the canal, that it failed to exert a cathartic influence higher up, because it required to travel almost the entire route of the bowels before enough could be dissolved to produce purgation. That it does not stimulate the mucous membrane of the whole canal to pour out an increase of its natural

secretion is obvious from the fact that the stools are not watery but consistent. No matter how large the dose, (if under twenty grains,) it is not felt by the patient until it passes the sigmoid flexure of the colon. After that point has been reached an internal commotion is realized and an evacuation soon follows.

That the medicine does not require the long passage in the bowels merely to be sufficiently dissolved in order to purge is obvious from the well-known endermic use of it. Applied to an ulcer or a denuded spot it will as effectually and as promptly prove cathartic as when it is exhibited in the more usual way.

All the varieties of aloes agree in the feature already named, viz., in acting on the lower portion of the bowels and inducing consistent discharges. This effect is not in the least degree altered by the form of administration.

In considering the *cathartic* power of aloes it is proper to notice the popular error in regard to the agency of this medicine in producing hemorrhoidal disease or *piles*. This idea is favored by the peculiar tendency of aloes to act exclusively on the lower bowels; and yet it is not true that the disease called *piles* depends so commonly as some believe on the use of this medicine.

Much that is said of the evils growing out of the irritant action of aloes on the rectum is attributable to the abuse of the article. Too frequently employed, it will, as any other cathartic, irritate as well as purge. In the sedentary, who neglect to make use of the requisite exercise, and who consequently realize a constant determination of blood to the rectum and verge of the anus, we find nearly all the cases of piles that are the subjects of medical treatment. Such persons are almost constantly harassed with constipated bowels, for the relief of which they resort to various cathartics, including aloes as a matter of course; and if hemorrhoidal disease supervene or be made worse the entire result is attributed to the irritant action of aloes. We need not argue that the sedentary are, from the very fact of their constant sitting posture, liable to attacks of piles, for this is universally conceded. Such persons may suffer from piles, and yet may never have taken a dose of aloes, while some who have often swallowed that medicine in cathartic doses have realized no more than simple purgation from its use.

The *irritant* action may sometimes do good. In persons of phlegmatic habits, whose entire system partakes of the torpidity that invades the bowels, who have defective appetite and mental langour, with all the symptoms that make up a case of hypochondriasis, large doses will often, even though they should prove a little drastic, do much good. A happy counter-irritation is established in the alimentary canal which, though transient, diverts morbid action from more important parts of the economy.

What is called the *emmenagogue* action of aloes is often due to the operation first named. Many dyspeptic females labor under derangement and inefficiency of the uterine system, associated with torpor of the bowels and defective appetite, who find relief from the daily use of small portions of aloes alone or in combination. I am well satisfied that such females are often injured by opiates taken to relieve present discomfort; and these persons are as frequently and signally benefited by aloes. We may sometimes combine aloes with assafœtida and cantharides, with good effect, to excite proper uterine or ovarian action, to relieve suppression of the menses, even without regard to the presence of hemorrhoidal disease. The following prescription I have often found serviceable in delicate females, laboring under such disabilities, with loss of appetite and torpor of the alimentary canal:—

℞.—Pulv. aloes, opt.;
" asafœtid. āā ʒss;
" cantharid. gr. xx.

Rub these well together with a little soap and divide into twenty pills, of which give from one to three three times a day.

To the articles of the above prescription we may add, if need be, some of the salts of iron; especially will this be proper if the patient be very feeble.

Aloetic injections thrown up the rectum repeatedly, a week before the menses should appear, and continued daily, have sometimes been very useful. From ten to thirty grains should be added to two or three ounces of water for this end.

The *anthelmintic* power ascribed to aloes depends on the bitterness of the article and its associated tonicity. In hundreds of cases the presence of worms in the alimentary canal is caused by long-continued atony; and under such circumstances a feeble tonic, with the gently-cathartic power of small doses of aloes, will do good. The practice has been to dissolve two drachms of aloes and one ounce of liquorice-ball in a quart of hot water. A tablespoonful of the cold mixture may be given to a child from eight to ten years old, every morning. Children soon become accustomed to the dose. It speedily improves the appetite and expels the worms.

But injections of aloes have proved beneficial in persons troubled with worms, especially the ascarides. From a scruple to a drachm of aloes dissolved in eight ounces of water makes the injection, of which a third or a half may be thrown up at once for children, or the whole quantity for an adult.

An English physician, Dr. Greenhow, who has made a good many experiments with aloes, declares that the good effects of the medicine are greatly increased by long trituration; and he

also asserts that the griping tendency can be prevented by adding a few grains of the extract of henbane or hops, say from one to three. He says further, that two grains of ipecacuanha mixed with the aloetic dose will almost invariably prevent its irritant action on the rectum and verge of the anus, and that thus combined the subjects of piles may take it with entire safety.

It is proper to name the circumstances which are held to forbid the use of aloes. The direction is to be regarded, however, as a general guide, to which there may be exceptions. The medicine is improper for persons of very plethoric habits, especially if they be a good deal irritable; for persons actually laboring under piles; for those who are liable to sudden uterine evacuations; for females in the early months of pregnancy, who may have aborted. The sympathetic action of aloes from the rectum to the uterus might be very pernicious in such cases.

The *dose* of aloes has been a subject of controversy. Some insist on small doses, often repeated, while others contend for large portions at a single dose. This diversity does not relate to the tonic power of the article, but exclusively to its cathartic efficacy. It must be remembered that all writers place aloes among the generally safe remedies. It is not regarded as highly energetic, nor dangerous. A dose of twenty or thirty grains might sometimes answer better than several of five grains repeated. Much depends on habit here, and not a little on fancy and individual peculiarity. If the large dose be given it should be mixed with molasses, or syrup of any suitable kind, as few would relish six or eight pills for a dose. The latter is generally the most agreeable form of administration, and one or two pills can be tolerated by most patients. Those who fear the debilitating effect of aloetic pills will do well to mix the aloes with enough of the soft extract of quassia to form a pill mass.

We alluded before to the *endermic* use of aloes; that is, the application of the medicine to the raw surface, as an ulcerated or blistered spot. Ten grains of fine powder of aloes laid on such a spot will purge in the course of six, eight, or ten hours, and thus the unpleasant taste of the article is wholly obviated.

The compound *Hiera picra*, once a very popular medicine, consists of finely pulverized aloes and canella alba. Guiacum, aloes, and cinnamon, constituted a mixture once much in use, under the name of the *compound aloetic powder*.

ALTERATIVE.—This is a therapeutic term applied to any sort of treatment that is calculated to induce a change in the blood, and consequently in all the secretions and tissues. There is probably no better illustration of an alterative medicine than we have in the administration of one-grain doses of blue pill daily, for several weeks, so as to avoid salivation altogether. The light

stools disappear and are succeeded by those of natural color, while the skin loses its yellow tinge and regains the usual appearance of health.

ALUMEN. *Alum.*—Sulphate of alumine and potash, sulphate of alumine and soda, sulphate of alumine and ammonia.

Common alum of commerce is found native in several parts of the world, in large masses. It may also be manufactured from what are called *alum ores* or *earths*. *Roche*, or *roch*, or *rock* alum abounds in *Rocca*, in Syria, and hence the name. These varieties are all composed of sulphuric acid, alumine, and potash. The sulphate of alumine and *soda*, called sometimes *soda alum*, was introduced to notice by Dr. Ure. It is very much more soluble in water than the common article; and Ure regarded this as a matter of some importance, though his discovery has never been of much benefit to the profession.

The sensible and obvious qualities of common alum are familiar to every one. Its decided acidity lays the foundation of its astringency, on account of which, chiefly, it is employed in practical medicine. Alum dissolves readily in water. A fluid-ounce of water at 60° will dissolve about thirty grains; the same quantity of boiling water will take up two hundred and forty grains. Alcohol and sulphuric ether also dissolve alum, but the solutions are rarely resorted to.

Before we notice the therapeutic uses of alum it will be well to say something touching its *incompatibilities*. The *doctrine of incompatibility*, so important in its various applications, has striking illustration in regard to alum. All the alkalies and alkaline salts are incompatible; so are carbonate of ammonia, carbonate of magnesia, acetate of lead, the salts of mercury, many vegetable and animal substances. Now, when we speak of incompatibility here, we mean to say that a mixture of alum with any article named results in so much decomposition as to destroy the quality of one, and perhaps of all the articles blended together. Thus, there are practitioners who mix alum and sugar of lead in the same prescription, a given quantity of water being employed for solution. Both alum and sugar of lead are astringent; and the mixture is made with the view of augmenting the *astringent* quality, and thereby better fitting it for a given case, as of hemorrhage or profluvium of some sort or other. But no sooner is the solution made, than the alum and sugar of lead cease to be, and two other salts are produced, viz., the acetate of alumine, which is exceedingly feeble, and the sulphate of lead, which falls to the bottom (because almost insoluble) and is absolutely inert.

The prominent *therapeutic* property of alum is its *astringent* power. We have said enough on the general nature of astringent

action in our preliminary remarks, and need not repeat here. Everybody in and out of the profession understands sufficiently well what we mean by an astringent. This grand quality of alum laid the foundation for its general use in *hemorrhages*, *fluxes*, &c. Van Helmont exhibited it largely in *uterine hemorrhage*, and, in fact, was the first to employ it in that form of disease. It is quite probable that this use of alum first suggested the employment of the sugar of lead for the same end. From five to twenty grain doses of alum have been given every three or four hours with happy result in this kind of hemorrhage, and the practice is still not unusual in some parts of our own country. So also it has been and is now given in *diarrhœa*, *leucorrhœa*, and the like, on account of its astringency. It is also reported as successful in *dysentery*, though we are inclined to believe that the cases were rather chronic diarrhœa.

Laennec employed finely powdered alum in *angina tonsillaris*, *variolous angina*, and *œdema of the glottis*. He preferred the fine powder to all sorts of gargles, and introduced it by means of a goose-quill. He placed some of the powder in a quill, and passing this into the open mouth of the patient, blew the powder forcibly, so as to lodge it on the affected spot. The moisture of the parts gradually dissolved the alum and thus protracted the astringent action.

In *gonorrhœa* the use of alum has had not a few advocates. The more common form has been by injection; but we have here to notice its internal exhibition as peculiar to Germany. Dr. Frederick assures us that he has treated the inflammatory stage of gonorrhœa most successfully with the following mixture:—

℞.—Powder of alum, ʒj;
Water, ℥vi;
Extract of liquorice, ʒi.
Mix well, and give a tablespoonful three times a day.

The pain, ardor urinæ, &c. soon abate, and the disease is arrested. Injections, made by adding from five to ten grains of alum to an ounce of decoction of oak bark, have been useful in *gonorrhœa* and *gleet;* and yet stronger injections are useful for relief of bloody discharges per anum. Solutions of alum and oak bark, or alum and water, have often been serviceable in *subacute ophthalmia*, and also as gargles for common *sore throat*. The latter practice is familiar to almost every head of a family, and is often beneficial, and generally safe.

In *typhoid fever*, associated with exhausting looseness of the bowels, doses of from thirty to sixty grains of alum have been administered with decided advantage, as we learn from *Villard's Repertoire de Clinique*, vol. iv. p. 88. Here, too, the medicine acts in virtue of its astringency.

Very many years ago alum was employed in *intermittents*, in doses of from five to ten grains, with as much of nutmeg, three or four times a day, during the intermission. We can hardly suppose that the good result in that case was due to astringency. The practice, however, has long since fallen into disuse.

Most certainly the success of *alum* in the treatment of *colica pictonum*, or lead colic, cannot depend on the *astringent* nature of the remedy. The practice is quite an old one, and has frequently been renewed, as may be seen by consulting the *London Lancet* for 1843, and *Ranking's Abstract* for 1849. Professor Benj. Smith Barton, formerly of the University of Pennsylvania, was in the habit of saying to his class, that, however strange it might seem, "some *astringents* do actually *purge*." He named alum, especially, as in point, in doses of from thirty to sixty grains.

Mr. Copland says, in his *Dictionary of Practical Medicine*, "that Schmidtman details a case in which the exhibition of two or three doses of alum produced a most copious operation on the bowels after the most active purgatives had been given by the mouth and *per anum* without any effect. When residing on the continent, in 1818 and 1819, I saw many cases treated by this substance, given in doses of from a scruple to two drachms in gum-water, or with camphor and opium. M. Kapeler, in his hospital, into which many cases of the disease are admitted, employed scarcely any other medicine than alum dissolved in mucilaginous decoctions, assisting its action by oleaginous clysters. The worst cases, those with paralysis, loss of sight and hearing, violent cephalalgia, tremors of the muscles and limbs, &c., were restored in a much shorter time by this than by any other treatment, and with much less disposition to relapse or to pass into a paralytic state. I have employed alum with uniform success in several cases, and combined it with camphor, Cayenne pepper, and occasionally with opium; and have always found that when given in sufficient quantity, from two to four or five drachms in the twenty-four hours, and assisted by oleaginous clysters, it will open the bowels more certainly than any other medicine. M. Gendrin has recently given alum in fifty-eight cases of this disease, all of which recovered in from three to five days. He has also found that a drachm or a drachm and a half of *sulphuric acid* in the twenty-four hours, taken in three or four pints of water, is equally prompt and efficacious."

M. Brachet, of Paris, confirms the testimony of Gendrin very decidedly. He prescribed from one and a half to two drachms in a ptisan, to be taken during the day, adding forty or fifty drops of laudanum; and if the bowels were not moved by the third day he gave a mild aperient. One hundred and fifty cases

were so treated with entire success.—*Brit. and For. Med.-Chirurg. Rev.*, January, 1851.

Dr. Todd and others have endeavored to account for the happy action of alum in lead colic by supposing that chemical decomposition ensued, in virtue of which the carbonate of lead in the system was changed into a sulphate. Be this as it may, it is certain that lead colic has often yielded to large doses of alum, and that these have purged the patient when ordinary cathartics were inert. The truth is that the intestines are paralyzed by the action of the lead poison, and it may be that there is a special adaptation of the alum to that condition, which being subdued, purgation readily follows.

But if alum cannot accomplish its good effects in *colica pictorum* in virtue of its *astringency*, can it do what it is said to induce in *croup* by that sort of agency? Prof. Meigs, of Jefferson Medical College, Philadelphia, is quite partial to large doses of powdered alum for young children affected with *croup* of the inflammatory kind. He says he has given the medicine as an *active emetic* for more than twenty years. Its *rapidity* and *certainty* of action are assigned as the prominent qualities. A teaspoonful in syrup of any kind is given every ten, fifteen, or twenty minutes. Seldom is it needful to give more than one or two doses. Dr. M. names, as an additional feature of high value in this medicine, its failure to depress or exhaust the system as do other emetics, and especially tartar emetic.

We do not find in the profession at large a disposition to adopt *this* kind of *emetic* practice, notwithstanding the high encomiums passed on it by Professor Meigs. In fact, we have heard but one other gentleman speak of its exhibition, and his experience was not very favorable. We trust, however, that a remedy so highly endorsed will not be neglected simply because it seems to be a little paradoxical to employ an astringent in this way.

Dr. Andrews speaks of the use of alum in pertussis, bronchitis, and *croup*, in a paper dated Feb. 1844, and published in the *London Lancet* for that year. He did not employ it as an emetic, but as a sedative.

There are two preparations made of common alum which are often valuable, viz., the *alum curd*, and *alum whey*. The *curd* is readily formed by agitating a lump of alum (say a drachm or two) in the whites of two or more eggs; the albumen is soon coagulated or curdled, and is placed between pieces of fine gauze, and then applied over the eye laboring under *subacute ophthalmia*. It affords much relief, and is extremely grateful to the patient.

The *whey* is prepared by boiling ʒij of alum in a pint of new milk for the space of five minutes or less. Strain through

gauze, sweeten, and add nutmeg, if agreeable. The dose is a wineglassful from three to six times a day. It is a cooling, astringent drink, suited to cases of internal hemorrhage, gleets, and the like.

Alum has the property of retarding fermentation, and is added to the paste of paper hangers for this end. It speedily removes the turbidness of river-water, and is much used on the Ohio river for this purpose. A drachm or two will suffice for five gallons of water.

A few words are necessary on the article called *burnt* alum. It is the *Alumen ustum*, or *exsiccatum* of the old books, and is made by exposing common alum to heat, as on a shovel laid on burning coals. The salt is fused, the water of crystallization is expelled, and a dry, porous, light, white mass remains. The burnt alum so formed is employed externally as an astringent and escharotic. Mixed with equal parts of fine white sugar and applied to what the common people call *proud flesh* (profuse granulations) its gentle caustic power is developed. Jobert, in the *French Lancet* for 1835, speaks well of the *burnt alum* for *stricture of the urethra*. He makes the fine powder into a paste with sweet oil, and coats his bougie with the paste; thus prepared the bougie is passed into the urethra.

But the article has also been employed internally in *lead colic*, in twenty and thirty grain doses, repeated every three or four hours. It was first used thus by Grashius, and Paris bears decided testimony in its favor.

Large portions of common alum and also of burnt alum have poisoned. One or two ounces will give this result. The remedies are large draughts of warm water and a solution of soap, so as to vomit freely. The patient is soon relieved.

AMMONIA.—This is the volatile alkaline base of several important compounds. The word *ammonia* is taken from Jupiter *Ammon*, near whose temple sal ammoniac was first found. The native state of pure ammonia is that of gas, but as such it is rarely employed in practice, though the gas be really the efficient agent of several ammoniacal compounds. The gas, which is readily made by heating a mixture of quicklime and sal ammoniac, is rapidly absorbed by water, and in this way is produced the article called *aqua ammoniæ*, or water of ammonia, and liquid ammonia. An article very similar is formed by the distillation of hartshorn or other bones, and hence the term *hartshorn*, as frequently employed. What is called the *spirit* or alcohol of ammonia is the same gas absorbed by alcohol.

The forms of liquid ammonia above named are very frequently employed by the physician both externally and internally. Their primary action is stimulant in all cases. And when we call an article like this a *rubefacient* we mean to say that it first stimu-

lates or excites the skin, more blood is determined to the spot, and a kind of inflammatory action is set up. Hence the import of the word *rubefacient* is to *redden*. We invite by the use of such articles an unusual quantity of blood to the spot.

The *rubefacient* use of liquid ammonia is quite extensive and very valuable. The promptitude of its action depends on its strength; and as the article is on sale of several grades of concentration, this fact should be borne in mind, whether we need it for internal or external use. A good deal, too, depends on individual cutaneous sensibility. In some persons, a cloth wet with a weak article will instantly excite redness and stinging; in others, a much stronger preparation will be slow to develop the same result. We see this often in the application of liquid ammonia to the throat to relieve what is usually called *sore throat*. The design is to transfer inflammation from the mucous tissues within to the surface, and to fix it there, and this is frequently accomplished. A very good plan is to make a flannel bandage as hot as possible and to moisten it with the liquid ammonia, and then to wrap the flannel close round the throat. In a few minutes, ordinarily, the rubefacient action will be obvious and relief will be obtained. Pringle was very partial to this use of liquid ammonia in the early stage of *cynanche tonsillaris*, and the practice is yet in use. The mixture called *volatile liniment* is often substituted for the liquid ammonia because less apt to be severe in its operation. If the strong liquid ammonia be employed alone it may actually vesicate, which, though probably all the better for the patient, is undesirable. The union of oil with the liquid ammonia blunts the energy of the latter, while the mixture retains a rubefacient power. Hence the importance of the compound. To make it, we prefer to pour the strongest liquid ammonia into a phial, and then to add sweet oil until a soap is formed, shaking the phial repeatedly to make the union complete. The books give directions as to quantity, but these fail sometimes, owing to defect of the liquid ammonia. To give the volatile liniment an anodyne quality we add to each ounce about a grain of the sulphate of morphia, or thirty drops of laudanum. This mixture is an excellent application for the relief of *chilblains*, and should be rubbed into the parts at night, after a previous ablution with warm soapsuds.

But besides the mere *rubefacient* use of liquid ammonia it is resorted to as a very speedy *vesicant*. The latter is but an augmentation of the former, and hence it occurs, in persons of very tender skin, that we sometimes blister when we designed only to redden the skin.

The *vesicant* use of liquid ammonia is important as a quick mode of setting up endermic medication, and is too little known

to the profession at large. We separate the cuticle in a few seconds or minutes by this contrivance, instead of waiting the slow action of cantharides. To vesicate with liquid ammonia we must employ the most concentrated article. An excellent plan for speedy vesication, to prepare for the application of energetic medicines to the skin, is to lay a heated dollar on a plate, and over it two circles of old linen rather less than the dollar in size. Saturate these with the strong liquid ammonia and apply the whole to the skin, the dollar remaining on the linen. Press on the dollar for the space of from five to ten minutes, and there will usually be complete vesication. The cuticle being next removed we can at once apply salts of morphia or other medicine to the spot with happy effect and with very little loss of time.

The celebrated *lotion of Granville* is composed of the most concentrated liquid ammonia, distilled spirit of rosemary, and spirit of camphor. It induces vesication almost immediately. For the particular formula consult the *American Journal of Pharmacy*, vol. v. p. 174.

The following is a good substitute:—

Take of strongest liquid ammonia, five ounces;
Tincture of camphor, two ounces;
Spirit of rosemary, one ounce.
Mix.

The blistering ointment of Gondret is made of the strongest liquid ammonia, oil of almonds, and lard. It will vesicate in ten minutes. Of the same nature is the *pommade* of Trousseau, and several other preparations largely employed in France. The prominent ingredient of many similar articles is confessedly some form of liquid ammonia.

Injections of this stimulant medicine have been found very useful in some forms of *uterine disease*. In the proportion of a drachm to a pint of water it has thus been employed in cases of *cancer uteri*. It is said to remove or greatly to lessen the uterine pains, the foul odor of the discharges, &c. Similar injections have been tried beneficially in the various forms of *deranged menstruation*, but the practice demands judgment and discretion. The local stimulation of ammonia that would be useful in one case might do harm in another.

But there has been and yet is much use of liquid ammonia as an *internal* medicine; and here the range is very great. As a mere *antacid* it is often serviceable; and if the patient be very feeble it will prove a happy diffusible stimulant. In such cases it is preferable to sulphuric ether, so often resorted to by patients because of its more grateful properties. The ether wholly fails to relieve the acid condition of the stomach, though its stimulant character is undoubted. The liquid ammonia answers

both intentions very happily. The adult dose may be from five to thirty drops in a tablespoonful of water, three or four times a day. Like all alkaline medicines it should not be resorted to daily as a mere habit, not only because it loses its power for the given end, but it may actually exert a bad influence on the mucous tissue of the stomach.

When we desire to make a sudden and somewhat severe impression on the system we give a teaspoon half full or quite full at a dose. Thus it has been administered just as a chill of ague and fever was expected, with the effect of preventing the dreaded seizure. Here it acts by the shock suddenly imparted, and which so affects the nervous system as to break up for the time the morbific associations which constitute the periodicity of the disease.

The stimulant power of liquid ammonia is also useful in old and *obstinate cutaneous eruptions*, and especially when these suddenly disappear. It not only operates as a stimulant to the whole system, but to the capillaries in particular, and thus the retrocedent disease is made to return. The adult dose here should not be over twenty drops at one time, repeated if need be every two hours in a small quantity of warm water or ginger tea.

On the same principle of exciting the action of the cutaneous vessels this medicine is also useful in *chronic rheumatism*, though part of its good effect is due to its power to neutralize acid, which is almost always abundant in the stomachs of rheumatic patients. Breschet, who was partial to this use of liquid ammonia, generally combined some preparation of opium with it, and very properly, because of the need of allaying pain.

A very important application of this medicine is in the treatment of *neuralgia* of the face and head, accompanied by severe headache. The best mode of exhibition is to give the patient from twenty to forty drops of the concentrated article in a cup of gruel at bedtime, or whenever the pain may be most severe. The medicine should be well mixed with the gruel and the whole taken at once. At the same time it will assist the operation if a portion of the ammonia be rubbed into the painful spot. The cases cited by the foreign journals in this relation are very interesting, and we have no hesitation to commend the practice to persons who suffer from this distressing malady.

In *asthma*, which so often baffles medical skill, the application of strong liquid ammonia to the velum palati, on soft lint, though for a moment, will often put a stop to the paroxysm. The patient is often found to be half suffocated by the disease, and although the sudden contact of lint soaked in ammonia with the back part of the mouth may temporarily augment the suffocation, its action is of such a nature as to break up the asthmatic

paroxysm and to give great ease to the sufferer. Coughing is instantly excited, the spasmodic stricture is gone, expectoration ensues, and respiration becomes more natural. The operation may be repeated if circumstances demand, and is perfectly safe. The practice has the high sanction of Rayer, and is stated fully in the *Bulletin des Sciences Médicales*, to which the reader is referred.

In the *London Lancet* for October, 1846, will be found strong testimony in favor of the use of liquid ammonia in *pertussis;* and I suppose its efficacy there is based on the same principles that make it valuable in asthma. There should, of course, be more caution in its exhibition to children. In both diseases the same medicine has been given internally, as we are assured, with manifest benefit.

Dr. Scharm, a German physician, speaks in high terms of commendation of the use of liquid ammonia in *delirium tremens.* He declares that he has been able to tranquilize the system and give sound sleep by the exhibition of teaspoonful doses of this medicine. We regard it as decidedly more safe than the excessive opiate dosing, so popular in many parts of the world. Certainly the remedy is worthy of notice in this country, where the disease so terribly abounds.

The *poisonous* action of liquid ammonia merits a few remarks. It acts as an irritant poison, as might be expected from its well-known properties. I knew a young child just able to walk poisoned by swallowing the contents of an ounce phial of this medicine. Instantly there was terrible suffocation, and fortunately vomiting expelled a large portion of the poison. A mixture of vinegar and water was freely given to the child and it recovered. In lieu of vinegar any vegetable acid might be employed, as, for instance, lemon juice diluted, or a solution of tartaric acid; and if none of these could be had, oil should be poured down freely, so as to neutralize the alkali and form a soap. A very interesting case is given in detail, showing the symptoms and treatment very satisfactorily, in the *London Lancet* for 1846.

The *Edinburgh Medical and Surgical Journal*, July, 1841, furnishes the following very interesting case of poisoning by the inhalation of the gas of liquid ammonia:—

A young man who slept usually in a chemical laboratory was poisoned by the fracture of a vessel containing nearly fifty pints of volatile alkali, (liquid ammonia.) The accident occurred in the night, without his knowledge, and he was exposed to the vapors nearly an hour. He was roused by violent constriction of the throat and dyspnœa. He arose, but felt suffocated, and would have perished if a woman who heard his feeble cries had not come to his rescue and at the risk of her own life dragged him out.

When seen by the physician the patient's countenance was extremely anxious. His face was covered with livid streaks, especially about the nostrils. The mucous membrane of the mouth and nostrils appeared to be destroyed, and bloody frothy matter flowed from the mouth and nose. The tongue was of a bright-red color, and had lost most of its cuticular covering. The voice was very feeble, and the man complained of a sharp pain in the throat, which soon extended to the breast. The dyspnœa was extreme and fits of suffocation frequent. He had great thirst, and deglutition was almost impossible. The pulse was feeble, irregular, and quick.

Bleeding was resorted to liberally, and water acidulated with vinegar injected in large quantities, (probably by the mouth and rectum, though it is not stated.) At the end of two hours the symptoms abated in severity, excepting the difficulty of swallowing, which increased. By frequent friction and leeches to the throat, gargles, injections, and baths, he was declared to be out of danger at the end of forty-eight hours. Loss of voice continued for six days, but after this he recovered rapidly.

The *aromatic spirit of ammonia*, or the *volatile aromatic spirit*, is a compound to which many practitioners are very partial. It is a good diffusible and soothing stimulant. Any one can make it extemporaneously to suit his fancy and the special case, but a more common formula is thus:—

℞.—Spirit of ammonia, two pints;
Essential oil of lemons, two drachms;
Nutmegs, bruised, a half-ounce;
Cinnamon, do., three drachms.

Macerate in a close vessel for three days, shake occasionally, and distil a pint and a half. A good substitute might be had at once by the following combination:—

℞.—Spirit of ammonia, ℥i;
Oil of lemon,
Oil of rosemary, āā five drops.
Mix.

The usual adult dose of the aromatic spirit of ammonia is from twenty to sixty drops, properly diluted with water. It is a very pleasant article, especially to delicate females laboring under acidity of stomach and sick headache. I have given it to such persons to prevent the unpleasant effects that sometimes follow or attend the exhibition of sulphate of quinine and known under the name of *quininism*. My plan has been to direct from ten to twenty drops to be taken every hour or two during the use of the antiperiodic.

The spirit of ammonia has, by very many at home and abroad, been regarded as a valuable addition to astringent and anodyne

medicines in the treatment of *Asiatic cholera*, and we shall have occasion to allude to it again in this relation.

The *fetid spirit of ammonia* has also some claims to our notice. It is a medicine, however, that demands no set formula, because its component parts should be joined to suit each particular case. It is sometimes made by digesting the fetid gum in liquid ammonia; but I prefer to make it as I need it, by adding the fetid tincture to the aqua or spiritus ammoniæ. A teaspoon half full of the former and twenty drops of the latter will make a suitable dose for an adult, and is often useful as a diffusible stimulant in hysterical cases.

The first salt of ammonia to be noticed is the old *sal ammoniac*, the *hydrochlorate* or *muriate of ammonia*. Though found native in Africa and elsewhere, it can be prepared by the union of hydrochloric acid gas and ammoniacal gas, or by the double decomposition of sulphate of ammonia and muriate of soda. The salt is exceedingly hard and therefore difficult of pulverization; has an acrid, bitter, yet rather cooling taste, and when pure is nearly white. It is not easily affected by heat. Three parts of water at 60° dissolve one part of the powder, while boiling water takes up its own weight.

The *incompatibles* of this salt are the mineral acids, potash and its carbonates, soda, lime, magnesia, most metallic salts whose base forms insoluble salts with muriatic acid.

The *refrigerant* property of sal ammoniac is sometimes employed in medical practice. Solution in cold water obviously reduces the temperature, and in this state the mixture is occasionally applied to indolent tumors and to abate heat of the surface. It must of course be used as soon as the salt is dissolved, or it will be no more refrigerant than ordinary cold water.

The watery solution mixed with an equal quantity of vinegar of squills has been successfully applied to the *hydrocele* of infants. A cloth is soaked in the mixture and kept constantly on the parts. It acts, in part, by stimulating the absorbents to unusual energy, for the removal of the effused fluid. Another use of the watery solution is for the relief of severe *headache;* but here it acts most probably by carrying off excess of heat, which is so common in some varieties of that affection. Sometimes a very concentrated watery solution is usefully employed as a gargle to relieve an *inflamed throat*, a prominent symptom of the case being a persistent burning in the fauces. Here the gargle should be used very frequently, and must be fresh made in order to have the refrigerant effect. It also operates under these circumstances partly as an astringent and by setting up a new action.

Weak watery solutions of sal ammoniac have long been em-

ployed by the French as lotions for *subacute inflammations of the eye*. From one to three grains are dissolved in an ounce of rose water and applied frequently on soft lint.

Sal ammoniac has long been popular as an external remedy for *itch* and some other cutaneous affections. I have found it useful in a variety of skin diseases attended by troublesome itching. A drachm of the finely pulverized salt should be well rubbed with an ounce of common sulphur ointment, and a portion of the mixture rubbed on the parts affected night and morning.

Paris speaks well of a stimulant plaster into which the salt enters and is undoubtedly decomposed. It is made by incorporating an ounce of brown soap with two drachms of lead plaster, and then adding a half-drachm of powdered sal ammoniac. The mixture is to be spread on leather as soon as made and applied to the skin, and renewed at least once in twenty-four hours. The alkali of the soap combines with the hydrochloric acid of the sal ammoniac, thus setting free its ammoniacal gas, which acts on the skin as a stimulant and rubefacient. The plaster has been useful in *affections of the chest*, especially when applied to recently-blistered spots, and it is sometimes resorted to for relief of *rheumatic pains*.

The *internal* exhibition of this salt has been confined very much to the Germans, who resort to it frequently in the belief that it exerts a happy influence on the secretions when all other medicines fail. Hence they employ it in the management of obstinate *intermittents*, generally in combination with Peruvian bark. The dose is from one to three grains, repeated three times a day or oftener. In *phthisis pulmonalis* also they have been very partial to its use, and have professed to derive much benefit from it. In one case a drachm was given every two hours until, in the course of three months, a pound had been consumed. The night sweats, sickness of stomach, and general debility were obviously abated, and the patient greatly improved. Sometimes they combine it with sulphur, under an impression that the lung disease has an important association with a morbid state of the skin. Thus:—

℞.—Sal ammoniac, ℥i;
Flowers of sulphur, ʒij.

Mix, to make twenty-four powders, one of which to be given every two hours.

The dose of sal ammoniac here is just twenty grains. In all the cases of alleged cure or relief of pulmonary disease by this medicine the breast was kept under the constant irritant influence of a tartar emetic plaster, which did much more for the patient than the internal medicine.

Dr. Watson strongly recommends sal ammoniac in what he

denominates *faceache*, which is often a very troublesome and tedious affection. He regards the disease as essentially *rheumatic*, which is probably the fact. Half-drachm doses of the salt, dissolved in as little water as possible, were taken three times a day, with manifest benefit, though I should be very apt in such cases to try the external use of strong liquid ammonia at the same time.

The next internal use to be named is an American practice first introduced by Dr. Somerville, of Virginia, and recorded in the *American Journal of Medical Sciences*, vol. xix. A similar practice has since been announced by Professor Grillo, an Italian. The disease in which these gentlemen employed the medicine was *ischuria*. The first case in which Dr. S. employed the sal ammoniac in this affection was an old man of seventy, who was attacked with the disease while laboring under bilious fever. It became necessary to resort to the catheter daily for the space of three months; and finding little relief from that expedient, excepting of a merely transient nature, he gave the following mixture:—

℞.—Pulv. g. Arab. ℥ss;
Aquæ, ℥xxiv;
Pulv camphor, gr. iij;
—— sal ammon. gr. v.

Mix, and give one-fourth at a dose, and the residue in three parts, at intervals of one hour.

Sometime before the whole was consumed the urine began to pass freely; at first with pain, but at last without discomfort. The prescription was continued for three weeks, and the patient entirely recovered.

The last internal use of this salt which I propose to mention is taken from De Foy's *Materia Medica*, and is highly praised. The preparation is called *ammonical beer*, and was employed in cases of *scrofula*, *typhoid fever*, and *diabetes*, with a view to rectifying the state of the blood. We do not know that the prescription has ever been tried in this country. It is thus:—

Take of powdered sal ammoniac, two drachms and a half;
Table-beer, sixteen ounces.
Mix. The dose is a wineglassful for an adult, three times a day.

Very large quantities of sal ammoniac are decidedly poisonous. It is an irritant poison, inducing vomiting and sometimes delirium, inflammation of the stomach, &c. The stomach should be emptied immediately and diluents of a mucilaginous quality given, and, if need be, leeches applied to the epigastrium.

The *carbonate* and *bi-carbonate* of ammonia are next to be noticed. The carbonate is frequently spoken of as the *volatile salt*, *volatile alkali*, *smelling salt*, *prepared ammonia*, &c. It is

made from the double decomposition of chalk or carbonate of lime and sal ammoniac, or hydrochlorate of ammonia. These ingredients, reduced to powder and well mixed, are placed in a retort and exposed to sufficient heat to sublime.

Carbonate of ammonia is a much whiter salt than sal ammoniac, and much more readily pulverized. It is a hard, translucent, striated mass, emitting a very pungent odor and having a sharp urinous taste. Its solution acts on vegetable colors just as those of any of the alkalies. It differs from sal ammoniac in its easy spontaneous decomposition and depreciation if left unstopped. Glass bottles with well-ground stoppers are necessary, in order to long preservation. Besides the loss of its pungency, when not thus kept, it becomes opake and effloresces, and at last falls into powder which is almost destitute of sensible qualities.

Carbonate of ammonia dissolves in water, and more abundantly if the water be heated. If the temperature be over 150° the salt is liable to be decomposed, and therefore is not to be administered in very hot liquids. It is wholly insoluble in alcohol.

The incompatibilities of carbonate of ammonia are all the acids, the fixed alkalies, carbonate of lime, magnesia, alum, cremor tartar, acidulous salts generally, Epsom salt, corrosive sublimate, calomel, sugar of lead, salts of iron and zinc, and hot infusions or decoctions as before named.

It is proper also to say that carbonate of ammonia is liable to be decomposed if reduced to powder and so put up in small papers for use. It is much better to give it in pill with some vegetable bitter extract, or conserve of roses, or mucilage of gum Arabic.

The *volatile julep* is an excellent preparation of carbonate of ammonia. The following prescription is a good one:—

Take of carb. ammonia, ʒi;
Powder of gum Arabic,
White sugar, āā ʒij;
Cinnamon water, ʒv.

Mix, *secundem artem*, and give an adult a tablespoonful every two or three hours.

Each dose will contain about six grains. This mixture is a good diffusible *stimulant* and *expectorant*. It is often a very useful medicine for the relief of that gastric atony consequent on habits of intemperance, and which is realized by those who lay aside strong drink suddenly. Taken every hour or two it will often avert an attack of delirium tremens in such individuals. I have often used the julep in *pneumonia*, after bleeding which did not sufficiently relieve the difficulty of expectoration. It will also be found an excellent medicine in cases of *obstinate hoarseness* which sometimes amount to complete *aphonia*. In

these cases it is well to gargle with a portion of the julep, at the same time employing volatile liniment or pure liquid ammonia to the throat externally.

In *low fevers* the volatile julep is often very beneficial, exerting an almost immediate influence on the whole economy. Its force is spent chiefly on the nervous system, and not very obviously on the heart and arteries. Occasionally it gives a very salutary diaphoresis.

The addition of opium, laudanum, or a salt of morphia, makes the julep a very good medicine for many cases of *protracted diarrhœa*, where the vital energies are much enfeebled. Thus:—

℞.—Carb. ammon. ʒi;
Pulv. g. Arab.,
Sacch. alb. āā ʒij;
Acet. morph. gr. ij;
Aq. menth. ℥vi.

Mix, and give a tablespoonful every two hours.

I knew a professor of Materia Medica who sent a prescription for the volatile julep to a distinguished medicine shop in an eastern city, and in place of two *drachms* of carbonate of ammonia he directed two *ounces* for a six-ounce mixture. The apothecary, well acquainted with the doctor, resolved to have a little fun with him for the blunder. The prescription was prepared as it should be. At the dinner-hour of the doctor the apothecary called to see him in great apparent perturbation, professing fears that he had committed a grievous mistake, which might be fatal to the patient. The prescription was exhibited, and the affrighted professor started in haste to visit the patient and arrest the administration of the medicine, when the apothecary, finding the joke had been carried far enough, told the whole story, to the great relief of the prescriber. Fortunately, however, it would not be practicable to make a six-ounce vial hold the contents of the prescription just referred to, so that a moment's reflection would have quieted all apprehension.

The *external* uses of carbonate of ammonia are various. Reduced to a coarse powder and mixed with some aromatic oils it constitutes a good smelling salt for the temporary relief of a tendency to faint, so common in delicate females. Applied to the nostrils its stimulation is speedy and salutary. The coarse powder applied to the skin is decidedly rubefacient, if confined to the spot by means of compress and bandage. It may also be rubbed with oil or lard, or simple cerate. The addition of powdered opium to the ointment so made will give a good application to parts laboring under *rheumatic pains*. A plaster made by mixing one part of carbonate of ammonia with three parts of

extract of belladonna, and spread on leather, is also frequently employed with benefit for the relief of local pain.

Carbonate of ammonia is sometimes a good *emetic*, and is specially suited to cases in which a depressing or sedative emetic is forbidden. From a half to a whole drachm dissolved in a teacupful of warm water will induce vomiting in the space of from fifteen to thirty minutes. It is a good substitute for the mustard emetic.

Carb. ammonia is sometimes the occasion of *poisoning*. Too long-continued application to the nostrils has induced severe and fatal bronchitis. In the *Ed. Med. and Surg. Journal*, vol. xiv., is an interesting case of this kind, in which death resulted in forty-eight hours. Such cases indicate the importance of caution in the local use of the remedy. Too large doses taken into the stomach set up inflammation of the mucous membrane. Huxham records the case of a young man who acquired the habit of chewing the carbonate in lieu of tobacco, until it induced hemorrhage from the gums, nose, and bowels. His teeth fell out, hectic fever ensued with extreme exhaustion, and death at length closed the scene. For an over dose, vinegar and water, or diluted lemon juice, will be found the best antidote.

Acetate of ammonia is the salt which constitutes the ancient *Spiritus mindereri*, an excellent medicine, much employed, especially in the treatment of *fevers*.

Various modes are pointed out for the preparation of this mixture. Carbonate of ammonia is the basis with which we may unite any form of acetic acid. The pure acid, distilled vinegar, or good common vinegar will answer. The purer the acid, the more desirable is the preparation on the score of appearance. To make it we may add to the powdered carbonate as much acid as will entirely decompose it and exactly neutralize the ammonia; and this is precisely what is meant by *saturation*. Brande says, "four pints of distilled vinegar are requisite for the saturation of seven drachms of the carbonate;" but something, as to the exact result, depends on the real strength of the distilled acid. We cannot rely on weight and measure, but must add the ingredients until there is exact neutralization. An experienced operator determines this by his taste, but a novice should employ the test power of litmus paper, which will not be changed to red nor green if neither acid nor alkali be in excess.

In the method above stated all the carbonic acid of the carbonate is lost. To prevent this, and to have the benefit of the acid gas in the mixture, the following plan is to be adopted. Having ascertained the relative strength of your acid and carbonate, place both in a strong bottle, having previously reduced the carbonate to powder. Instantly close the bottle with a good

cork and tie it down. The decomposition of the salt will go on and be completed in a few minutes, and whenever a dose is poured out the sparkling qualities of a carbonated water will be obvious. The cork should be replaced as soon as possible after a dose is poured out, and the bottle should be inverted, with the neck in water. Those who have employed the spirit of mindererus thus prepared assure us that it agrees much better with delicate stomachs than the medicine as ordinarily prepared.

The inventor of this medicine first employed it in fevers with a view chiefly to its *diaphoretic* effect. But it is important to bear in mind that this effect will not follow in the early stage of fever of high excitement. The system must be reduced by bleeding or other depletion before a diaphoresis will be secured by its exhibition. As there is often a torpid state of the bowels in febrile affections, I have been in the habit of adding to the mixture a small portion of the sulphate of magnesia. The use of a warm bath to the feet and legs is often a safe and salutary adjuvant.

In some cases instead of torpor of the bowels there is an opposite condition, and then, in place of Epsom salt, we add one or two grains of the acetate of morphia to six ounces of the spiritus mindererі. The dose of this medicine will necessarily vary according as it is made of pure acetic acid or of common vinegar. A teaspoonful of the former will be nearly equal to a tablespoonful of the latter. It should be followed by draughts of warm tea, as balm or sage tea, which will assist in securing the diaphoretic effect.

From a great deal of experience in the use of this remedy in *bilious remittents* I became very partial to it. During a period extending from 1823 to 1827 intermittents and remittents were epidemic in many parts of Pennsylvania and the neighboring States, and my opportunities for testing the value of this article were exceedingly numerous. The details of practice were of course varied necessarily to suit peculiarities. It was not often that bleeding was required. If the condition of the head, or of any other part, demanded it, the remedy was employed. More frequently the treatment of the remittents was commenced with my favorite emeto-cathartic, consisting of calomel and jalap, each five grains, mixed, and repeated every half-hour or hour until three or four doses were taken. Copious discharges by the mouth and rectum generally followed; and if the bowels were not sufficiently moved the infusion of senna with Epsom salts sufficed. The general disquiet of the system was often thus relieved, and the skin obviously loosened and moist for a considerable length of time. But to augment the last-named result and to get a full febrifuge effect, I gave, with as little de-

lay as possible, the spiritus mindereri. In some cases I found it useful to add tartar emetic to the mixture. This was specially indicated by the presence of a good deal of arterial excitement, and was found to be a safe substitute for the lancet. My common formula was thus:—

℞.—Acet, distill. ℥iv;
Carb. ammon. q. s. to neutralize.
Add to the solution
Tart. emet. gr. i.
Mix. Give a tablespoon half full.

By the use of this or a like mixture for two or three hours a very copious perspiration was generally secured, with sensible relief of all unpleasant symptoms; and during this state of things the administration of the sulphate of quinine was commenced. In the region round about Philadelphia, in the period above named, it was not necessary to employ this unequaled antiperiodic as it has been since exhibited in other places. My usual practice for an adult case was to mix ten grains of the sulphate with half that quantity of powdered ginger, and to divide into four parts, one of which was given every half hour in syrup or sweetened water. The appearance of moisture, even though the skin was rather hot, was the evidence of actual remission, and justified the use of the sulphate. It was deemed an unwise course to wait for total absence of heat, or, in other words, for an *intermission*, since that is no part of a *remittent*. The moment I saw an evident abatement there was *remission* enough to warrant the use of the antiperiodic power of the salt of quinine. My theory and my practice, and the issue, all harmonized here most perfectly, for I never in my whole medical history have witnessed as perfect a triumph of medicine over disease as I saw for weeks and months in this procedure in the treatment of *bilious remittents*.

The grand error then perpetrated by many physicians was to abstain from the use of anything like a tonic or antiperiodic because the tongue was not quite natural, the skin too hot, the liver not sufficiently active, &c. The practice corresponding with this error was to repeat cathartic doses more and yet more drastic, in the hope of cleaning the tongue and rousing the liver. The strength was all the while rapidly waning, and a true typhoid state of the system induced, which, after continuing for weeks, ended in death, unless the inherent energy of a good constitution triumphed over the folly or madness of the doctor.

Very many of the so-called *congestive fevers* of the South-West were induced, as I have had palpable evidence, by such a course of professional mismanagement as that to which allusion has been made in the foregoing remarks.

In the treatment of *cynanche parotidea*, or *mumps*, I have found the spiritus mindereri an excellent medicine. This disease is for the most part a very manageable affair, and rarely presents an unpleasant aspect, unless rudely managed. The chief embarrassment grows out of metastasis to the testicles, mammary glands, or to the brain, and these are found most frequently in connection with over-vigorous treatment. Such at least has been the result of my observation.

I have seen the mumps extensively prevalent in medical classes in Ohio and Kentucky, and my customary plan has been to administer the emeto-cathartic of calomel and jalap at once, as already indicated in my remarks on bilious remittents. This is followed by the spiritus mindereri, so as to keep up a moist state of the skin; and the same mixture is applied on flannel to the swollen throat, where it acts as a gentle *discutient*.

In a French medical journal mention is made of the happy use of this medicine in the treatment of *uterine cancer*. Tablespoonful doses were given in a wineglass of gruel or gum-water, and repeated every hour. The late Professor Eberle was partial to a like practice in *dysmenorrhœa*. In both cases the local distress was greatly relieved, and the medicine acted freely as a *diuretic*.

Boerhaave treated *opacity of the cornea* with a mixture of equal parts of spiritus mindereri and water dropped frequently into the affected eye. A collyrium is sometimes used in *subacute ophthalmia*, made of the spirit and rose-water, equal parts, with the addition of a small quantity of an opiate. The following prescription is more common:—

℞.—Spt. mindereri, ʒss;
Aq. rosar. ʒij;
Aquæ pur. ʒij;
Acet. morph. gr. ij.
Mix.

As an external application the spiritus mindereri has been successfully tried in *tinea capitis*, after poulticing to remove scabs and cleanse the surface. But neither this nor any other lotion or appliance will avail in scald head, unless special care be paid to the condition of the digestive organs.

The incompatibles of acetate of ammonia—the salt which constitutes spiritus mindereri—are the acids, the fixed alkalies, alum, lime-water, sulphate of magnesia, corrosive sublimate, nitrate of silver, sulphates of zinc, copper, and iron.

The *phosphate of ammonia*, a compound of phosphoric acid and ammonia, is an old medicine which has lately been revived, chiefly for its importance as a remedy for *rheumatism* and *gout*. In *Ranking's Abstract*, No. vii. p. 72, are some very good prac-

tical suggestions by Dr. Edwards, who has employed it in the above diseases with very pleasing success. In some instances the effects were almost magical, so promptly did the patients regain the power of easy locomotion.

In the *Philadelphia Medical Examiner* for August, 1846, we have the experience of Dr. Hartshorne in the use of the phosphate in *rheumatism*. The doses employed varied from ten to thirty grains, three times a day. In all the cases reported decidedly sudorific and antiphlogistic measures were also employed at the same time. The phosphate of ammonia probably acted, in part, by eliminating the *materies morbi*—which some writers regard as uric acid and the urates—by the bladder, as it manifestly augments the urinary discharge. It may be given in water, or in a bitter infusion, as of serpentaria.

The first physician who noticed the use of this salt in gout and rheumatism was Dr. Buckler, of Baltimore. His paper appeared in the *Amer. Journ. Med. Sciences*, Jan. 1846. He added sometimes half an ounce, and occasionally an ounce, of the phosphate to six ounces of water, giving a tablespoonful of the mixture every four hours. He affirms that obvious relief ensued in the course of thirty-six hours. He thinks the remedy acts by decomposing the urates and eliminating the uric acid from the blood and urine. (See *Braithwaite's Retrospect*, part xiii.) I have tried this plan, and am pleased with it.

The *hydrosulphuret of ammonia* has had some reputation as a remedy for *diabetes mellitus*. It is made by passing sulphuretted hydrogen gas into the water or spirit of ammonia. It is an exceedingly offensive liquid, having an odor nearly as odious as rotten eggs. It has been held to be a direct sedative, inducing drowsiness, vertigo, nausea, and even vomiting. Cruikshank first employed it in the disease above named for the purpose of lessening morbid action of the digestive organs. The dose was five drops in a tumbler of water three or four times a day, gradually increasing the number of drops daily until some vertigo ensued.

The valerianate of ammonia (composed of valerianic acid and ammonia) has been highly commended by Dr. Declat as a remedy for *facial neuralgia*. The preparation he employed was a brown liquid, not very limpid, of disagreeable taste, and smelling strongly of the valerian. Ordinarily the dose was a teaspoonful, but he has given two and even three at a dose. In his own person the medicine induced all the desirable sedative effects of opium apart from the cerebral inconvenience resulting from the use of that drug. He tells us that the preparations of the article vary, and that some standard of uniformity is greatly needed. Of course this remark is just.—*Brit. and For. Med. Chir. Rev.* Jan. 1857.

Ammoniac Gum. *Gum ammoniac*—obtained from the *Heracleum gummiferum* of Africa.—This article is introduced just for the purpose of making a remark which I have often uttered, viz., that it is one of the most worthless articles in the Materia Medica, never having done a particle of good unless compounded with other agents of acknowledged power. It has been called a *stimulant*, an *expectorant*, an *antispasmodic*, an *emmenagogue*, &c. &c., but should never be allowed a place in any physician's shop.

Amygdalæ. *Almonds*—bitter—sweet.—The former contain some hydrocyanic acid. The sweet almonds are employed in medicine mainly for the purpose of forming emulsions. They have a demulcent property, and are therefore used as demulcents generally are, both in the form of infusion for drink and also for injections. The oil of almonds is bland and pleasant, but possessing no very valuable medicinal properties.

Amylene.—This is the name given to a new anæsthetic agent, obtained by the distillation of fusel oil and chloride of zinc. This product has been known to chemists for about fifteen years, although very little has been said about it in the journals. It is a very light, volatile liquid, the vapor of it being much less pungent than that of chloroform, although the patient must inhale a larger quantity in order to induce the desired effect.

Amylene has been tried successfully in a good many surgical operations in King's College Hospital, London. Pain was entirely prevented, and recovery ensued without the occurrence of nausea, the patients being in a state of semi-consciousness.

"Last week," says the *Lancet*, "a patient aged thirty-three was operated upon for fistula in ano, by Mr. Fergusson. Previous to the operation amylene was administered by Dr. Snow. Unconsciousness was produced in two minutes, and the operation quickly performed, the anæsthetic being inhaled altogether three minutes. The pulse ceased during the operation, but respiration continued for at least ten minutes afterward. The patient moved after the pulse ceased, and gave signs of rallying. These symptoms proved, however, fallacious, and he died in a few minutes. On examination, there was found slight dilatation of the right ventricle of the heart; the lungs were emphysematous. Dr. Snow concludes that death resulted from the amylene, the condition of the lungs probably tending to the fatal result. This case was the 144th in which Dr. Snow had administered amylene, and on no other occasion was its employment attended by the slightest ill consequence."

Dr. Tyler Smith says the amylene should always be given by means of an inhaler, and not with a mere piece of lint. However well the latter may do for chloroform, it is not the thing for

amylene. Dr. Smith says he has used it in midwifery practice with success.

M. Giralds states, (in the *Med. Times and Gazette*, April 4, 1857,) as the result of using amylene in place of chloroform in the cases of twenty-five children of different ages, that he reached the following conclusions:—

1. It is respired more easily and with less struggling than chloroform.
2. Anæsthesia takes place very quickly.
3. Sleep is more calm and natural, being unattended with stertor.
4. The patients return rapidly to the normal state.
5. It does not induce nausea, vomiting, nor cerebral congestion.
6. The patients suffer no inconvenience afterward, recovering all their wonted sprightliness.

AMYLUM. *Starch*—the fecula of wheat, &c. &c.—This is demulcent, and is often useful in form of injection, to relieve the bowels and bladder when laboring under irritation. A starch enema is a good vehicle for the administration of laudanum per anum when it cannot easily be introduced by the mouth. Two or three drachms of powdered starch boiled in a pint of water till the whole is dissolved will make a proper article for this purpose. Two or three ounces of the solution, with from twenty to sixty drops of laudanum, will often be retained if thrown into the rectum carefully, and will accomplish all that could be desired from the use of opiates by the mouth. If the lower bowels are not in an irritable condition a half-pint of the solution can be easily retained.

ANIMAL FOOD.—The importance of sound and well-cooked animal substances is now almost universally conceded. In the article on *Diet* we have been somewhat particular on this subject, and propose now to notice, briefly, the changes which those substances undergo that render them insalubrious.

By some process not by any means understood certain animal matters are so changed, although their exterior may appear as usual, that the eating of them gives rise to very distressing symptoms, and sometimes causes death. Some have supposed that there is carried on silently and imperceptibly a modified putrefaction, which changes the quality without affecting the form or apparent condition. The articles most usually altered in this or in some other way are *sausages*, *lard*, *pork* or *bacon*, and *butter*.*

* It may be a matter for serious study whether the disease called *hog cholera*, which has killed so many hundred hogs in the far West during the last year,

The *poison of sausages* has become so notorious in some parts of Europe as to have been the subject of a thesis, a prize essay, and other papers. In the Wirtemberg territories, in Germany, we are assured that two hundred and thirty-four cases of this kind of poisoning occurred in about thirty-four years; of which number one hundred and ten proved fatal. In the winter and spring of 1834, similar cases occurred in the neighborhood of the Black Forest, in the territories above named. The symptoms are reported to have been very alarming, and several individuals died. The food eaten by these persons was the sausage of the country and liver puddings. The former was reduced to a pulp in the centre, was very bitter and rancid, and smelled like cheese. The puddings had been evidently decomposed, as they were quite sour. The remedies found most successful in these cases were immediate vomiting, a purgative draught of Glauber salt, and clysters of vinegar and soap.

It is stated by various writers that the symptoms of sausage-poisoning do not begin until twenty-four hours after the noxious meal has been taken. This is said to be owing to the great indigestibility of the fatty matter which enters the food. Pain in the stomach, vomiting, purging, dryness of the mouth and nose, are usually the first symptoms. The eyes and eyelids, and next the pupils, become fixed and motionless; the voice fails, or is entirely lost; deglutition is difficult; the pulse gradually sinks; frequent swoonings come on, and the skin becomes cold and insensible. The bowels are sometimes torpid, at others the very reverse. The appetite is not impaired, there is little or no fever, and the mind maintains its usual tone. Fatal cases end with convulsions and great difficulty of respiration between the third and eighth days. Such is the shock imparted to the system that even in successfully treated cases the effects are felt for years.

The *morbid appearances* in the dead body are inflammation of the mucous membrane of the stomach and bowels, whiteness and dryness of the throat, thickening of the gullet, croupy depositions in the windpipe, great flaccidity of the heart, and a morbid tendency to resist putrefaction.

What is the nature of the change effected in the sausage no one has been able to reveal. It has been asserted that the poisonous principle resides in a fatty acid, called by Buckner the *botulinic* acid. Experiments with this acid, as obtained from the spoiled or poisonous sausage, showed the same results as are witnessed in animals that partake of the sausage itself.

In regard to the poisonous quality of *lard* under peculiar cir-

may not entail on our citizens all the consequences that flow from eating poisoned pork. It is said that many of the animals sick of the disease above-named, were killed and cured in the usual way, for transportation.

cumstances, we have little to say that is satisfactory. Mere rancidity does not seriously affect it. Keeping it in copper or leaden vessels may render it more or less deleterious.

In the winter of 1838–9, I saw a portion of lard sent to Professor Peter for examination in consequence of having sickened those who partook of it in any shape. Some were affected pretty severely, though no one died. The lard looked as well as usual and had no particular smell or taste. The examination failed to detect anything of a poisonous nature. It is quite possible that lard may be poisoned by the empyreumatic oil, resulting from the application of a strong heat to a small portion of it. It is known that this oil as produced by the destructive distillation of lard is decidedly poisonous. Five drops passed into the throat of a bird nearly killed it.

Pork in the fresh as well as the cured state, under the name of *ham*, *bacon*, &c., has often evinced poisonous properties. I am of opinion that some of the cases of poisoning, as they are termed, by fresh pork, were dependent on other causes. In the summer season, when green or ripe fruit is freely indulged in, almost any kind of fresh meat, not well seasoned, will derange the digestive apparatus; and it has frequently occurred that true and fatal cholera morbus has resulted from such imprudence.

In the *Philadelphia Medical Examiner* for January, 1839, we have a short paper headed "Poisoning from *pork*," furnished by a physician of Illinois. The patient died, it is true, but he had been laboring for months under gastro-enteritis, was frequently attacked with colic, and often much disturbed by any sort of food that did not suit his condition. Under these circumstances fresh pork was freely eaten, and soon after a quantity of grapes, and the man died in nine hours from the commencement of the attack, which did not begin until the day after the pork meal.

I will not say, however, that young pork may not acquire a *poisonous* quality, and kill as the consequence; but the cases that I have met with are not satisfactory.

In reference to ham and all kinds of bacon the evidence of occasional poisoning is conclusive. This may be the result of very different causes. The meat may be poisoned in the act of smoking it, as is known to have happened to certain soldiers in Corsica, who smoked their meat with mezereon and other woods. In the careless manner of gathering rubbish for this purpose many poisonous articles may be accumulated and the meat may thus be effectually poisoned.

The more common source of poisoning in bacon, however, is doubtless the same fatty acid that renders sausages so deleterious in some vicinities and in certain seasons.

The history of a family poisoned by eating a ham-pie made at a Parisian pastry-cook shop is deeply interesting. The examinations made by Ollivier and Barruel to detect some kind of metallic poison totally failed, and the able chemists were forced to the conclusion that the meat had experienced a change similar to that which gives a poisonous quality to German sausages and ham.

In three hours after dining on the ham-pie the master of the house was seized with general uneasiness, cold sweats, shivering, violent gastric pains, frequent vomiting, burning thirst, extreme tenderness of the abdomen, profuse purging, and very violent colic. The poison was evidently of the *irritant* class, as the same symptoms attacked a daughter aged twenty-seven and another aged nine. The physician who was called in supposed that verdigris or some other salt of copper had been communicated by the pastry-cook's copper moulds. By a vigorous course of treatment the patients recovered. The plan pursued is not stated. It should be borne in mind, however, as a reason for suspecting a copper poison, that the alvine discharges were as green as the common house-leek.

Dr. Geisler has given, in *Horn's Archives* for 1828, the account of a family of eight persons evidently poisoned by bacon. Their symptoms, with the addition of delirium and loss of recollection, were the same with those resulting from the sausage poison. A remarkable circumstance in this history is that the father escaped unhurt, "having stewed his bacon, while the rest ate it raw." It is supposed that the process of stewing dissipated or decomposed the fatty acid so as to render it harmless.

In the *London Medical Gazette*, vol. xix. p. 378, we have the case of a family poisoned by bacon, or rather several members of the family. All who partook of the meat were sickened, and one of the children died after severe gastric and intestinal distress which continued for more than three weeks. Severe spasms and violent retching, with dreadful headache, were the attendant symptoms. *Post-mortem* examination revealed extensive gastric ulceration.

The difficulty of deciding satisfactorily as to the true source of poisoning in animal matters has been alluded to. We may remark further that many families have been sickened and some persons fatally poisoned by eating the meat variously cooked of animals that had sickened and died. The symptoms in these cases are those of *irritant* poisoning, such as gastric pains, vomiting, severe colic, diarrhœa, &c. &c. In all these cases it is quite probable that the fatty matter of the animal experiences a change such as occurs in the German sausage, though this is only a conjecture. It would seem that the proper course of

treatment would be to dislodge the meat from the stomach and then to allay the irritation by means of anodynes and rubefacients, blisters, &c. to the epigastric region.

In several New York papers for January, 1842, we noticed substantially the following statement, the relation of which to the foregoing remarks is sufficiently obvious:—

"A large number of persons (*forty-one in number*) became suddenly sick in the upper part of the city of New York a few days ago; and from the fact that this number in the same neighborhood had thus been stricken down with disease at or about the same time, the city authorities considered it their duty to institute an investigation into the circumstances with a view to the discovery of the cause, if any existed out of the natural order of things. The mayor has accordingly given notice that the cause of the sickness proceeded from the eating of *smoked beef* by the individuals attacked, which, on examination, was found to have a bluish, unhealthy appearance, and is supposed to have been made of some animal that had died of disease. It is conjectured that, in putting up the meat, some kind of poisonous drug has been used instead of saltpetre. The persons now lying dangerously ill were attacked with chills, which terminated in severe vomiting and unusual pains of an excruciating character."

The proper treatment in the cases above detailed is to evacuate the contents of the stomach at once, to give a mild purgative draught of Epsom or Glauber salts, and clysters of vinegar and soap. The latter may be made of three or four ounces of soft soap, two ounces of vinegar, and four of water. Sometimes it may be needful to blister the epigastric region and to give gentle anodynes.

The French *Journal of Pharmacy and Chemistry* for August, 1842, gives an account of nearly six hundred persons poisoned by partaking of a feast in which veal in the incipient stage of putrefaction was largely employed. The symptoms were a combination of those attendant on irritant and narcotic poisons, and death ensued in many cases. The great prostration of the patients gave a close resemblance to cases of typhus fever; and some of the nurses are reported to have caught a like disease from the patients.

Effects somewhat similar, though not with fatal results, followed the eating of a roebuck, killed after a violent chase in which it was exceedingly terrified.

The *Edinb. Med. and Surg. Journal* for July, 1842, has furnished some interesting particulars of poisoning by a heifer affected with carbuncles. Sixty persons ate of the meat, and all were attacked with giddiness, tremblings, shiverings, severe cramps, vomiting and purging of green bile, intense thirst,

sunken countenance, delirium, with the tongue red at the tip and furred at the base. All recovered under the use of simple means, save one. In this case, the symptoms were most severe. The body was much wasted, and covered with livid spots.

ANÆSTHETIC.—This term is of Greek origin, and means, literally, loss of feeling. Unconsciousness is frequently an attendant of the state of anæsthesia, to induce which inhalations of chloroform and sulphuric ether are resorted to.

In addition to the use of these agents in obstetrical cases and in surgery, they have proved salutary in *rheumatic* disease. Dr. Aran applies them directly to the joints affected, on a moist compress, renewing them every twenty-four hours, or oftener if needful. He prefers the Dutch liquid (chloride of olefiant gas) to all other articles.—*London Medical Gazette*, December, 1850.

ANODYNE.—This term is introduced here in order to correct erroneous impressions. It means, truly, any agent that will secure sleep or quiet repose by mitigating or annulling pain. By many, the word *anodyne* is made synonymous with some form of opiate. But a very little reflection will show this to be a mistake. A bleeding from the arm, or cups to the neck or head, will sometimes give hours of sweet sleep, by relieving the patient of severe pain of the head. The remedy is obviously an anodyne, and in just such a case opium would probably do mischief. A female has lost several nights' rest by an inflamed breast, threatened with abscess, and so soon as a fly-blister has begun to act fairly on the surface the woman falls asleep. I have witnessed this more than once, and saw plainly an anodyne result. Ice applied to the head is often a most delightful anodyne.

ANTACIDS.—This term seems to be sufficiently significant. It indicates any remedy to prevent or cure acidity anywhere. The alkalies and alkaline earths being chemical antagonists of the acids, are therefore the leading antacid agents; such as magnesia, lime-water, the carbonates and bicarbonates of potash and soda.

The medical mind has imbibed the notion that to prevent or cure acidity the patient must avoid acids and employ alkaline articles more or less. This is a very restricted view of the subject. A generally atonic state of the whole system, and especially a long-continued defect of tone in the stomach, will often of itself engender a morbidly acid state, which is curable by the tonic power of the milder acids more certainly than by any other means. This has been tested in my own person, and in other cases, most abundantly. Long-continued acidity, dependent on defective tone, has been cured over and over again by the use of lemonade, and even unmixed lemon juice. A very good paper was published, not long since, in one of the

American journals, showing the efficacy of sour buttermilk in dyspepsia and chronic diarrhœa; and I have no doubt that the principle involved was precisely the same as that herein illustrated.

ANTAGONISM OF POISON AND DISEASE.—I have chosen the caption prefixed to these remarks because of its brevity rather than for its explicit character. The point to which I desire to call attention specifically is one that has entered into my public teachings for several years; and I am free to confess that I do not yet comprehend it fully. I refer to the fact, about which there can be no difference of opinion, (I mean as to its existence,) that decidedly poisonous doses, so far as bulk or weight was concerned, have been frequently swallowed without material injury, and that, too, independently of any condition of the stomach sufficient to account for the result. The doctrine that has appeared to me as the true solution of the problem is, that in the most striking cases on record the otherwise *poisonous dose* has *spent its force on the morbid action present in the system*, whatever that may have been, and in this way its legitimate character has not been developed. I have not met with a single direct reference to this view of the case anywhere excepting in a short article lately published by Dr. Beck, in which there was an incidental allusion to it.

I am well aware of the effects of habit in controlling the mischievous action of poisons so as to render them quite harmless; but I have no reference to this agency on the present occasion, for that could not meet the difficulty.

The case most familiar to the profession, illustrative of the doctrine, is the administration of very large doses of tartar emetic in the treatment of pneumonic inflammation. Here the dose is often so great as to be exceedingly hazardous if its operation were restricted to the stomach. The idea of *tolerance* is associated necessarily with the fact that some other organ besides the stomach is to participate in the agency of the remedy; that other organ is the lung, which feels the influence of the medicine in its restoration to the condition of health. Now, although we cannot demonstrate all this just as if it were a problem in Euclid, we are compelled to believe that the salutary influence of great doses of tartar emetic in this disease involves the principle which it is our purpose to illustrate. We do not desire to be understood here as advocating this plan of curing pneumonia, but simply as attempting to account for the result by the obvious antagonism of disease and poison.

The modern use of mammoth doses of nitrate of potash is another case in point. Every reader of the journals has learned that this medicine has been employed in doses of two drachms, and even a half-ounce, without developing the smallest evidence

of poisonous action. So generally has the deleterious quality of nitrate of potash been associated with even two-drachm doses, that some have objected to potash as an antidote to nitric acid because a poisonous salt must needs be formed in the stomach. In acute rheumatism, in hemoptysis, and other diseases, the great doses fail to exert a toxicological agency simply by reason of the medicinal power acting wholly on the morbid action present in the system. It is remarked by Pereira, "that peculiarities of constitution and morbid conditions of the system (especially affections of the stomach) are principally concerned in modifying (whether increasing or diminishing) the tolerance of this salt." (Vol. i. page 424.)

It may be impracticable to explain how these large doses spend their force on the morbid action rather than on the stomach. Some of the late speculative writers have suggested the idea that all medicinal agents are negatively or positively electric, and that affinities, attractions, and repulsions, are modified by the varying influence of these opposite states. But this suggestion does not meet the case, and all we certainly know is the naked fact.

A case was reported in a foreign journal some years since of a woman who had a dropsical husband whose long-continued indisposition had become exceedingly burdensome. She resolved to get rid of him, if possible, by administering an ounce of tincture of digitalis. The quantity was large enough, as every one knows, to kill or greatly injure an ordinary patient. But the wife was sadly disappointed, as the intended poison effected an entire evacuation of the effused fluid and a most unlooked-for recovery ensued. The fact is not isolated, for others of a similar character have been recorded.

What shall we say in attempting to analyze the case? Is it not apparent that there was really and truly an adaptation of the poisonous dose to the existing morbid condition, and does not the fact clearly illustrate the doctrine of antagonism?

The well-authenticated agency of tobacco as an antidote for the poison of arsenic, or rather as a remedial agent, is explicable on the same ground precisely. The cases reported were females, who had never indulged in the use of tobacco. A portion of the arsenic, fully sufficient to kill under ordinary circumstances, was counteracted by the use of tobacco, and without any emetic action. What were the facts as regarded the pathological condition of the stomach? The arsenic had commenced its appropriate action beyond doubt, as the symptoms evinced; there was very probably set up true inflammation, such as arsenic is competent to establish. How then were the patients saved? The tobacco was given in strong infusion, expressly with the design of vomiting and so dislodging the poison. But the emetic

action failed entirely, and yet the patients were restored after comparatively little suffering.

I know it has been said that the arsenic and tobacco formed a neutral mixture in which the poisonous property of both articles was lost or nullified. But it is more probable that the intrinsic character of tobacco failed to display itself because its power was spent on the existing morbid condition of the stomach and bowels.

In offering these remarks and cases on the antagonism of poison and disease, I am anxious to correct erroneous impressions regarding the effects of very large doses of medicines of an active nature. It is too common, when these doses fail to poison, even though a curative result follows, to attribute the absence of poisonous symptoms to defect in the remedy as occasioned by original impurity or bad preparation. These no doubt often seriously affect the therapeutic application, and merit attention. Yet it is true that defective observation suffers palpable results to be overlooked, which, when properly analyzed, not only fail to show any defect in the quality of the remedy, but prove most conclusively the doctrine of antagonism of poison and disease as herein set forth. To this subject we particularly invite the attention of our brethren.

Some may be ready to infer that I have forgotten the opinion, often advocated, that many forms of disease are products of a veritable poison the precise nature of which is unknown; and that in this view of the matter it would be more philosophical to speak of the *antagonism of poison and poison.* But if this be correct, and we do not say it is not, the same remark would apply to every case of disease for which we exhibit active remedies, as nearly all our energetic medicines are, in a certain sense, poisons.

Our main design, however, refers to the cases in which poisonous doses (in the ordinary acceptation) have been taken not only without fatal result, but with the effect of curing the patient of alarming disease.*

ANTHELMINTICS.—This term denotes all those means, external and internal, that dislodge worms from, or destroy them in, or prevent their propagation in the stomach, alimentary canal, or elsewhere. Much diversity obtains as to the agency of worms in the human system. Some physicians seem to regard them as always pernicious, while others view them as a wise provision, now and then at least, for the removal of offending matter. That worms are sometimes a source of injury and suffering is beyond all doubt a well-established fact; but they are often suspected as the cause of evils with which they have no sort of connection. Well

* Quite recently a physician has professed to prevent smallpox by administering vaccine virus internally. He supposes the vaccine to be a modification of the poison of the variolus, and that it operates on the principle of counter-poison.

authenticated cases are on record of troublesome cough of weeks continuance kept up and originated by maggots of the common fly. Elliotson gives some interesting facts in point. Dr. Good tells of a flesh-fly, (*musca cibaria*,) or the larva of it, discharged by active purging, after having occasioned much derangement of the whole system by sympathy with the alimentary canal. The intestinal irritation caused by worms and transmitted to other and distant parts frequently does great injury to the system. In *Cooke's Morgagni*, vol. i. p. 285, and in the *Amer. Journ. of Med. Sciences* for Jan. 1845, we find notices of *pleurisy* evidently induced by this kind of irritation. In the last-named journal for October, 1843, we are told that *epilepsy* was manifestly set up in the same way, and ultimately cured by vermifuges, and that *incontinence of urine* had been successfully treated with anthelmintics, thus justifying the belief in the origin of that disease in worms. The *Edin. Med. and Surg. Journal* for April, 1843, gives a case of severe *constitutional irritation* in a child eighteen months old induced by worms. The discharge of five hundred and ten lumbricoid worms in the course of eight days left the child well. Fothergill, Quin, and others have made it appear, quite satisfactorily, that the disease usually called *hydrocephalus internus* has also had a verminous origin; and the celebrated oculist, Mr. Ware, taught that severe *ophthalmia* had been established by the same agency. A remarkable case of this sort is also furnished by Chamberlaine in his book on *cowhage* as a vermifuge.

But why should any hesitate to credit statements like the above, when every one knows that worms in the alimentary canal have repeatedly induced high fever, delirium, and convulsions? I do not know of any infantile distress more alarming than I have repeatedly witnessed from the sympathetic irritation of worms. The subject, therefore, is highly important to the practitioner. It is recorded of an old physician that in every doubtful case of disease in young children he always resorted to some kind of anthelmintic treatment, and with very general success.

A worm or other insect, no matter how small, getting into the nostrils or into an ear, will often set up severe irritation, calling for immediate aid. If not properly treated high constitutional distress may ensue, with fever and all its train of ills. It is not known to every one that an accident of this sort happening to the ear is promptly removed by pouring sweet oil into the external meatus. The insect is instantly dislodged, and the pain ceases.

Mothers suspect the presence and agency of worms if a child has habitually a bad breath with a tumid abdomen, the tongue furred, the eyes heavy, the lips pale and swollen, itching of the nose, evinced by constant picking at the nostrils, heat and irri-

tation at the verge of the anus, &c. All these may be present, and yet no worms be in the canal; yet such are the usual attendants of worms in that region. The physician looks for febrile manifestations if worms be really troublesome; he finds irregular appetite, costiveness or diarrhœa, a loathing of food, and sometimes nausea and vomiting, more or less cough, palpitation, headache, convulsions, grinding of the teeth. All these belong to the morbid effects of worms.

The worms that infest the human body are of various size and form, and sometimes the most insignificant in point of size do great mischief. I knew a lady who suffered terribly for years from pain in the frontal sinus, and was finally cured by the discharge of very small worms from that cavity by the frequent snuffing of turpentine.

The more common worms are, the *ascaris lumbricoides;* the *tænia*, or *tapeworm;* the *ascaris vermicularis*, and *trichuris.*

The *lumbricoid* is synonymous with the *teres*, or long round worm. Some have regarded it as really the same as the common earth-worm, which it certainly resembles. It differs in wanting the elevated ring or band so obvious in the middle of the earth-worm. The human lumbricoid is from two to fifteen inches long, and about as large round as a goose-quill. At the moment of evacuation they are nearly transparent, and of a pale-red, but soon change to a light-opaque yellow, after death. These worms infest the jejunum and stomach chiefly, and are sometimes ejected by the mouth. There seems to be in some families a predisposition to the formation and lodgment of this kind of worm, and with a total exemption in regard to the other varieties.

The *tænia*, or tapeworm, is also called the *lumbricus latus*, and *le ver solitaire*, or solitary worm, because generally there is but one present at a time. We are told of a lady, however, from whom eighteen distinct and perfect tapeworms were expelled. This kind of worm is made up of regular parts or pieces, connected by articulation, the whole ending in a kind of tail. Each of these parts has a reproductive power, so that the disease is not cured unless the whole be expelled. These worms are sometimes of great length. Boerhaave speaks of one thirty ells long, and the same author says he saw one with 21,600 joints. A Dutch peasant is reported to have vomited no less than forty ells, or one hundred and twenty feet, at one spell, after taking an emetic, and would have thrown up more but he bit the worm off, fearing he should puke up all his bowels. The location of this worm is generally in the small bowels, where it is so rolled up as to give the sensation of a ball rolling from side to side as the patient turns in bed. The appetite is rendered very morbid

by the irritation of this kind of worm, both as to quantity and quality.

The *ascaris vermicularis*, or *maw-worm*, is of a pale-yellow color, and when fully grown is about half an inch long and as thick as a common thread; hence it is sometimes called the *thread* worm. This worm is most frequently found in the rectum, which it annoys severely. The gut is sometimes nearly filled with these worms, inducing a very distressing itching, which reaches to the verge of the anus. The human frame is infested by this worm more than by all others, and very few children are entirely free from them. They excite restlessness and even convulsions in not a few instances.

The *trichuris*, or *long thread* worm, is seldom seen in this country.

The *origin* of worms is a subject often discussed but not easily settled. The *ectozoa* and *entozoa* theories are direct opposites. The former refers to an origin *without*, the latter to an origin *within*, the body. We believe that worms may be generated within, although we believe they are, for the most part, derived from an external source. Dr. Duncan and others have furnished cases going to prove that worms discharged by vomiting and purging were formed by eggs deposited on cabbage-leaves and other vegetables taken as food or carelessly plucked and chewed while strolling through a garden. In this manner it is alleged that the *bots* of horses are generated—the eggs of the gad-fly finding their way into the animal's stomach and ultimately producing the peculiar worms called *bots*. It is quite certain, too, that the constant use of very bad water will engender worms in the stomach and bowels, and that complete recovery has soon followed a change of residence, where pure water was always at hand. Mere change of location has thus very speedily relieved an entire family from the depredations of worms.

The fens of Lancashire, in England, have from time immemorial been notorious for tapeworm, and every one concedes that the cause is to be found in the locality. Sir John Pringle asserts that the lumbrici are very frequent concomitants of the remittents of all marshy countries.

There can be no doubt, however, that a state of the stomach and bowels may result from bad living or disease, of such a nature as greatly to increase the number of worms if not actually to give rise to their presence.

This conjecture is made matter of fact by the well-known practice of punishing criminals, in Holland, by depriving them of salt entirely. The deteriorating influence thus exerted on the mucous tissue results in the formation or development of worms to an incredible extent. The digestive powers and the general

health alike suffer. On the same principle, any very material change for the worse in daily diet may set up worms in those who never before felt their morbid agency. A healthy individual was sentenced to imprisonment in England who had never known what it was to be annoyed by any kind of worm. His diet was bread and water, with six ounces of meat twice a week. After two years' use of this diet he began to pass large quantities of tapeworm, and soon became emaciated and very feeble. He continued to pass portions of the worm after his release, but never recovered his health.

The very general prevalence of worms among the lower classes is justly ascribed to the constant use of crude and defective food. The ravages of worms are nowhere more marked than in the West Indies, especially among the negroes who live on plantains, yams, and rice, half-cooked or not cooked at all, and deprived of animal food, unless it be of the worst kind. It is very rare to find a child among them quite free of the influence of worms. It is a prevailing opinion that in regions where the people subsist largely on animal food tapeworm is seldom troublesome. Hence its infrequency in Cincinnati, Lexington, Louisville, &c.

The various remedies for worms will be noticed in their proper places.

ANTHEMIS NOBILIS. *Chamomile. The Flowers.*—The warm infusion is sudorific, emetic; the cold infusion or extract is tonic. A poultice, made by stewing the flowers in strong vinegar, and applied hot, is an excellent discutient, and soother of local pain.

ANTIDOTES.—These are employed to counteract poisons, and are usually given to act locally. There are three principal varieties, as *demulcents*, which sheath the irritated surface and guard it from further harm; *emetics* and *cathartics*, to get rid of the poison by evacuation; and *chemical* agents, to neutralize and render the poison insoluble in the stomach. We shall have frequent occasion to notice the individual antidotes.

ANTI-INFLAMMATORY.—This term, which is substantially the same with antiphlogistic, has been introduced to the notice of the profession chiefly in reference to the action of calomel and tartar emetic in the arrest of inflammation and the removal of the effusions consequent upon it. There is good reason to believe that the repulsion between fibrin and calomel is so decided as to create a basis for the exhibition of this medicine, in order to arrest that morbid process in connection with which fibrin is deposited so as to interfere with the due performance of organic functions. In like manner the persistent use of very small doses of tartar emetic, as the sixteenth of a grain, given every twenty minutes or half hour, displays a marked and controlling power over inflammatory action, and at length puts a stop to it. We

have seen this most strikingly in affections of the brain, or its membranes, (or both perhaps,) that were clearly inflammatory, after blood-letting, general and local, had apparently failed to do good. On the same principle we have been in the habit of administering to vigorous females just delivered of their first child (still-born) a mixture of three grains of tartar emetic in a quart of water, to be drank through the day in the dose of a wine-glassful every hour, as a preventive of inflammation in the mammary glands, or to arrest it if already begun. We regard the treatment as decidedly *anti-inflammatory*.

ANTIMONIUM. *Antimony*, formerly called *stibium*, and hence *stibiated* tartar, in place of *emetic* tartar.—The familiar term *antimonial* denotes a medicine consisting mainly of antimony in some form of combination or other. Pure antimony, called also the *regulus*, is the basis of some of the most important compounds in use. The absolutely pure metal has no medicinal property.

What is called *crude antimony*, although of a dark-gray, not unlike the metal, is a compound of antimony and sulphur, and known by the name of *sulphuret of antimony*. This when heated with iron filings is decomposed, and pure antimony is obtained. This sulphuret was probably the first *antimonial* medicine ever known to the world, and the knowledge came by casualty. Being procured in large masses, and easily shaped into the form of cups and other drinking-vessels, it furnished a substitute for the more costly utensils that were afterward introduced. Wine was frequently drank from cups so prepared; and when allowed to remain in the vessel over night, or for a given length of time, it was discovered that the wine had acquired emetic properties, owing, doubtless, to the chemical action of the acid in the wine on the sulphuret. This medicinal wine was found to be an efficacious preparation.

The *everlasting* or *perpetual* pills had also an emetic power followed by a cathartic action. These pills were made by cutting small pieces of the sulphuret of antimony into round balls of the size of pills. One of these sufficed for a family for many years, and even for subsequent families. They acted slowly but effectually, and were highly esteemed. It is said that a lady who had swallowed a perpetual pill became alarmed at its unusually long retention in the alimentary canal, and sent for her physician to seek advice. The doctor assured her that there was no sort of danger, as he had known that pill a great while, and that it had passed through the bowels many hundred times, and would certainly find its way out on the present occasion, in due season.

The sulphuret of antimony is not now employed in medical practice excepting as a veterinary article of physic. It has, however, been largely appropriated to the manufacture of more fashionable antimonials.

The *glass of antimony*—the *vitrified sulphuretted oxide* of *antimony*—merits a passing notice. It results from the exposure of the crude antimony to the joint action of a dull-red heat and air. Most of the sulphur of the sulphuret is burnt out, the antimony is converted into a protoxide which is fused by the heat, and when cold presents a vitreous or glassy appearance. It is protoxide of antimony combined with a variable quantity of sulphur.

This *glass* of antimony was long employed for making *tartar emetic* and *antimonial wine*, or *wine* of *the glass of antimony*. An ounce of the glass added to a pint and a half of Spanish wine, digested for twelve days and filtered, gave an efficient *antimonial wine*. The same *glass*, it is said, would serve for the repetition of the process almost *ad infinitum;* not quite the truth, however, as must be very obvious.

The *calx of antimony*, sometimes named in books of practical medicine, was an impure protoxide. Morton employed it, combined with the powder of chamomile flowers, in the treatment of old agues.

The *Kermes mineral* and *golden sulphurets of antimony* are not entitled to special consideration. We have no use for them.

The most valuable of our antimonial medicines is the well-known *tartar emetic*, *emetic tartar*, *antimoniated tartar*, *stibiated tartar*, *tartrate of antimony*, *tartrate of potash and antimony*, *patassio tartrate of antimony*. The names here given are all employed synonymously, the last being the most modern and probably the most technically correct. I prefer, however, when writing prescriptions, to employ the first in the list.

Tartar emetic was known to, and described by, a German chemist in 1620, and is now regarded as a triple compound of tartaric acid, oxide of antimony, and potash. It is readily formed by boiling equal parts of cremor tartar and protoxide of antimony in four times their weight of water, filtering the solution, and evaporating until a pellicle forms on the surface. The protoxide of antimony used in this process is obtained from the muriate of antimony by the addition of water, and falls to the bottom in a white mass, formerly called *pulvis algarothi*.

Tartar emetic is soluble in three times its weight of water at 212°, and in fifteen parts of cold water. The aqueous solution is decomposed by several acids, the alkalies, alkaline earths, and by all vegetable infusions or decoctions that contain tannin. It is the latter agent in various articles that gives them an antidotal power, in reference to the poisonous action of overdoses of tartar emetic.

Tartar emetic is not unfrequently adulterated, and it should, when practicable, be purchased in the crystalline state. The pure crystals are white and inodorous, having a slightly styptic,

metallic taste; exposed to the air they effloresce, and on burning coals they are blackened and yield metallic antimony. A solution of the pure crystals gives a copious golden-colored precipitate with hydrosulphuret of ammonia. If the crystals rapidly deliquesce in the open air it is evidence that other salts are present.

The *bolus ad quartanum* of the French, so much employed in obstinate quartan agues, was a compound of tartar emetic and Peruvian bark, which not only gave intestinal evacuations but seemed to control the periodical affection; and yet it is well known that a scruple of tartar emetic is wholly decomposed by an ounce of the strong decoction of Peruvian bark. I know, however, that tartar emetic and sulphate of quinine in combination often more effectually arrest *intermittents* than any form of the bark alone. Two grains of tartar emetic may be combined with ten of sulphate of quinine, and the whole given in three or four hours without inducing vomiting at all, yet with a decided antiperiodic result.

The *uses* of tartar emetic are very numerous and equally important. Properly graded in respect of dose we are able to obtain from it very desirable results. In minute portions, as a sixteenth or an eighth of a grain, it acts happily on the skin very speedily. In rather larger doses it will nauseate, vomit, purge, sweat freely, and act as a sedative, very sensibly reducing arterial excitement.

We call it very properly a *nauseant*, an *emetic*, an *expectorant*, a *sudorific*, a *rubefacient*, a *counter-irritant*, a *sedative*, and, in very large doses, a *poison*.

The following formula is an excellent mode of administration in a febrile state with hot, dry skin, and especially so after the use of the lancet:—

℞.—Emet. tart gr. i;
Nit. potas. ʒi;

Rub well together and divide into ten powders. Give one every two hours in a tablespoonful of sweetened water.

The powders so made are decidedly antiphlogistic, reduce the pulse, moisten the skin, and increase the urinary evacuation. They are sometimes called *nitrous*, and sometimes *antimonial* powders. When a grain or two of calomel is joined to each powder we have the favorite preparation of Rush when he desired promptly to touch the gums by a gentle ptyalism.

When we desire to allay pain and secure ptyalism soon, the following will answer well:—

℞.—Emet. tart. gr. ij;
Calomel, ʒss;
Pulv. opii, gr. vi.

Rub well together, divide into twelve powders, and give one every four hours.

There is no medicine more easily administered to young patients than tartar emetic. Dissolved in water it has neither taste nor smell, and we have no difficulty with it. One grain dissolved in two or three ounces of water make a mixture of which a teaspoonful may be given to a child a year old and repeated according to circumstances.

The *tartar emetic dose* for adults, as sold in the shops, consists of six grains in one paper, with directions to dissolve in six tablespoonfuls of warm water and take a tablespoonful every ten minutes until vomiting ensues. Often the effect will follow the second or third dose, and sometimes the whole will be taken and no vomiting follow. The diversity depends on the peculiar condition of the general system, or of the stomach; and attention is demanded to these points in administering tartar emetic to adults and to children.

I have known individuals who, from habit in their own country, had always taken the entire portion of six grains at once, and who continued the practice here. It is not a safe method, and may induce severe and even fatal spasms.

As an adjuvant to squills, gum ammoniac, assafœtida, and some other articles, tartar emetic is of great value. Hence its introduction, by some, into the brown or pectoral mixture in lieu of antimonial wine.

The strong tendency of tartar emetic to run off by the bowels, as seen especially in the southern section of this country, and the decidedly depressing quality of the remedy when employed as an emetic, are features that must not be forgotten by the medical practitioner.

The *external* use of tartar emetic is often important. We may combine it with lard or cerate, and so get a *tartar emetic ointment;* or we may add it to a soft and hot Burgundy pitch plaster, or we may use a watery solution, or an oleaginous liquid made more powerful by the addition of croton oil. To form the ointment a drachm of tartar emetic may be rubbed with an ounce of lard or simple cerate. A cloth being spread with the ointment so made and applied to the skin will soon set up high irritation. In three or four hours the skin will be deeply reddened and small vesicles begin to appear. As soon as this state is perceived and there is much pain from the application, it should be removed, and a soft bread and milk poultice laid on the spot and renewed twice a day. The vesicles will soon fill and ulcerate, constituting a discharge or drain from the skin, which is often very serviceable, especially in *diseases of the chest.* One advantage of this drain over a blister is its longer duration, as a means of counter-irritation and depletion. As the part is apt to be marked by scars after healing, it is important to avoid places

that will show these scars in future life; especially does this remark apply to females.

The pitch plaster is a convenient mode of pustulation. Having spread the pitch on leather, and while hot, dust on the surface a scruple or two of the tartar emetic, and press it into the pitch with a spatula. Heat the plaster gently and lay it on the part intended to be pustulated, and manage subsequently as already pointed out.

An excellent plan, however, and perhaps the least troublesome, is to employ the following:—

℞.—Antimon. tart. ℈i;
Ol. olivar. ℥ss;
" crot. tig. ℥ss.
Mix.

Rub a portion of this into the spot by means of soft cotton or sponge, night and morning, and lay a piece of flannel on the place wet with the mixture. The irritation and vesication will soon be obvious, and if not sufficient can be augmented by subsequent applications. This preparation is very useful along the upper part of the spine, to relieve the organs of the chest, laboring under various forms of disease, calling for decided counter-irritation, as, for instance, *chronic bronchitis*.

We hinted at the formation of a kind of antimonial wine from the glass of antimony, but as the article is made almost exclusively of tartar emetic, and as when thus made, it is a very important medicine, it merits a further notice. It is sometimes called the *liquor of tartar emetic*, though more generally known as *antimonial wine*. This compound differs from the old article as made from the glass of antimony in the disuse of the fluid commonly called *wine*. Not a particle of this enters the medicine now under consideration, as will appear from the formula. Two scruples of tartar emetic are dissolved in eight ounces of boiling water, and, after filtration, two ounces of rectified spirit of wine or alcohol are added, with a view to prevent decomposition of the tartar emetic, which so often resulted from the old plan, in consequence of defective wine. The medicine thus prepared will remain unchanged, and hence the importance of the formula. Each tablespoonful of the solution contains one grain of tartar emetic. A fluidounce, containing two grains of the salt, of course every teaspoonful or sixty drops, must contain exactly a quarter of a grain. We thus know precisely how much of an active antimonial we are exhibiting in every dose; and this is a decided advantage over the old preparation from the *glass* of antimony.

The solution, as prepared above, is colorless, and this too is sometimes an advantage, in the case of suspicious patients. If

it is desired to have it more or less colored, this end is readily attained by the addition of cochineal or red sanders. From ten to thirty drops of the solution will act as a diaphoretic, and after the effect begins even five-drop doses will often keep it up if repeated every ten minutes. Added to saline medicines and warm drinks the sudorific action is more certain and often more effective. Given in doses of a drachm or two it nauseates; in half-ounce to ounce doses it acts as an emetic. These doses are for adults, and may be reduced or enlarged to meet the circumstances of peculiar cases and constitutions. Sometimes a very small dose will vomit an adult who at any other time could not be moved by a quantity twice or thrice as large.

When antimonial wine is given to children, as for the relief of croup, it now and then sets up *long-continued vomiting*, or irritability, with distressing efforts to throw up. These cases sometimes are quite alarming to young practitioners. They may be relieved often by exciting the action of the bowels by a small quantity of laxative medicine, or by an injection. If the irritability still continue, it may be arrested by a dose of lauda num, or a little old wine, or very strong coffee without sugar or milk, or by laying a small blister over the epigastrium, and on the denuded skin a half-grain of the acetate or sulphate of morphia, repeating in an hour if necessary. The last expedient is the most reliable.

Dr. Paris has given some important facts touching antimonial wine made with common wine instead of alcohol. He was engaged in an official inspection of the apothecary shops of London, and frequently noticed that the wine was wholly defective, all the protoxide of antimony being precipitated. It was ascertained that inferior wine had been employed, or that which contained a great deal of tannin, which rendered the mixture inert. This development led to the general use of the rectified spirit of wine, which wholly prevents the decomposition of the tartar emetic.*

Before we dismiss the notice of antimonial wine, or the liquor of emetic tartar, it is proper to refer to a most happy and valuable use of it as a sedative, to control *undue cerebral action*. In cases of this kind, over which the lancet seems to have little agency, I have seen fifteen-drop doses, repeated every ten or fifteen minutes, operate most decidedly for good. It is gene-

* Antimonial wine should be recently prepared, because all solutions of tartar emetic are very liable to undergo spontaneous decomposition. It ought to be clear and without deposit. If it has undergone decomposition it will contain no antimony, which may be proved by passing through a portion a current of sulphuretted hydrogen gas, or adding a few drops of hydro-sulphuret of ammonia. The presence of antimony is proved by the orange-colored precipitate that falls. *Adulteration of Medicines*, p. 37.

rally needful, in the case of adults, to persist in the use of the medicine twelve, eighteen, or twenty-four hours. The pulse is reduced, febrile heat subdued, and the skin kept moist. A quantity of tartar emetic equivalent to the antimonial wine would answer equally well; say an eighth of a grain, or even a fourth in some cases.

The same practice has been very successful in Europe as well as in this country in obstetrical cases. In the *Dublin Lying-in Hospital*, the long-continued exhibition of tartar emetic, or antimonial wine, in the small doses named above, has been remarkably useful in *rigidity* of the *os uteri and vagina*, in *irritable and violent labors*, in *obstructed or inflamed mammæ*, *puerperal convulsions*, *and mania*. The patients should be kept under the sedative action of the medicine for twenty-four, and sometimes even thirty-six hours. I have found a watery solution of tartar emetic, three grains to a quart of water, a most admirable medicine for preventing imflammatory action in the breast of females after their first pregnancy with a dead child and the breasts exceedingly tumid with milk. The solution is to be drank in the quantity of a wineglassful frequently in the course of the day; or if that sicken the stomach the half may be swallowed. It should be continued at least during twelve or eighteen hours, and even much longer if the circumstances so require.

A practice very similar is beneficial in the case of old luxations, and dropsy of the synovial membranes, where it acts by its power as a sedative by promoting the action of the absorbents and by its relaxing property.

The *contra-stimulant* use of tartar emetic is also important. The medicine is not intended to act as an emetic, but accustoms the stomach to its irritant action, so that after one or two doses the force of the remedy is spent on local inflammation, as in *pneumonia*, where it has been largely employed. This practice was frequent in the seventeenth century—fell into disuse, and was afterward revived. The effect of the medicine is said to be to control local excitement or inflammation, and therefore it is virtually a *sedative*, though regarded as a *contra*, or *counter-stimulant*.

Laennec gave forty-eight grains, in divided doses, in twenty-four hours, with no vomiting after the first three or four doses. Others have given much larger doses than Laennec administered; and to the peculiar state of the stomach, under the influence of these doses, they gave the name of *tolerance*. The idea is that the stomach, after a time, tolerates or endures the presence of a real emetic without realizing any special discomfort. Rasori affirms that he could accustom the stomach to doses of five,

twenty, and even fifty grains, on this principle. The medicinal effect was all spent on the inflammatory state of the lungs. He gave the remedy thus liberally in lieu of blood-letting, and affirmed that he could tell pretty certainly the extent and grade of pneumonic inflammation by the quantity of tartar emetic that could be borne without vomiting being induced.

In order to show with what unchangeable hardihood Rasori administered tartar emetic, we will give in detail the two following cases:—

"A young man was received in the clinique of Rasori on April 5, 1809, who had labored for four days under symptoms of pneumonia, for which he had been bled and cupped on the side: pulse hard and wiry; cough, with pain in the right side of the thorax. (*Bled, tartar emetic* 24 *grs.*) 6th inst., vomited twice. (*Tartar emetic* 48 *grains.*) Evening: Great augmentation of cough and pain; expectoration tinged with blood; pulse vibrating; six alvine evacuations. (*Tartar emetic*, 48 *grs.*) 7th inst.: In the morning, (*tartar emetic* 72 *grs.*) Evening: Exacerbation of fever, of cough, and of pain; frequent vomiting; six dejections. (*Tartar emetic* 72 *grs.*, *blood-letting.*) 8th day: Same symptoms. (*Tartar emetic* 144 *grs.*, *bleeding.*) Evening: Vomiting, with increase of symptoms. (*Tartar emetic* 144 *grs.*, *bleeding.*) 9th day: Frequent vomiting; respiration a little difficult; pain moderated; feeling of oppression referred to the epigastrium; great muscular weakness; skin dry and hot; tongue dry. (*Tartar emetic* 72 *grs.*, *blood-letting.*) Evening: Repeated vomiting. (*Tartar emetic* 36 *grs.*, *blood-letting.*) 10th day: Vomiting less frequent; the other symptoms continued. (*Tartar emetic* 36 *grs.*, *blood-letting.*) 11th day: Respiration calm, no pain, but little cough; the patient could take a full inspiration, but could scarcely speak; pulse small, compressible, and unequal; skin dry and hot; tongue dry, frequent vomiting, with intense thirst. (*Tartar emetic* 36 *grs.*, *blood-letting.*) Evening: (*Tartar emetic* 36 *grs.*) 12th day: (*Tartar emetic* 36 *grs.*, *blood-letting.*) The patient died the following night. Upon examining the body, some hepatization was found in the right lung. Everything else was in a state of integrity.

"Another person, aged 27 years, was admitted into the clinique of Rasori April 5, 1809. He had complained for three days of pain in the right side of the breast, with cough, spitting of blood, and difficult respiration; his pulse was scarcely perceptible; heat of skin moderate. It will be unnecessary to give the daily treatment of this patient. It will be sufficient to say that between the 5th and the 11th of April he was bled ten times and took 826 grains of tartar emetic. On the latter day he died." Both patients were destroyed by the treatment.

There can be no doubt that this heroic practice has often succeeded. But I am of opinion that the previous use of bloodletting should not be dispensed with, and that less tartar emetic will be required to cure *pneumonia*, if this precaution be observed. It is doubtful whether more success has attended the French and Italian practice than was known to follow the old plan of Cullen, in which bleeding, calomel, ipecacuanha, and opium, were the prominent remedies.

It should be borne in mind, too, that this large use of tartar emetic has done mischief by setting up ulceration of the pharynx, œsophagus, stomach, and bowels; and has sometimes induced terribly severe gastric spasms, which compelled the practitioner to lay the medicine aside and substitute ipecacuanha in its stead.

Mr. Milton, surgeon, has shown that tartar emetic is quite as useful in inflammation of the cellular tissue near the surface as it is in pneumonia. Inflammations of the wrist, gum-boils, whitlows, buboes, and the like, yielded rapidly to the remedy. He gave it in doses of from a half to a whole grain every two hours, and increased the dose as the sickness of stomach subsided. If the bowels were bound, he gave drachm doses of tartrate of soda at the same time. If the medicine vomited too much, he checked this by a half-drop or more of Prussic acid. (See *London Lancet*, May, 1850.)

Tartar emetic was a favorite remedy for *dysentery* in 1776, as we learn from a paper by Dr. Brown, apothecary to his majesty's hospitals in America. He says his medicine produced all the good effects said to follow the use of other articles, with the advantage of being much more certain and steady in its operations. (See *Med. Commentaries*, vol. ii. p. 406.)

In the cases just named the therapeutic properties of tartar emetic have reference to qualities other than those of emetics as such. But when we employ it in *delirium tremens*, after the manner of the late Dr. Joseph Klapp, we expect to succeed chiefly in virtue of its power not only to empty the stomach, but to correct the morbid state of its mucous coat. It must not be forgotten that this medicine is not suited to all cases of this disease, and that when it is found in young men who have not been long in habits of inebriation a very different plan must be adopted. It is in the *delirium tremens* of old topers, whose stomachs have lost nearly or quite all their sensibility, that we expect to be successful in the use of tartar emetic. There is a total absence of inflammation in such cases, most probably because the long use of the stimulus has burnt out the native excitability and rendered the organ callous to impressions. The mucous membrane is coated with a thick layer of viscid mucus, that makes the organ insensible to the action of opiates

in the largest doses. Hence it happens that twenty grains of opium at one dose fail to procure sleep.

Facts like these led to the use of tartar emetic to rouse the dormant powers of the stomach, to clean off the viscid mucus by repeated acts of vomiting, and so present such an improved and renovated condition of the stomach as to make it impressible by one grain of opium, or even by a teaspoonful or two of fetid tincture.

The design of using the tartar emetic in such cases is, then, obviously with a view to its full emetic effect, and I may add that it is a safe practice. I mention this circumstance because objections have been raised to the potency of the remedy. "You will utterly prostrate the system of an old drunkard," says one, "by tartar emetic." But from observation and actual practice I know that there is no force in the objection. Frequently it will be seen that the patient will fall asleep as soon as the emetic action has ceased; and, at all events, the opiate dose, though small, will effectually secure that desirable result. Should the system flag, give a teaspoonful of the milk or tincture of assafœtida every hour or two, with occasional draughts of some bitter infusion, and small quantities of light food, such as the patient can most comfortably receive. The volatile julep may also be administered, to quiet nervous uneasiness and gently to stimulate the stomach and bowels.

The practice above detailed was very successfully adopted by Dr. Klapp, in the *old Philadelphia Almshouse*, and afterward by his nephew, in the *Moyamensing Prison;* and Dr. Ware, of Boston, made a publication in the *American Journal of Medical Sciences* for August, 1838, showing that eleven out of twelve patients were cured by him in the same way.

The *hive syrup* of Dr. Coxe, so long employed as a popular remedy for *croup* and the *colds* of children, depends very much on tartar emetic for its remedial powers. It contains enough of that salt to nauseate, even in small doses, and so to prove *expectorant.* This latter effect is always a consequent result of the nausea set up by the remedy, and should it vomit, as it may, expectoration is made more free and easy. The same effects often follow the use of tartar emetic, or antimonial wine, which are frequently resorted to as remedies for ordinary colds and coughs. On the same principle the external as well as internal use of tartar emetic has been serviceable in *pertussis.*

Mr. Moore, assistant surgeon, Upper India, has treated a great many cases of *intermittent fever* with *tartar emetic,* and regards it as the best means of cure. He gave it in very small doses (a tenth of a grain) every hour during all the stages. In simple cases this alone sufficed; but if complications of congestion or

inflammation were present he resorted to general and local bleeding in addition to the tartar emetic. (See *Braithwaite*, part xx.) We may add that Professor Dudley, of Kentucky, has long been in the habit of treating intermittents by the frequent exhibition of emetics.

The *emetic* treatment of *chorea* is probably less valued than it deserves to be. I do not speak of it as *the* practice above all other methods, but as one of the plans of cure that may sometimes be proper. A very interesting case of this disease in a child nine years old is reported as speedily cured by the use of antimonial wine. (See *London Lancet*, New York reprint, vol. i.)

Why does *tartar emetic* frequently fail to vomit where that is the chief object in view, as in *croup?* Certain it is that very large quantities have been given, in repeated doses, and no vomiting has occurred; or it has come on late in the attack, with a force almost irresistible. In the nineteenth volume of the *American Journal of Medical Sciences* a case is related in which a half-ounce was swallowed by a patient laboring under croup, and yet there was no vomiting. The neglect of proper depletion, either general or local, is the difficulty in such cases. The condition of the system is not right for the due emetic operation. A few leeches to the throat, or a small bleeding from the arm, will secure a speedy emetic action from a quantity of tartar emetic that would otherwise be wholly inoperative. This doctrine was happily illustrated by Rush, and afterward by Eberle, and since their time it has been verified by thousands.

But tartar emetic may be a real *poison*. The precise quantity that will act thus cannot be designated. Much will depend on the state of the stomach, as to fullness or vacuity, the general health and habits of the patient, &c. &c. In some instances the quantity swallowed has been so large as to paralyze the stomach and prevent vomiting. An ounce would have this effect, or even a much less quantity. In all such cases vomiting should be set up by local irritation, as by the finger or a feather thrust down the throat, or by forcing warm water into the stomach by means of a stomach-pump.

When the quantity swallowed has been small and the irritability of the stomach is very great, the best plan is to administer very strong green tea or coffee, or anything that contains tannin largely. Tannin itself is a good article. The tartar emetic is thus decomposed and rendered inert, while the further use of the remedy restores the stomach to its former condition. Should the case continue to be embarrassing, the treatment named when speaking of antimonial wine will be proper.

It may be expected that something would be said respecting James's *fever powder*, the *pulvis antimonialis* of the books.

But as all secret medicines are repugnant to our feelings we feel indisposed to devote much time to this article, whose real composition, as practiced by the inventor, is a matter of uncertainty. The powder most probably is a compound of phosphate of lime and protoxide of antimony. But we can always have at our command a better article, whose composition we certainly know, and therefore we should give it our preference. We allude to the *nitrous powders* previously spoken of.

The *chloride* or *butter* of antimony is an old medicine, which is now rarely employed. Its leading property was that of an escharotic.

ANTIPERIODIC.—This term has come to be generally employed because it seems to convey an idea not embodied in any other. But what do we mean by it? Reference is had, in its use, to the periodical nature of various fevers and chronic diseases, which are cured in virtue of the power of certain medicines to break up the periodicity or periodical tendency so apparent in their progress. Thus ague and fever is confessedly periodical, and neuralgic affections are under the same or a like influence. We cure the one and the other by the exhibition of bark or the sulphate of quinine. We prevent the return of the periodic phenomena or paroxysms which constitute the grand features of the disease, and we regard the remedy as the proper antagonist of the morbid state and call it an *antiperiodic*. Now it is conceded that we know nothing more of periodicity, as related to disease, than that it consists chiefly of some change in the functions of the nervous system somewhere and somehow. The essential nature of the series of phenomena involved is not understood and probably never will be. Yet we see the facts daily, and so palpably that we cannot doubt the agency of remedies to counteract and to nullify the basis of all periodical disease. Thousands on thousands are cured of all the grades of ague and fever by the antiperiodic agency employed, and the connection of cause and effect is thus demonstrated as clearly as in any other conceivable case.

That the *antiperiodic* power of the sulphate of quinine is uniformly developed under precisely the same circumstances none will affirm. It may act well in a system greatly enfeebled, and really prove a stimulant, primarily and constantly. It may act equally well in another system, and evince a sedative influence in some organ at least, if not in the whole arterial system. Yet in these apparently opposite conditions the final action may be, and undoubtedly is, what we call antiperiodic.

Arsenic is an antiperiodic, and yet there are few, if any, who will contend that in all its agency in the human system, prior to the final arrest of periodical disease, it affects the economy precisely as it is affected by bark or quinine. Nevertheless we hold

it to possess decided power over periodicity, whatever the nature of that may be. *Headland* shows, conclusively, that the action of arsenical and quinine medicines is widely different; that arsenic is a catalytic blood remedy, modifying the blood poison and the two passing out of the system; while sulph. quinine is a *restorative* hæmatic, adding something to the blood that is lacking and itself remaining in the system. These remarks apply specially to the cure of periodical fevers.

ANTIPHLOGISTIC.—This term, like some others, is often employed without anything like a correct knowledge of its import. We are advocates for a proper acquaintance with the real design and value of all our technicalities.

The word *phlogiston* was in use among the chemists of former times to denote the principle of inflammability or combustion supposed to be inherent in combustible bodies. The addition of *anti* and a slight change in *phlogiston* gives *antiphlogistic*, or *against phlogiston*, or inflammation, or the principle of inflammability. Hence the word, primarily and truly, has reference to all the means proper to subdue inflammation or high morbid action. It is therefore appropriately applied to all the forms of sanguineous depletion directed against the inflammatory process, and includes all other depleting remedies that have a like tendency, such as vomiting, purging, &c. &c.

ANTIPLASTIC.—This term is synonymous with anti-fibrin, anti-inflammatory, &c.

APIOL.—This is a new antiperiodic, of which mention has been made in the *Brit. and For. Med.-Chirurg. Rev.*, January, 1857. We have not noticed any other account of it.

AQUA. *Water.*—The first remark to be made on this article relates to the writing of prescriptions. There is no advantage in appending *fontis* or any other word to *aqua*, but there may be positive evil when the appendix is carelessly written. This *fontis* has been so badly scrawled that the interpreter made *fortis* out of it, and hence he added aqua fortis in place of aqua fontis. The simple *aqua*, or its genitive *aquæ*, is all-sufficient, denoting *water*, and nothing more nor less.

For medicinal uses, and to have neat compounds, water should be filtered or distilled prior to its use in putting up prescriptions. Distillation will give a purer result than can be had from filtering. It separates the water from all impurities and gives us the native fluid unadulterated. In the absence of the fixtures necessary for distillation any of the well-known methods of filtration will answer for ordinary purposes.

The percolation of water through gravel and the crevices of rocks prepares it for the use of man as a common universal beverage. The fact that it has been accessible since the creation,

in any quantity and almost everywhere, seems to indicate the design of Heaven that it should be the natural drink of the race. Yet, happily as it is adapted to the wants of man, and simple and tasteless as it is, it has a fatal power when drank in considerable quantity by persons overheated by exercise in the summer season. Hence in every large city cases of sudden death are reported every year as the result of this kind of imprudence. The accident is most frequent when the stomach is empty, and the cold drink has more opportunity to exert a morbid influence on the unprotected tissue of the stomach. The patient is almost instantly thrown into severe spasms, first of the stomach and then of the bowels, the pain of which is almost intolerable. The most prompt relief is obtained from the immediate administration of a teaspoonful of laudanum, and the application of sinapisms to the pit of the stomach and the extremities. In a paper on this subject, which I published in the *New York Med. Repository* many years ago, it was attempted to be shown that these accidents were seldom heard of in country locations, nor in persons known to be habitually temperate in the use of strong drinks. It is quite possible, however, for the same results to follow the imprudent drinking of iced water or very cold water by persons overheated, anywhere, no matter how temperate their habits.

Although there is really no positive nutriment in water, it is matter of fact that individuals have subsisted many days on water alone. But it should be remembered that the fatty matter in the omentum and other parts of the economy is taken up by the absorbents, in all cases of starvation, and converted into blood; so that the system has really, for the time, an internal sustaining power, which seems to be kept up by water.

Not only was water at one time the only beverage of the race, but there was a period when it constituted the chief means of *curing disease*. The Italians treated *fevers*, centuries ago, almost exclusively with ice and cold water, internally and externally administered. In *smallpox* the cold water treatment was successfully employed long before the sect of *hydropathists* had existence. In the *Memoirs of a Babylonish Princess* we find an account of a time-honored practice from which it is very likely that modern hydropathy took its rise. "During the hotest months," says the writer, "when the thermometer is at 120° of Fahrenheit, the ladies wear a silken garment or chemise, and slippers, but no stockings. At night it is the custom to sleep on the terrace at the top of the house, in the open air, the ladies, the men, the children, and the domestics having each their separate terraces. Strange as it may sound to European ears, it is by no means an uncommon practice with the ladies of Bagdad, in the months of July and August, to steep their night-clothes in cold

water, which is slung up for this purpose in skins in order to keep it as cool as possible. Having done this they put them on, wringing wet, and again retire to their beds of palm branches to enjoy refreshing slumbers. Notwithstanding this practice, rheumatism, so prevalent in England, is rarely heard of in that country.

The facts developed in this piece of history are of high practical importance, and may well rebuke the timidity of medical men everywhere touching the internal and external use of cold water. The time has been in this country when a patient burning with a fever and dry tongue was forbidden a drink of cold water, and ice would have been regarded in the light of a poison. In this delusion we never shared, having never witnessed any sort of injury as the effect of cold or even iced drinks, taken moderately by fever patients. Nay, what is even more heterodox in the estimation of many, we never refused a drink of cold water to a patient because he had taken calomel, or was at the moment in a state of gentle ptyalism. Our experience has yet to assure us that a thousandth part of the mischief said to flow from the practice had any legitimate connection with it. The worst-swelled faces we have ever seen were in subjects who, while profusely salivated, were not allowed a drop of cold water, though imperiously demanded by nature.

According to my observation, no one remedy is so grateful to patients laboring under *bilious remittents* as ice, used *ad libitum;* and none more safe. In the exquisitely irritable stomach of gastritis, when every other article is forcibly ejected as an intruder, ice is not only tolerated but is often indispensable.

To aid my medical brethren in a just appreciation of this very ancient remedy, a few extracts will now be presented from the well-known works of Dr. Lettsom, which were published long before *hydropathy* presented itself, as a system, to the world. The facts are furnished by Dr. Pearce in Letters addressed to Lettsom, between the years 1760 and 1781, and written in St. Croix. "*In ardent fevers* I have used the cold bath and *lemon juice* with great success; and repeated trials have satisfied me that two or three wineglasses of lemon juice given in the height of a fever in the course of the day, with cold water in the intervals, surpassed every other medicine as a febrifuge: it composed the stomach, promoted expectoration, and checked cough." (Vol. iii. p. 407.) "Cold immersions and full draughts of cold water were the most efficacious remedies in the treatment of the *dry belly-ache.*" (Ibid. p. 407.) "A negro wench was attacked with *continued fever*, became delirious on the ninth day and remained so till the twenty-second. She was then stripped and six pails of cold water poured over her head and body. She became instantly sensible, was put into bed, and a wineglassful of lemon

juice administered. She fell asleep and rested comfortably for more than six hours, when she awoke free of pain or distress of any kind, excepting a sense of debility. A suitable diet restored her to health." (Ibid. p. 409.) "The practice in *bilious fevers* was to pour over the naked body three gallons of cold water, after which the surface was wiped dry and the patient put to bed, having taken a wineglassful of lemon juice. This process was repeated, if necessary, every two hours, until the fever ceased, a result that followed usually in from six to eight hours. Often a single effusion sufficed." (Ibid. p. 411.) "In *sore throat*, however severe, nothing more was needed than two or three tablespoonfuls of lemon juice several times a day, and a stocking or other fixture well soaked in cold water applied round the neck. The patient was soon relieved. The worst *quinsies* and *sore throats* were promptly cured in this way." (Ibid. p. 412.) "A negro sailor was seized with severe *pain in the bowels* and *high fever;* he was bled, and took camphor, nitre, &c., employed warm fomentations, all in vain; woollen clothes well soaked in cold water were then applied to the abdomen, acid drinks and cold water frequently given. The pains and fever soon ceased and the man was soon well." (Ibid. p. 414.) "*Suppression and retention of urine* were quickly relieved by cloths dipped in cold water applied to the abdomen, and a wineglassful of lemon juice at the same time." (Ibid. pp. 414–15.) Many other extracts could be given, but these must suffice. In a note to page 408, Dr. Lettsom observes that "Dr. Pearce employed *cold drinks* and *cold bathing* in the low *bilious remittent* and *typhoid* fevers of the West Indies with so much success as thereby to get into good practice."

But if the more modern work of Ranking be consulted it will be seen that the cold water treatment has been equally successful in England in more recent times. In Nos. 5, 6, and 7, of the *Abstract*, cases in point may be found, furnished by distinguished and competent men. *Braithwaite's Retrospect*, No. 15, contains the same kind of testimony.

An Episcopal bishop, (Dr. Gobat,) who has resided for years in Jerusalem, gives an interesting fact of his own personal experience, in the use of water internally and rain-water externally to cure a severe *ague* followed by burning fever. The attack came on at twilight, and three large glasses of water having been swallowed he soon fell into a gentle slumber. He was soon roused by a heavy fall of rain, which effectually drenched every article of clothing he had on; even the carpet beneath him was soaked, as the rain fell in torrents. He wrapped himself in his clothes, dripping as they were, and laid him down to rest. His linen absorbed the heat which radiated from his feverish limbs,

and at dawn of day he was able to take his departure, feeling as well as usual.—*Journal of* 1850, p. 151.

Not wholly unlike the foregoing is Dr. Heaton's case, reported by himself in the *Boston Med. and Surg. Journal*, March 10, 1852. He had labored under an ague a good while, and determined to try the effect of jumping into the Mississippi river when the cold stage was on him. He had no return of the ague after this experiment.

Iced water, drank without measure or restraint, saved individuals from the grave who were abandoned as hopeless cases in the *Asiatic cholera* of 1832 and '33. In my lecture on that disease, published by my medical class in May, 1849, mention is made of a very striking case of this kind the subject of which yet lives and is personally known to the author. The indication for the use of the water was instinctive, or rather providential. It induced copious perspiration, of a salutary nature; the lady fell into a sweet sleep, awoke refreshed, and gradually recovered. Hers was a case of the most manifest collapse that had occurred in the place. The explanation I have offered to solve this use of water was that the absorbents immediately took up the fluid to carry into the blood a supply to compensate for the loss of its serosity, as the result of the morbid action in the system.

Dr. Lewis (a very respectable graduate of the Lexington school) has given to the *Stethoscope*, published in Richmond, Va., a good paper, in which he shows pretty clearly that cistern-water has proved a prophylatic in respect of Asiatic cholera. (See January No. for 1853.) We may here say that the same view has long been held by Professor B. W. Dudley, and other distinguished physicians of Kentucky.

A very important use of water is that reported by Dr. Samuel Jackson, formerly of Northumberland, Pa., in the *American Journal of Medical Sciences*. He found that the usual remedies for *scarlatina maligna* utterly failed, and the disease being in his own family, he resolved to test the power of water in the shape of *ice*. He found that lumps of that substance placed in the mouth and gradually dissolved there not only allayed the irritation of the throat, but acted happily on the system, reducing the pulse from one hundred and forty to eighty or ninety. His success led other physicians in the vicinity to adopt the same treatment, and with most happy results.

When *measles* were epidemic at Berlin, in the year 1823, Dr. Thaer conceived the idea of using cold lotions, composed of vinegar and water, on all parts of the body. He treated sixty-eight out of one hundred and twenty cases in this way, and lost but one, while eleven of the remaining fifty-two perished. The disease assumed a very inflammatory character, and the manner in

which the sick were surrounded by warm clothing and heated air much increased this state.

In some of the cases treated by Dr. T. the lungs and brain were affected; and in all such cases, before he commenced the cold applications, he had leeches freely applied and cooling remedies exhibited. Moreover, he never neglected reducing the temperature of the sick chambers. By this plan of treatment the most desperate cases terminated favorably, and but four died. The fatal cases were far advanced when medical aid was first afforded, and they had been much aggravated by warm apartments and bedding.

When the lotions were once commenced, all other means were discontinued. He began to use the applications when the temperature of the body exceeded 27½° R. (equal to about 62° of Fahrenheit;) for it was then he observed that the patients became much agitated and their respiration hurried. He varied the temperature of the lotions according to the heat of the body, —the higher the animal heat the lower did he make that of the lotions. He never employed them higher than 26° or lower than 1½° R.; the heat of the body in the former case being 29½° and in the latter 35° R. Finally, he never continued them for more than eight or less than four minutes at one application. He says that the lotions should not be used if the infant is tranquil, or when it is perspiring.

We are assured that children treated in this way get well in eight days; the desquamation is prompt and abundant, and the convalescents may expose themselves to the free air during the desquamation and before the catarrhal cough has altogether ceased. When the affection of the lungs is far advanced the use of the lotion is followed by abundant expectoration.

He thinks that if such patients could be kept in an atmosphere of 13° R. we might dispense with the cold lotions.

He follows this practice with great advantage in scarlatina and pertussis. (Hecker, *Litterar. Annalen der gesammten Heilkunde.*)

The external uses of cold water, warm water, and ice, are very important. To say nothing specially of the shower bath, the warm bath, and bathing with water of various temperatures, there are many applications of the remedy that are highly valuable.

The following hygienic use of cold water by the ladies of *Bagdad* may furnish a hint of practical value as to its prophylactic powers:—During the hottest months, when the thermometer is often at the height of 120° Fahrenheit, the ladies wear a silken garment or chemise, and "babouches" or slippers, but no stockings. At night it is the custom to sleep on the terrace at the top of the house, in the open air,—the ladies, the men, the chil-

dren, and the domestics, having each their separate terraces. Strange as it may sound to European ears, it is by no means an uncommon practice with the ladies of Bagdad, in the months of July and August, to steep their night-clothes in cold water, which is slung up for this purpose in skins in order to keep it as cool as possible. Having done this they put them on, wringing wet, and again retire to their beds of palm branches to enjoy refreshing slumbers. Notwithstanding this practice, rheumatism, so prevalent in England, is rarely heard of in that country.—*Memoirs of a Babylonish Princess.*

In *Braithwaite's Retrospect*, part xvii. p. 50, is the report of cases of *delirium tremens* successfully treated with cold water dashed over the head and the entire body repeatedly until the patient became composed. After free use of the cold water he was well wrapped in blankets.

Cold water or ice applied to the head and continued for an hour or longer is reported to have been successful in *apoplexy*. There can be no doubt that when the circumstances forbid the use of the lancet this expedient may be very effectual. It certainly merits attention, as being in many cases better suited to the nature of the disease than free depletion.

M. Chassaignac, of Paris, has lately advised, in the *Gazette des Hôpitaux*, the use of ice in various severe forms of *ophthalmia*. He does not employ ice exclusively, but as an adjunct to other treatment. He applies it by means of a kind of orbital mask of wirework, secured by a spring, the pad of which presses on the occiput. The mask is composed of two layers, between which little bags of ice are introduced. (See *London Lancet*, Feb. 1850.)

The *cold dash* has long been very popular in the management of the *congestive* fever of the far South, and most probably acts very much as in the various cases of *narcotic poisoning*, in which it has been so successfully employed. It rouses the dormant energies and brings on reaction, if sufficient vitality remain to permit that result. In my opinion the nervous system is implicated very much in the same manner in both cases.

Cold water freely dashed over the naked abdomen is among the most efficient modes of overcoming *obstinate constipation*. This disease is often kept up by a fixed spasmodic contraction, which very often resists all internal medicines, and yields finally to the persevering use of the cold dash. *Tetanus*, *hysteria*, &c. have occasionally been cured in the same way.

In a German medical journal for April, 1845, Dr. Garray, of Venice, urges the importance of cold water as an external remedy for phthisis pulmonalis. He observes "that, having lately seen Dr. Marshall Hall's remarks on the application of alcoholic washes in phthisis, he was led to adopt cold water in preference.

He points out that the inflammatory condition of the lungs in this disease, the deposition of tubercle, and the cough, bear a relation to each other; that one produces and keeps up the other, and that if one can be diminished the whole are benefited. The cough, for instance, keeps up the inflammatory condition of the lung, and this, in its turn, both favors the cough and tubercular deposition. Cold water, he argues, applied locally, is one of the most powerful means of arresting local inflammation and its termination, by softening or suppuration; and he asks: If this could be accomplished in phthisis, why might not the other symptoms disappear? He was induced, by this reasoning, to order repeated applications of cold water to the chest of phthisical cases, and, as he says, with favorable results. He relates one case, accompanied by considerable inflammation of the lungs, and fever, where, by means of cold water poured over the neck and chest morning and evening, for three months, all the symptoms disappeared."

I have applied cold water cloths around my throat for the relief of inflammation of the fauces, to which I was very liable, with most marked benefit. I made the application at bedtime, covering with a large silk handkerchief, and the next morning found the throat well, the surface being deeply reddened.

M. Cazenave reports, in the *London Journal of Medicine* for August, 1849, a case of *retention of urine* relieved by ice and cold water. The latter was injected freely, after having emptied the bowels by means of a cathartic enema. The ice was applied in bladders around the penis, on the perineum, thighs, anus, and hypogastrium. A water-proof cloth being placed under the patient, a continuous stream of cold water was made to fall on his loins for twenty-five minutes. In an hour the difficulty was overcome. The practice was resorted to in cases in which the catheter could not be introduced because of chronic inflammation of the prostate. (See *Ranking*, No. 10, p. 136.)

In *Braithwaite's Retrospect*, part v., is an account of *infantile convulsions* manifestly arrested by the application of *ice* to the spine. A more common practice has been to apply sinapisms and other irritants to the spine, and frequently they have apparently done good. We learn, however, from the statement in Braithwaite, that an opposite practice is sometimes called for.

Of *ice* to the head in the treatment of *bilious remitting* and other fevers it is not needful to say much. The practice is happily in pretty general use. The best mode is to apply it in a bladder, the neck of which being tied the application can be made without wetting the bed-clothes. The ice should be broken into pieces as large as a walnut.

Pounded ice freely swallowed promotes uterine action, and

should be taken when abortion is inevitable and the uterus is contracting feebly and the hemorrhage is considerable. (See *Braithwaite*, p. xix.)

Dr. Hildreth, of Wheeling, Va., has given some interesting cases in the Cincinnati *Medical Observer* for February, 1857, to show the safety and efficiency of ice passed into the uterine cavity to arrest hemorrhage there. We tested this practice too often, thirty-five years ago, to have a doubt in the premises. We not only put ice into the uterus, but surrounded the pelvis with ice. In no instance did we realize any unpleasant result.

The *cold water* treatment of *sprains* and *contusions* is also important. Dr. Poulin, a French military surgeon, condemns depletion altogether, (as by leeches,) and advocates cold water. This is to be applied immediately, and, if practicable, the part is to be immersed in cold water and to be kept there for two hours at least. Even days may be consumed in this use of the water, if relief be not complete before. It is ordered that the water must be changed as soon as it begins to get warm. After the proper use of the cold water a bandage is to be applied wet with spirits of camphor or Goulard water.—*Med.-Chir. Rev.* July, 1846.

Cold water has long been a popular remedy for *burns and scalds*, and I know it is perfectly safe. I have been burned with phosphorus and hot acids in the laboratory, and can testify to the relief afforded by ice and iced water, and with no untoward circumstance accruing. On one occasion a retort was fractured containing the materials for making chlorine gas, and the contents were dashed into my eyes so as almost entirely to deprive me of the use of the organ. Cloths wet with ice-cold lead-water were at once and constantly applied; the inflammation was arrested, and on the next day I was able to lecture. Additional information on this use of cold water may be found in the *American Journal of Med. Sciences* for October, 1847.

The treatment of *burns* by *iced water* is very successful in the *Hôpital St. Louis*. M. Jobert speaks of it very confidently, even for extensive burns. Large pledgets of cloth steeped in cold water are laid on, and these are covered with bladders of ice. In bad cases, the lancet, low diet, and refreshing drinks are employed. Under the treatment the patients are refreshed, the pains abate, fever lessens, and the whole system is invigorated.

Injections of *cold* water once or twice a day will often prove an excellent means for overcoming *habitual costiveness;* and it is proper to say that warm water injections sometimes effect the same end. In the one case there is a lack of tone in the bowels, and in the other too much excitement.

Injections of cold water have been found very effectual for the relief of excessive *tympanitic distension*. The cold contracts

the bowels and diminishes the gaseous expansion, while the water absorbs a portion of the gas. The injection may be frequently repeated.—*Professor Schonlein.*

Warm water is often an excellent application to parts affected with *erysipelatous inflammation.* I am aware that cold appliances are more frequently made in this form of disease, yet I know from experience and observation that the burning heat and itching of erysipelas are promptly relieved by warm water constantly applied to the surface. At the same time it is necessary to correct the digestive organs, which are almost uniformly at fault.

Warm water injections frequently thrown up the rectum while the patient is in the warm bath will often give great relief in *colica pictonum* and *constipation of the bowels* from ordinary causes. *Itching* about the anus, on the genitals, &c., is generally abated sensibly by the frequent application of water as hot as it can be borne.

In March, 1853, I was attacked with great severity with *neuralgia* of the right hip and thigh. The pain was of the most excruciating character, and continued for several hours to resist the internal and external use of opiates, chloroform-liniment, ointment of veratria, &c. &c., and finally yielded to the persistent application of water almost at the boiling-point. Flannel cloths dipped in the fluid were reapplied with great pertinacity for about two hours, and sleep of a soothing character ensued. When the pain returned, some hours after, it was checked by resorting to the hot water as before.

Mr. Hare, surgeon of the *Bengal cavalry*, recommends very highly the use of warm water injections in the *acute dysentery* of that country. Generally, it is necessary to bleed first pretty freely. The chief dependence afterward is on the injection of warm water by means of a long elastic tube passed up beyond the sigmoid flexure. From four to six pints are thrown up daily. The inflamed parts are thus soothed, the hardened feces softened and brought away. In the *chronic* form of the disease he cleans out the bowels with warm water injections, and then throws up injections of nitrate of silver, made by adding fifteen grains to a quart of water; or he relies on the repeated warm water injections, and gives small portions of the nitrate of silver by the mouth, applying leeches occasionally to the abdomen. He rarely uses mercury, excepting in the form of ointment. (See *Braithwaite*, part xx.)

In the *Gazette Médicale*, 1844, Dr. Roche advocated the injection of warm water into the uterus to prevent puerperal fever. Very lately Dr. Gensoul, of Lyons, has revived this plan in *L' Union Médicale*, affirming that phlebitis of the womb is often brought on by the detritus and clots stagnating in the uterus,

and that warm water injections, by removing these, will contribute largely to keep off the fatal effects of uterine inflammation. (See *London Lancet*, February, 1850.)

In the *London Medical Times* for August 25, 1848, is a paper in which it is affirmed that *scarlatina* has been arrested by the application of hot water compresses to the epigastrium, and by enveloping the patient in blankets to induce copious perspiration.

It is not easy to reconcile this with the usual treatment of this disease. We present the fact for consideration.

The therapeutic action of warm water has been very happily extended to the treatment of *croup* by Dr. William Budd, physician to the Bristol Infirmary, as we learn from the *Medical Times and Gazette* of June, 1852.

The mode of procedure was quite simple, and that commends it strongly. The child was placed in a bed enclosed by a double curtain. Near to the child was placed an earthen pan nearly full of water almost boiling, and a hot brick was plunged in now and then to evolve steam. The air within the curtain was thus filled with vapor at from 75° to 80° Fahr. Besides this, an emetic was occasionally given, just to assist in expelling the morbid product in the trachea, which is all important. From the moment of inhaling the hot vapor the case was obviously improved, and in two hours the child was much better.

Cases are given in detail showing the value of this very simple method of cure.

The *vesicant* power of hot water is sometimes of practical value, as when it is desired to blister a part in an instant. Provide a bowl and a towel large enough to fill it completely. Pour boiling water on the towel until it will hold no more; invert the bowl and apply to the spot where it is desired to detach the skin, and a blister will be the result at once.

Touching water impregnated with mineral and saline matters, and therefore called *mineral waters*, a great deal might be said. It is certain that these waters are often feeble, and that more potent drinks can be manufactured containing all the constituents of the native waters. The effect, no doubt, depends on change of scenery, of society, of living, of associations, and on relief to the mind from the troubles and cares of city business.

For much valuable information on the subject of water in connection with *bathing*, see Bell's *Book on Baths*.

Arctium Lappa. *Common Burdock.*—This is a very common plant; too common, I suppose, in the estimation of many. The books, without an exception, say that the root possesses some little *diuretic* and *alterative* power, but that it is pretty much laid aside, as a comparatively worthless article. It is brought forward here to show its efficacy in *obstinate eruptions*,

that frequently for a long time baffle medical skill. Professor Graves, of Dublin, reports a very interesting case in his *Clinical Lectures*, which has attracted my attention and led me to recommend the medicine in like cases. He had under his care a young man who had long been afflicted with an impetiginous affection, attended with varicose veins, a purulent and ichorous discharge, making a distressing case. It had been treated with leeches, poultices, astringent washes, and all the ordinary appliances. The discharge increased, while the heat and itching were almost intolerable. An old lady advised a trial of burdock root; four ounces in a quart of water to be boiled to a pint, and the whole to be drank in a day. In three or four days he was much better; but, as Dr. Graves was in doubt as to the efficacy of the burdock, he ordered its discontinuance. The man soon became worse, and continued to suffer as before. The burdock was resumed, continued for a season, and the patient was completely cured.

Dr. W. Barton, of South Carolina, who had heard the above statement in my lectures some years ago, called on me, in the winter of 1848–9, to say that he had put the burdock to the test in an old case of skin disease, and with entire success.

I have known a most obstinate case of *scrofulous ophthalmia*, that had been under various treatment to no good purpose, yield in a few weeks to the burdock. The juice of the mature leaf was employed in teaspoonful doses three times a day, the patient being about five years old.

There can be no doubt, I think, that burdock is possessed of decidedly *alterative* properties, which make it a valuable remedy. It acts on the skin and kidneys. The ground root, neatly packed in pound papers by the Shakers of Lebanon, New York, and for sale in most of the cities and towns, will probably be found a better article than that which is generally sold in the form of root.

Argentum. *Silver.*—This metal is too well known to need a description. As a metal it is not now employed by physicians in any part of the world. Many years ago a German, by name Meyer, professed to cure *ague* by giving fifteen grains at a dose just before the paroxysm was looked for. If the first dose failed, a second, it is said, was always successful. Professor Serrès, of Montpelier, also exhibited the filings of pure silver in *syphilis*. A case of the supposed efficacy of metallic silver is also given in the third volume of the *Transactions of the London College of Physicians*, by a Dr. Coyte. The patient was certainly cured of *epilepsy*, but not, as I think, by metallic silver, but by a salt of that metal formed in the stomach; for the metal in all probability has no medicinal power as such. The history of the case is this:—A man, aged forty-six, had epileptic fits from his infancy, and to save his tongue from severe injury, carried a silver

crown piece in his pocket, to be placed between his teeth so soon as a fit was about to come on. On March 12, 1771, he accidentally swallowed the piece of silver. In September, 1772, he was seized with fever, for which emetics were ordered; active vomiting caused the ejection of the coin, nearly twenty months after it had been swallowed; and down to July 6, 1773, the date of the published article, he had no return of fits. The coin was blackened and corroded on the edge, and there can be no doubt that a muriate or acetate, or both, were formed. The facts as stated are sufficiently authentic, and the case is certainly instructive.

The *nitrate of silver* has long been employed in the practice of medicine. Its more common name, *lunar caustic*, indicates one of its properties. It is a compound of nitric acid and oxide of silver. As we usually see the article it is of a grayish color, a dark-white, and sometimes exhibiting a tinge approaching to blue or black. This is the effect of light, which exerts a chemical agency and causes discoloration, for the crystals can be made so pure as to be transparent and nearly destitute of color. To get the caustic as we employ it, the salt is fused so that it can be poured into moulds gently tapering, where it contracts when cool, so that the sticks are easily forced out of the moulds. It is then nearly white, and is covered well with blue paper to guard it from the light.

This salt is liable to adulteration with other metals, especially copper. The purest quality is made of silver and nitric acid only, and the highest priced article is apt to be the best, for an obvious reason. Physicians will find it of variable price, and they should understand that the secret lies in the relative quantity of silver employed in the manufacture. A really good article cannot be procured honestly for the price of an inferior one.

The nitrate of silver is preferred, as an *escharotic*, to common caustic, because it scarcely can be said to deliquesce. It may stain the fingers by frequent use, and hence it has been coated with sealing wax by Dumeril, to guard against this inconvenience. The stick and the watery solution are both employed as agents to operate on the surface. The solution may be made of any desired strength. From five grains in an ounce of water to a drachm dissolved in the same amount of liquid the range is sufficiently wide for all contingencies.

When the stick or solution is applied to an ulcer, a gray film is soon perceived to cover the surface. This is the effect of chemical action on the albumen. Frequently repeated, with the same result, a decided impression is made on the ulcer a new and more salutary action being thus set up.

The solution is usually applied by means of a camel's-hair pencil, two or three times a day, according to circumstances.

An advantage in the application is obvious in the very small amount of discomfort it gives to the patient. It is often useful to small *aphthous sores of the mouth* and to *scorbutic gums*. Injected into *fistulous ulcers* it promotes healthful action and union of the parts.

A most agreeable and salutary *counter-irritant* is found in a solution made by dissolving from a quarter to a half-grain of nitrate of silver in an ounce of rose-water. It is applied to the eye affected with *subacute ophthalmia*, presenting a good deal of uneasiness, and a sensation as though particles of sand were present. The best mode of applying this and all other eye-washes is in the *eye-glass* sold by the apothecaries. Every part of the external eye is thus brought in close contact with the solution. I have employed the eye-glass with this solution, in my own person, and derived great relief from its use.

The counter-irritant action is also seen in the use of the solution as a remedy for *chilblains* or *frost-bites*. The stick caustic is preferred by some, but if the solution be made strong it will answer very well. An ounce of water should contain from half a drachm to a drachm of the salt. The application should be made at bedtime, after having washed the parts with warm soap-suds.

On the same principle, too, in part at least, does the solution act when applied to *swollen tonsils* and *inflamed fauces*. The tonsils, especially in scrofulous subjects, will suddenly become very much swollen, so as to fill the throat and set up very troublesome cough. A very speedy method for the relief of this, as well as of inflamed fauces, is to apply a solution, made by dissolving a drachm of the salt in an ounce of water, far back in the throat by means of a soft sponge tied fast to a whalebone stick, constituting an ordinary swab.

The progress of *croup* of the inflammatory form has been promptly arrested by the use of the strong solution applied as above; some insist on a much stronger solution. It seems to arrest at once the existing inflammation and to prevent its diffusion. Many cases have been detailed, in our own and foreign journals, to show the efficacy of the nitrate in membranous croup. We may refer the reader to the *American Journal of Med. Sciences* for July, 1851, for a very interesting case of this kind. The very troublesome affection which so seriously annoys clergymen and other public speakers, and which depends on *follicular ulceration* and *inflammation of the larynx*, has been successfully treated with the nitrate of silver by Dr. Horace Green and others. The stick, or a very strong solution, is brought to bear on the parts affected, by careful manipulation which demands some experience. Much useful information on this subject will

be found in *Braithwaite's Retrospect*, part xix. pages 119–127. Dr. Green insists on the decided superiority of the crystallized nitrate of silver over the common lunar caustic as a local remedy. From two to four scruples are dissolved in one ounce of water, and applied by means of a bent whalebone directly to the mucous lining of the larynx and trachea. The nitrate combines with the albumen of the parts and induces a favorable alteration in the vital action of the tissues. (See his book, page 29.)

Dr. Ravenhill Pierce gives the following testimony in respect of the treatment of *hooping-cough* by nitrate of silver, in the *London Lancet* for July, 1857:—

"In *seventy-five* cases, (thirty-two boys and forty-three girls,) varying in age from two to eight years, which came under my care during last autumn, in a school containing over a thousand children, I used the local treatment recommended by Dr. Eben Watson, viz., sponging the glottis once a day with a strong solution of nitrate of silver (one scruple to one ounce of distilled water) by means of a curved probang; and in combination with this I ordered Dr. Gibb's nitric acid mixture, (dilute nitric acid, twelve drachms; compound tincture of cardamoms, three drachms; water, one ounce; simple syrup, three ounces and a half,) a teaspoonful every three hours. I also from the commencement gave a teaspoonful of cod-liver oil twice a day, and at the same time kept the patients on generous diet and in warm yet well-ventilated rooms.

"Now this treatment has in my hands been invariably successful; and the little sufferers have not only escaped all those troublesome and dangerous complications which so frequently attend and follow hooping-cough, but have at the termination of their illness, in numerous cases, gained both flesh and stamina. I am perfectly aware that both the nitrate of silver and nitric acid plans have been used separately, but I have not heard of the two methods being combined.

"I am desirous of calling particular notice to the fact of my having given cod-liver oil from the *very commencement* of the attack, instead of waiting till the period of convalescence; and to this as well as to the generous diet I, in a great measure, attribute the satisfactory and non-debilitated state of the patients at the time of their recovery.

"I would also mention that after a few applications of the solution of nitrate of silver I have found that the force of the peculiar spasmodic cough has been diminished in frequency and intensity, and the shock to the system caused by the straining and convulsive efforts of the patient consequently much lessened."

The use of nitrate of silver as a remedy for *erysipelas* has long been known to the profession. Higginbotham, of England,

has written the best work on this subject, and done more than any one else to set forth the value of the practice. In this country the remedy is extensively applied; but there are some who err in regard to the strength of the solution, and this is the reason why it has not been more generally appreciated. It should not be weaker than a drachm to the ounce of water. It is necessary to carry the solution beyond the inflamed parts a small space, and often one application thus made will suffice. It seems at once to fix the boundary of the inflammatory action and to change the morbid process into a more healthy state.

Mr. Higginbotham has recently furnished some interesting facts to show the advantage of nitrate of silver in lacerated wounds. Cases are cited of wounds of the face and lacerations of the perineum to enforce his position. He contends that the irritability of the parts, after properly uniting the edges, is promptly controlled by touching the parts with the caustic. (See *London Lancet*, April, 1850.)

The strong solution and weaker ones have been applied to *burnt* and *scalded parts*, and some have used the stick caustic in similar cases. Pain is speedily allayed, and a new cuticle is soon formed. Having covered the whole surface with the caustic, a thin dressing is laid on of soft lint coated with mild cerate.

The solid caustic is one of our best remedies for *excoriated and fissured nipples*. This is a troublesome and painful affection. The caustic should be cut to a very fine point, so as to allow it to be passed down to the bottom of every fissured part. The nipple is then to be dressed with soft cerate, and to be protected from the child's mouth by a shield, or by feeding the child in some other way. The application of the caustic is sometimes so painful as to make it necessary to administer an opiate. But the local relief is more likely to be permanent than from the use of any other appliance.

The *bed sores* which assail the back and other parts of patients long confined are often promptly relieved by the use of nitrate of silver, first washing the sores well with weak chloride of soda, or soapsuds. It seems to set up a new and most salutary action, and the healing process is accelerated. The stick or the strong solution is to be employed.

The *ectrotic* or *abortive* treatment of *gonorrhœa* and *leucorrhœa* by means of lunar caustic has been for some time before the profession, and many approve it. The solid stick is preferred by most physicians, and is introduced into the urethra, or brought in contact with the vagina, and allowed to remain there long enough to excite some irritation. Some have used a strong injection of the caustic. The remedy acts by counter-

irritation, setting up a new action and controlling the previous state.

Painting the interior of the nares with a solution of nitrate of silver was proposed by M. Tessier, in 1845, as a mode of *arresting* or *cutting short* a *catarrh*. Dr. Lockwood, of U. S. Navy, has since suggested the same treatment.

Chronic cystitis, attended by frequent mucus discharges, has been greatly relieved and often cured by injections of the nitrate of silver thrown into the bladder and retained at least five minutes. From eight to sixteen grains are dissolved in from two to four ounces of water for this purpose. (See *American Med. Journal*, Oct. 1847.)

Dr. McDonnell has also given his experience in the *British American Journal of Medical Science* for June, 1849, touching the efficacy of injections of nitrate of silver for the cure of *chronic inflammation of the bladder*. He injects water at 98° into the bladder to clean it out, and then throws in four ounces of the solution of nitrate of silver, which are allowed to remain not longer than a minute. The patient is then put into a warm bath, and anodynes given, if necessary, to allay pain. The injection contains from five to ten grains to the ounce of water. It is best to begin with a weak solution.

In some of the cases reported there was obvious chronic enlargement of the prostate gland.

Injections, consisting of twenty grains to an ounce of water, have been employed successfully in cases of high *irritability of the bladder*, by W. Reeves, Esq., of Carlisle, who reports in the *Lond. Lancet* for June 11, 1853. There is some soreness and pain after the injection is passed, but these are abated by rest and the free use of barley-water. In some cases one injection sufficed to cure completely. If a relapse ensued the injection was repeated. A lady who had suffered for more than two years, and who was sounded for stone more than once, recovered after one injection.—*Braithwaite*, p. xxvii. p. 209.

Dr. Boudin, in the *Gazette Médicale*, very highly recommends injections of the nitrate in what he calls *follicular enteritis*, by which he means *typhoid fever*, with inflammation and ulceration of the mucous membrane of the small bowels. He dissolved three or four grains of the salt in six ounces of water, and threw it up the rectum night and morning. Of fifty patients so treated only two died. Was it possible to know that the bowels were ulcerated in the forty-eight patients who recovered? Here the remedy acted in part by counter-irritation. The report states that when gastric irritation was present a pill was given twice a day containing from a quarter to a half-grain of the nitrate.

Nitrate of silver is a favorite application of Dr. Bennett to the

os tincæ for the cure of *inflammation*, *ulceration*, or *induration*, whether in the single or married, where the disease is often very troublesome. The use of a speculum vaginæ fixes the actual condition of the parts, and the lunar caustic is applied accordingly. Dr. B—— teaches that leucorrhœa, dysmenorrhœa, &c. originate in the diseased state of the os tincæ, as above, very often if not in all cases, and hence the importance of correct examination and the right use of the remedy. Dr. Ashwell thinks, however, that Dr. Bennett is mistaken, or that he has been disposed to make too much of a hobby of this view of the matter.

Mr. Lloyd, of St. Bartholomew's Hospital, has cured many troublesome cases of *prolapsus ani* with nitrate of silver by smearing the caustic over the protruded gut and then pushing it up in place. It was rarely needful to make the application more than three or four times, and it was never followed by a bad result. In the worst cases the bowel was greatly swollen and the remedy soon gave relief. Hæmorrhoidal congestion and thickening of the mucous membrane at the verge of the anus are also treated in the same way.—*Med. Times and Gaz.*, February 10, 1855.

The cure of *fissure of the rectum* has been accomplished mainly by nitrate of silver. The fissure is ascertained by the finger, which detects a callous rough spot an inch within the verge of the anus. The stick caustic being carefully passed up is applied to the spot as often as may be required. A single application affords relief, but several touches are required for permanent cure. This plan is strongly advised by Colles, in his work on surgery.

Incontinence of urine is often cured by the use of lunar caustic. This disease may be congenital, and it is also the result of general bad health. When it is neglected in infancy, and remains till a female is about to enter into the marriage state, it becomes an embarrassing affair, and relief is most earnestly sought. Duffin has reported interesting cases of this sort cured by the caustic. A young lady aged nineteen had long suffered from incontinence of urine. The stick caustic was applied to the meatus urinarius and excited high irritation there, so that great pain was felt the instant a particle of urine came in contact with it and the further flow was arrested. The irritation being kept up a few weeks the disease was radically cured. (See *London Lancet*, 1839–40, vol. ii.)

Pereira speaks in praise of lunar caustic in the treatment of *scald head*. He says he never knew the remedy to fail, and adds that it does not cause permanent loss of the hair. He advises to rub it on the scalp after cleaning with a poultice of bread and milk; and cautions against acting on the whole of the

diseased scalp at once, which might set up delirium, but advises the application in spots on successive days.

Bretonneau and others employed the solid caustic to *variolous pustules* on the first or second day of eruption, in order to cut short their advance to maturity. The inflammation was thus arrested and scarring prevented. It is called the *ectrotic* or *abortive* treatment. As the face is the only spot where the scarring is dreaded, and as few pustules are found there in most cases, it has been proposed to cut off the apex of each eruption on the first or second day and gently to touch the spot with caustic. This is said to be the most certain method.

Before I dismiss the *external* use I desire to call attention to the power of nitrate of silver to dissipate *small hard tumors* effectually. These are found on the nose or other parts of the face, and often excite alarm by their long continuance. Although they do not rapidly increase, sometimes they are painful, and the irritation is increased by picking and scratching. I have removed these lumps frequently by touching once a day, or once in three or four days, with the stick caustic moistened at the point. The tumors have almost insensibly vanished. A female was once advised by a friend to try this simple expedient and felt disposed to do so. The tumor was near the end of the nostril, was quite small, but growing very perceptibly. Her physician objected strongly, talked much of the danger of setting up a malignant disease, and advised emetics and warm water as a topical application. The disease alarmingly progressed, and was at length cured by the well-known Judkins ointment; thus proving conclusively enough that the idea of malignant degeneration was a mere fancy. The tumor could have been wholly obliterated in less than three weeks by the nitrate of silver, and without any sort of ill consequence.

It has fallen to my lot to have a number of cases of serious *hemorrhage* from the cavity left by the *extraction of a tooth.* Various expedients have succeeded, but I have thought the effect was more immediate and certain from a plug of nitrate of silver, cut to a point, forced into the cavity and covered with lint, which was kept in place by pressure of the jaws. The first suggestion in this relation, so far as I know, was made in the *Med.-Chirurg. Rev.* for October, 1841.

The *vesicant* power of nitrate of silver is sometimes resorted to. Almost every article that is capable of setting up high irritation of the skin can be made ultimately to vesicate. Mustard, flies, acetic acid, ammonia, and nitrate of silver, agree in this feature substantially. To effect vesication the stick caustic is drawn very frequently in various directions across a spot moistened with a little water. When the impressions made by the

stick are sufficiently numerous, vesicles appear containing more or less serum. These are to be evacuated, and the operation with the caustic repeated if need be. The full effect is gained in from two to four hours; and there is no unkind action in the urinary organs, as is sometimes seen after vesicating by cantharides. This mode of blistering is said to be well suited to *diseases of the chest* with too much febrile excitement to allow the use of flies.

Before we notice particularly the *internal* exhibition of nitrate of silver we desire to say a word or two touching its application to the hair, as in *hair-dyes*, designed to change red into black hair. It is the physician's duty to inform himself on this point. He should know that *meningitis* has resulted from this employment of nitrate of silver to the head. Delechamp reports a very interesting case of a most *terrible headache* in a young lady from the same cause. The facts are very important. In one of the volumes of the *Journal de Chimie Médicale* we find the following case:—A female who had red hair which she desired to exchange for a more attractive color resorted to a fashionable hair-dye. She succeeded in making her hair black enough, but her skin was dotted with many very livid spots, which were quite painful, as the consequence of her achievement. The patient was directed to wash frequently with a strong solution of common salt, and to drink a little of the solution occasionally. The spots and pain gradually disappeared under this treatment.

The *internal* use of nitrate of silver was at one time and for many years almost wholly restricted to the management of *epilepsy* and *chronic nervous affections*. It is now resorted to on a much more extensive scale, and often with obvious advantage. We shall speak of it first, however, in respect of *epilepsy*, where it exerts a *tonic* and *alterative* power conjointly, in all probability. Beginning with doses of the eighth of a grain for an adult, it may be gradually carried to almost any quantity. The remedy is so old that experience enough on this point has been had to satisfy us that even in very large doses the medicine may be a safe one. Decidedly the best way to make pills of this salt is to rub it first to fine powder, and to add enough of the soft extract of quassia or gentian to make it into pills. This combination not only makes a perfect pill, but presents a twofold tonic and alterative, which is often very desirable in chronic diseases.

The chief danger of a protracted use of the nitrate, as in old epilepsy, consists in the *discoloration of the skin* that now and then occurs. We do not mean to say that large doses necessarily lead to this result, for facts speak a different language. In the fifteenth volume of the *Edinb. Med. and Surg. Journal*, we find the case of a patient who took one hundred and eighty-six grains

in twenty-six days, and with no discoloration at all. We infer that there is in the stomach or general system of one man such a state or condition as to insure discoloration from the long-continued use of this remedy in large doses, which does not operate in the case of another patient who misses this cutaneous accident altogether. The medicine is precisely the same whether discolorations follow or not, and the rete mucosum does sometimes experience such a deep tinge that it would seem to be unchangeable. The *Med.-Chir. Rev.* for 1837 has the case of a man known in London as the *blue man*, because of the extensive and long-continued discoloration of his skin. He took the salt not only until it stopped his fits, but for several months afterward, so that in all he had swallowed several pounds of the medicine. This case is quoted with remarks by Pereira, Thompson, and others.

The philosophy of this discoloration has never been satisfactorily explained; and yet we are sure, from the well-known agency of the nitrate to blacken hair and linen, that the result is due to chemical action of some kind. What change the salt undergoes is not certainly known, nor is it plain that the discoloration depends merely on the change in the character of the salt. The stomach contains muriatic or hydrochloric acid, or salts with that acid, and this fact would seem to make the decomposition of the nitrate certain. That the salt is altogether decomposable in the human system is equally certain. Not only is it capable of separation into nitric acid and oxide of silver, but the oxide is reducible completely to the metallic state. We infer this from the reports of Wedemeyer and others, made in the *London Med. Gazette*, vol. iii., such as the following:— An epileptic was cured by the continued use of nitrate of silver, but finally died of diseased liver and dropsy. A thorough post-mortem examination being made, it was ascertained that all the viscera were marked by a blue tinge; and in the plexus choroides and pancreas Mr. Brande detected particles of *metallic silver*. This fact proves quite conclusively the agency of the vital forces to decompose the most perfect salts, and that this power is far more potent than the merely chemical agencies of the animal economy.

We hinted at the removal of discoloration by nitrate of silver when we spoke of the pernicious effect of *hair-dyes*. We say further that no one should make this change in the color of the skin a valid objection to the use of the nitrate of silver when its *curative* powers are so well established, because it is not necessarily a permanent evil, even though it should certainly occur. Various washes have been successfully employed for the removal of the stain, such as strong solutions of cremor tartar, of hy-

driodate of potash, &c. Even diluted muriatic acid, citric acid, and strong vinegar have proved effectual. Perhaps the most certain is the iodide of potassium or hydriodate of potash. Two drachms dissolved in three or four ounces of water make a lotion which should be applied eight or ten times a day.

Very large doses of nitrate of silver have been given in the treatment of *Asiatic cholera* not only without injury, local or general, but with the effect of saving the patient. In the *Med.-Chir. Rev.* for October, 1834, may be found the experience of Dr. Lever in the cholera which had just before been epidemic. He was in favor of unusually large doses of this article, even so large as to excite incredulity in some minds. He says he has given thirty grains dissolved in three ounces of water at one dose, and very frequently twenty-grain doses, and that ten grains constituted his more customary dose. He assures us that the vomiting and purging speedily ceased under this administration. I suppose the remedy acted by its constringing power on the patulous vessels, pouring out the serosity of the blood into the intestinal canal, and also by its tonic quality. The theory, however, is unimportant. *A single real fact is worth more than ten thousand theories.* The only important question is this: *Is it a fact?* The character of Dr. Lever, not less than the reputation of the journal which gave publicity to the statement, forbids even suspicion, unless we are led to suspect by our own actual experiment the truth of the announcement. I should have no fear of poisoning a patient by such doses as Dr. Lever administered, and no reasonable doubt can be raised on this ground. We must bear in mind that the stomach and bowels are in a morbid state, or at all events under the influence of grave morbific agency, so that an otherwise poisonous dose will operate only as a counter-irritant, and that so far from being deleterious may exert a most salutary influence. It is well known that the condition of the stomach has a decidedly controlling power in respect of articles held to be poisonous.

The above statement is made in my lecture on *Asiatic* cholera, published in May, 1849; and I have learned that some persons doubted the accuracy of my quotation and were satisfied only by consulting the authority. Dr. Fithian, of New Jersey, has since informed me that doses larger than the books have suggested were employed by physicians in that State, not only in cholera, but to quiet high irritability of the stomach attending other diseases, and with very happy results.

Somewhat different is the use of nitrate of silver in *cholera infantum* as respects the dose. The success of the medicine in fractional doses has long been known to the profession, and merits attention. In doses of from one-sixteenth to one-eighth

of a grain, repeated twice or thrice a day, both infantile *cholera* and *diarrhœa* have frequently and speedily yielded. The astringent and tonic property combine to give efficacy to the treatment.

A German professor (Mauthner) speaks in very high praise of nitrate of silver as a remedy for *infantile cholera*. He orders an injection every hour of two grains in an ounce of distilled water, with a little oil. At the same time he gives, every four hours, a tablespoonful of a solution of one grain in two ounces of pure water. The mixture is readily taken and hardly ever sickens the patient.

Prof. Graves, of Dublin, reports very favorably of one-grain doses of the nitrate three times a day in the *diarrhœa* of consumptive patients. He declares it to be more effectual than twenty grains of the acetate of lead.

Dr. Hirsch, of Koningsburg, reports in *Hufeland's Journal* for 1847, the happy action of nitrate of silver in very minute doses in the *diarrhœa of new-born infants*. Besides an occasional enema, containing a fourth of a grain of nitrate of silver in mucilage of gum Arabic, and a very little opium, he used the following:—

℞.—Argent. nit. gr. ¼;
Aquæ, ℥ij;
Pulv. gum Arab. ℈ij;
Sacch. alb. ʒij.

Mix, and give a teaspoonful every two hours.

The good effects are obvious in a few hours, though sometimes not till the second or third day. Dr. Skinner, of North Carolina, gave to children between one and two years old one-sixteenth of a grain at first, afterward one-eighth, and sometimes a quarter of a grain. (See his paper in *Amer. Journal of Med. Sciences.*)

Mr. Lyons gave the nitrate combined with opium in the treatment of *yellow fever*, with the design of allaying irritability of the stomach and bowels. He employed the combination after the *black vomit* appeared, and the vomiting was arrested. The proportions were three grains of the nitrate to one of opium, made into a pill with conserve of roses.

Dr. Johnson, in his admirable work on *Morbid Irritability of the Stomach and Bowels*, speaks in high terms of commendation of the nitrate of silver in small doses, as one-eighth or one-fourteenth of a grain, with a little vegetable bitter extract, taken twice or thrice a day. The tone of the mucous coat is soon improved, the digestive powers become more natural, and the gastric uneasiness is abated. I have employed this remedy under similar circumstances, and with great satisfaction.

Dr. Ditterich, of Munich, advises the internal use of nitrate

of silver for *menorrhagia*, and also for the *leucorrhœa* which is present during the intervals. His prescription is:—

℞.—Nit. argent. grs. iij;
Aquæ, ʒij.
Mix.

Of the the solution ten drops are to be taken three times a day, gradually increasing the dose to fifteen drops. From four to six weeks are required for the medicine to act efficiently. In ten days the leucorrhœa sensibly diminishes; by the second menstrual period the catamenial flow is restored to its proper state, and all the nervous symptoms vanish. (See *Northern Journal of Medicine*, Dec. 1845.)

Dr. Peebles has reported success with nitrate of silver in the treatment of *jaundice;* but we feel inclined to doubt, as does Dr. Ranking in his *Abstract*, No. 10, whether this practice can be trusted. Dr. P. thinks the nitrate cures by modifying the state of the mucous membrane of the stomach and duodenum.

The *Dublin Medical Press* contains an article on the nitrate of silver as a remedy for *salivation*. A drachm of the salt is dissolved in an ounce of pure water, and the solution is employed as a wash to the gums and mouth three or four times a day. In three days the salivation is completely arrested. The only objection to this remedy is the discoloration of the teeth. This is obviated by using a wash made by adding two drachms of hydriodate of potash to an ounce of pure water. A brush should be used to clean the teeth, but the stains on the gums will subside by mere washing. (See *Dublin Med. Press*, Aug. 1849.)

If a very large quantity of nitrate of silver be swallowed by a person in health, it will most likely induce symptoms of *irritant poisoning*. The free use of a saturated solution of common house salt will quickly decompose the nitrate and render it inert.

In addition to the several qualities already assigned to nitrate of silver we add that it is also an *antiseptic*. The addition of a very small quantity will preserve water for a long time.

The *oxide* and the *iodide* of silver have been employed as substitutes for the nitrate, to avoid the accidental staining of the skin, of which we have already spoken. A writer in the *London Lancet* for July 10, 1841, has endeavored to show that for all the purposes to which the nitrate is appropriated the oxide is preferable, because it does not tinge the skin. It is made from the solution of the nitrate by the action of potash, which precipitates the oxide; this should be collected on a filter, washed, and dried. The adult dose is half a grain repeated twice a day.

Mr. Bennet, surgeon, states that he has arrested *uterine hemorrhage*, occurring before delivery, by the use of oxide of silver,

in the dose of half a grain twice a day for three or four weeks, occasionally intermitting for two or three days. (See *London Lancet*, May, 1850.)

The *iodide* or *ioduret* of silver has also been substituted for the nitrate, because of its alleged failure to produce discoloration.

The *cyanide* of silver has been exhibited in *syphilis* in the dose of one-tenth of a grain twice a day. It is said to be a very energetic medicine.

ARMENIAN BOLE.—This article is inserted here not because of its intrinsic importance, but to give a hint that may be useful. During a most fatal epidemic scarlatina the only successful practice was that of a notorious quack, who gave a secret powder, composed chiefly of *Armenian bole*, and really inert. Willan, who mentions the fact, says "the success did not depend on the action of the powder, but rather on the confidence inspired by a few successful cases." The lancet and purging were laid aside and the disease left very much to nature.

ARNICA MONTANA. *Mountain Arnica. Mountain Tobacco.*—The flowers, leaf, and root have been regarded as medicinal. It has been known to the profession at least as far back as 1719, when several dissertations were written concerning its medical properties. It was then very much overrated, and fell into disuse; nor is it likely ever again to hold an important place in the Materia Medica. The advocates of homœopathy often speak of arnica as one of *their* remedies, not aware of its antiquity. Some of them make a hobby of this *old novelty*.

Arnica was once suspected to contain strychnia, but numerous and accurate experiments proved its non-existence. The leaves and flowers are bitter and pungent, and contain some gallic acid. The ancient practitioners held it to be a *stimulant* of the nervous system, a *diaphoretic*, and an *irritant* of the digestive canal. They employed it also to discuss *tumors* and allay the irritation of *bruises*. Scopoli directed it to be used in the shape of poultice and tincture for these ends. Fehr called it a *panacea*.

Nine cases of amaurosis are reported in vol. iii. of *Duncan's Med. Commentaries* as having been cured by two or three weeks' use of a strong decoction of the arnica. The usual remedies had been previously tried to no good purpose.

We have many articles equally safe and decidedly superior, and hence the discredit into which it has fallen. It is one of the many things that will do no harm in moderate portions.

ARSENICUM. *Arsenic. White Arsenic. White Oxide of Arsenic. Arsenious Acid. Rat's-bane.*—The *pure arsenic* is *metallic*, and must be distinguished from the article so commonly called by that name. The metal is of a grayish color, and possesses no poisonous quality. Its union with oxygen, consti-

tuting arsenious acid, gives rise to its energetic character in small portions and its poisonous action in an overdose. The native compound, called *mispickel*, consisting of arsenic and iron, both in the metallic state, was formerly administered as a medicinal agent.

The white arsenic is properly called arsenious *acid*, because it unites with alkalies and gives rise to salts, as the arsenite of potash, which is the basis of *Fowler's solution.*

The resemblance between the arsenious acid and calcined magnesia has led to serious mistakes. Frequently, though not always, the acid has an acrid taste, which might serve as a caution. It leaves in the fauces a peculiar metallic acrimony that never attends magnesia. It has no smell, but is heavier than magnesia. To guard against casualty, it should always be labeled *poison*, in large letters, and should never be sold excepting on the order of a physician or some well-known and responsible person. It is too easily procured by servants and others under the pretext of killing rats.

It was at one time believed that arsenic spread on the earth's surface exerted a fertilizing influence, although not taken up by the vegetation grown thereon. It would seem, however, from the following statement, that the poison of arsenic is transmissible in vegetable matters, so as to exert a deleterious influence.

In the *London Lancet*, Dr. Fuller, Lecturer on Medical Jurisprudence at St. Thomas's Hospital, mentions the following singular fact connected with the English practice of steeping wheat in arsenic before sowing it:—

"For some months past, in certain parts of Hampshire, partridges have been found dead in the fields, presenting a very remarkable appearance. Instead of lying prostrate on their sides, as is usually the case with dead birds, they have been found sitting with their heads erect and their eyes open, presenting all the semblance of life. This peculiarity, which for some time had attracted considerable attention from sportsmen in the neighborhood, led to no practical result until about ten days ago, when a covey of ten birds having been found nestled together in this condition, two of the birds, together with the seeds taken from the crops of the remaining eight, were sent up to London for examination.

"I was requested to undertake the investigation, and the result of my experiments I will now briefly detail. I first examined the seeds taken from the crops of the birds, and detected, as I anticipated, a large quantity of arsenic. Having thus ascertained the presence of arsenic in the food of the partridges, I proceeded to examine the birds themselves. They were plump

and in good condition, but the œsophagus was, in both cases, highly inflamed throughout. The intestines were not inflamed, and presented no trace of ulceration; but they were remarkably empty and clean, almost as if they had been washed with water. May this not have been the result of diarrhœa? I now, at the suggestion of my friend Mr. Stone, proceeded to ascertain whether the flesh of birds so poisoned might not of itself prove poisonous when eaten, and with this view I carefully cut the flesh from the breast and legs of one of the birds, and gave it, together with the liver, to a fine healthy cat. She ate it with avidity; but in about half an hour she began to vomit, and vomited almost incessantly for nearly twelve hours, during the whole of which time she evidently suffered excessive pain. After this nothing would induce her to eat any more partridge.

"On examination the flesh of the birds was found to be full of arsenic. How did it get there? In Hampshire, Lincolnshire, and many other parts of the country, the farmers are now in the habit of steeping their wheat in a strong solution of arsenic previous to sowing it, with the view of preventing the ravages of the wire-worm on the seed, and of the smut on the plant when grown; that this process is found to be eminently successful, and is, therefore, daily becoming more and more generally adopted; that even now many hundreds-weight of arsenic are yearly sold to agriculturists for this express purpose; that although the seed is poisonous when sown, its fruit is in no degree affected by the poison; that wherever this plan has been extensively carried out pheasants and partridges have been poisoned by eating the seed, and the partridges have been almost universally found sitting in the position I have already described; and, lastly, that the men employed in sowing the poisonous seed not unfrequently present the early symptoms which occur in the milder cases of poisoning by arsenic."

In endeavoring to assign causes for the prevalence of diarrhœa and cholera morbus the editor of the *Liverpool Journal* says:—

"The question here suggests itself,—May not poachers and game-keepers, finding birds so killed, gather them up and sell them? Have not wheat fields been drained into rivers, and may not the drinking of the water have superinduced bowel complaints? May not the use of game lead to the same result? River-water has been considered objectionable where cholera prevails, and Dr. Sutherland, at Dumfries, has forbidden the use of the river-water, which is, however, exposed to the contamination of sewers."

The facts, as above detailed, commend themselves to the attentive study of medical men everywhere. Cases of unaccountable

fatality are occurring in various places which might be explained by reference to the many uses to which arsenic is appropriated.

Arsenious acid was formerly much employed prior to the introduction of the sulphate of quinine, and is certainly one of the best anti-periodics we possess. The best forms of administration are the *solution* and *pill*. The solution is usually called *Fowler's solution*, *tasteless ague drop*. Dr. Fowler first introduced this preparation, and published largely on its powers in *intermittents* and *periodical* affections generally. The article called *tasteless* differs from another preparation long in use, which contains the *compound spirit of lavender* and on which its color and taste depend. To make the *tasteless ague drop*, boil sixty-four grains of arsenious acid and sixty-four grains of carbonate of potash in six or eight ounces of water in a Florence flask, by means of a spirit-lamp. When the solution is complete and cold add enough water to make a pint. To form the other preparation, after boiling the solids in the water add enough compound spirit of lavender to make a pint. Some prefer to add two ounces of the lavender spirit to the pint, as the object is only to make the dose pleasant to the taste and agreeable to the stomach. Every fluidounce of either solution contains four grains of arsenious acid; each fluidrachm contains half a grain. The dose of the solution for an adult is from ten to thirty drops three times a day. Thirty years ago five-drop doses were deemed sufficiently large, and were the maximum in the hands of the late Prof. Barton and others. But as diseases of all kinds manifestly change in grade and force, so with the fevers for which this medicine has been employed. These will not yield to the five-drop doses once so popular. During the prevalence of fevers in Pennsylvania in 1819 and '20, I found it absolutely needful to use doses of fifteen and twenty drops three times a day or oftener. An account of this change in practice was given in the *American Med. Recorder*, and is noticed briefly in *Eberle's Therapeutics* and the *United States Dispensatory*. Large doses were not only more speedy in their action but the results were more permanent. The more sudden the impression the better, and the large doses named are given with entire safety. I had a patient who was expecting his chill within an hour or two, but taking the phial in his hand to drop the dose into a teaspoon was seized just as he was measuring the dose. Instead of fifteen drops he filled the spoon, and in the hurry swallowed the whole at once. I called in soon afterward and found him a good deal agitated; gave him a dose of Epsom salts and left him. On the next day he was seen again, and there was no return of chill, nor did the disease recur during the season.

As a general rule I have found that the solution succeeds best and soonest if it occasion a little sickness of the stomach and some little tumefaction of the upper lip and eyelids. For these results it is generally necessary to continue the use of the medicine for a week, or at least for five or six days. If it fail to induce the local symptoms named, or to give relief to the patient in any way, it may be regarded as not suited to the case. Obstruction of the liver or spleen, or of any of the organs, is an obstacle to the successful action of the medicine. An obvious advantage of the solution is that you can give it in the paroxysm as well as in the intermission; and the same is true of *remittents*. The swelling, or *œdema arsenicalis*, is transient, rarely continuing more than three or four days, and seldom quite so long.

The origin of the use of arsenic in intermittents, and febrile diseases with remission, is traced to the agency of the vapors of arsenical ores emitted from copper smelting works. Prior to the establishment of the Cornwall copper works the neighboring regions constantly abounded in intermittents. Since the regular operation of the works the periodical fevers ceased, and the workmen say "the smoke of the work kills all fevers." It is part of the history that no agricultural or other improvements in the vicinity can account for the change.

I have administered the medicine in form of pill, in the dose of an eighth of a grain; and in obstinate intermittents I have given as much as the fourth of a grain. This form prevents the detection of the medicine by the patient who has been using the solution containing the compound spirit of lavender. It will sometimes cure old intermittents, when combined with sulphate of quinine, that have resisted the latter remedy alone.

The following statistics are important, as they show the success of arsenic, contrasted with that of the sulphate of quinine, in the treatment of *intermittents*. They are taken from *Ranking's Abstract*, vol. ii. No. 2, page 184, and were made in the Hospital of Versailles.

Of 142	patients	who took	no sulph.	quinine	nor	arsenic,	8 relapsed.
Of 111	do.	treated with	do.	do.	only,	11	do.
Of 311	do.	treated with	arsenic,			10	do.

One-third of the 311 cured by arsenic had previously taken sulphate of quinine without relief.

Dr. Darwin administered arsenic successfully to a patient in whose *heart* there was an *intermission* of *pulsation* once in every three or four beats. Four drops of a saturated solution of arsenic constituted the dose three times a day. As there is obscurity in this title of the medicine, physicians who feel disposed to give it a trial had best employ the Fowler's solution in the same dose. The cases to be thus met will prove to be those in which there is

no true organic heart affection. The intermission may be neuralgic, or sympathetic from the condition of the stomach.

Porrigo, *lepra*, *eczema*, and other very obstinate diseases, have been radically cured by the use of arsenic. I well remember a case that occurred in the Pennsylvania Hospital in 1810, and for which the late Prof. Barton ordered Fowler's solution in five-drop doses three times a day. It was designated as *leprosy*. The patient was kept in a cell remote from the other patients, and the scales gathered from his body were measured from time to time by Samuel Coates, Esq., who was then the most efficient manager of the establishment. The quantity of the scales was incredibly large. The man recovered, and was discharged well.

Dr. Thwaites, of Edinburgh, introduced a new mode of administering the solution in old cutaneous affections, which I have tried with success in many cases. After reducing inflammatory action, if present, he began with doses of two or three drops thrice a day, increasing gradually to eight drops, or till fullness of the eyelids, swelling of the feet, &c. was obvious. Then the dose was gradually decreased to the original quantity, and after an intermission of four or five days the medicine was employed as before. There is decided advantage in the intermission of a few days, not only in respect of this medicine, but of others. The susceptibility of the system is thus revived and the power of the medicine thereby more efficacious.

I had a remarkable case illustrating the value of this practice. A young gentleman had been afflicted for years with herpetic disease of the eyelids and hands, for which he had been treated with mercurials and other active means to no good purpose. The plan of Thwaites struck me as suited to the case, and it was tried with complete success. Since then I had frequent opportunities of testing the value of the practice, and can very cordially recommend it to the profession.

A very interesting case of *psoriasis inveterata* is reported in vol. iv. of the *Amer. Journ. of Med. Sci.*, cured by the solution. The eruption was scaly and itching to a most distressing degree, and for years had resisted other treatment. Though the general health seemed to be good, the eruption affected nearly the whole body. The patient was at first bled and purged smartly, and then four-drop doses of the arsenical solution were given three times a day, gradually increasing to twelve drops at a dose. The scales fell rapidly, and in four weeks he was cured. The only additional remedy employed in this case was an occasional vapor bath. This is a good adjunct in all cutaneous diseases of long standing.

Many interesting cases of old skin diseases cured by Fowler's solution of arsenic are recorded in the *London Lancet* for April,

1846. *Prurigo scroti, prurigo pudendi muliebris, lepra vulgaris, lepra alphoides, psoriasis diffusa, psoriasis inveterata, psoriasis guttata*, are named; and some of the cases were very old, yet soon cured by the arsenic.

That very obstinate and unsightly disease called *gutta rosacea*, or *rose-bud face*, has been cured by Fowler's solution. A case is reported in the *London Medical and Physical Journal*, treated with eight drops three times a day, gradually increased to twenty-five drops. In three weeks the nose regained its natural appearance.

In *Wood's Quarterly Retrospect* for Jan. 1848, it is stated that *Fowler's solution of arsenic* is an excellent medicine for cases in which successive crops of boils make their appearance, to the sore annoyance of the patient. From five to ten drops three times a day in a bitter infusion would be the proper dose for an adult. This cutaneous affection is seen occasionally as a sequel of fever, and is often very perplexing.

The solution of arsenic has been employed in the treatment of *snake-bites*, and as these cases may frequently require medical aid in our new settlements it is well to know the facts referred to. A practitioner who went to the island of St. Lucie had occasion to test the arsenical practice, and found it quite successful. He gave one-grain doses of the mineral, as it exists in Fowler's solution, every half-hour, till the patient began to revive. Five cases were treated in a short time with perfect success. The men took severally six, seven, and eight doses of the following prescription ere the arsenic began to vomit or purge. No trace of poisonous agency was perceptible. Mr. Ireland prescribed thus:

℞.—Liq. arsenical. ʒij;
Tinct. opii, gtt. x;
Aq. menth. pip. ℥iss.
To which an ounce of lime juice was added.

Embrocations and clysters were also employed, but the cure was effected by arsenic.

This is perhaps the most heroic arsenical practice on record. It was *poison versus poison*, and the stronger triumphed.

In the *Med.-Chir. Rev.* for Oct. 1841, we find a novel use of arsenic furnished by Trousseau. *Arsenical cigars* are prepared from fifteen grains of arsenite of potash dissolved in a half-ounce of water. A sheet of paper is soaked with this solution, well dried, and then rolled up in form of cigars, having first been cut into slips of proper width. The patient draws in a large mouthful of the smoke and inhales it as deeply as he can. At first a good deal of coughing is excited, but the irritation soon subsides. This form of medication has been employed in *periodical neuralgia of the face* with benefit.

Dr. A. T. Thompson states that the action of arsenic is liable to exacerbations and remissions, and sometimes to intermissions. Thus we may suppose that there is a certain degree of analogy between its operation and that of the malarious poison, by virtue of which it may perhaps exert a corrective power over the working of the latter in the blood.—*Mat. Med.* p. 185.

It is best in all cases, says Dr. Headland, to give this medicine after a meal, on a full stomach, as then it is less likely to irritate, not coming directly in contact with the coats of the stomach, and being diluted by the food during its absorption.

Touching the use of arsenic in the form of paste and ointment there has been diversity of opinion. Some have rejected both on the ground of injurious consequences of a poisonous nature. But it is probable that neither would do harm if applied to the sound skin; and it is certain that Dupuytren has often applied an *ointment* of four parts of calomel and ninety-six of arsenic to *malignant ulcers* with advantage.

There have been various notions entertained as to the *modus operandi* of arsenical preparations. By some a *tonic* property has been contended for, and yet we have seen nothing in the use of the remedy to justify that view of the matter. That it proves an *alterative* is beyond doubt true, and especially does this appear in its employment in skin diseases. One writer contended for its *sedative* action, but we are satisfied that he was mistaken. The *antiperiodic* property is undoubted, and it is probable we have not a medicine more decidedly exhibiting this character; and it may be that some alterative action precedes the development of the antiperiodic effect. As before stated, Dr. Headland regards arsenic as a *catalytic hæmatic*, correcting the blood poison, or so modifying it as to secure its final removal from the system.

By far the most important inquiries of medical men touching the nature and effects of arsenic relate to its *poisonous* operation. This has been hinted at already; but as it is very necessary for the physician to be able to apply the more common and simple modes of investigation for the detection of this poison we propose to speak somewhat in detail on this point. Every medical man is liable to be brought into court to testify in matters of this kind, and such is the ignorance of many practitioners that their testimony is calculated to inflict deep disgrace on the entire fraternity. We believe, therefore, that what we have to offer on this special matter may conduce not only to the welfare of society but tend to elevate the medical profession.

Before we notice the *poisonous* action of arsenic it is proper to speak briefly of its *obvious qualities*. It is white, and therefore distinct from *metallic* arsenic, which is of a grayish-black.

It has a specific gravity of 3.7, and therefore should not be confounded with magnesia, which is very light. It volatilizes at 380° or a little above that temperature, emitting a garlic smell and white fumes. To do this experimentally, throw a little on burning coals, and the fumes and smell will be obvious; this is stated because if it were thrown on red-hot pure iron it would hardly give these results. The presence of carbon is necessary in order to deoxidize the arsenious acid and revive the metal, whose combustion it is that gives rise to the smell and fumes. Arsenious acid is quite soluble in hot water, but dissolves in small quantity in cold water. A thousand parts of water at 60° will take up two and a half grains in twenty-four hours. At boiling heat seventy-seven and a half grains will be dissolved, of which forty-seven and a half fall on cooling. It is important to recollect the difference in solubility, as here stated, since it helps to explain the failure of many attempts to poison wells and reservoirs of water; and it teaches also the importance of employing boiling water in examinations of substances or mixtures supposed to contain arsenic.*

The possibility of confounding arsenious acid with calcined magnesia was hinted at; and it is proper to say that a lady of one of the most respectable families in Philadelphia lost her life by this kind of mistake. A servant was directed to bring a teaspoonful of calcined magnesia from a closet where medicines were kept, the lady wishing to take it to relieve an acid stomach. Unfortunately a bottle of rat's-bane had been placed in the same closet, and from it the girl took the quantity directed. Very soon after swallowing the dose suspicion was raised by the feeling in the throat that all was not right. The styptic sensation increased, with burning in the stomach, which led the family to send for the nearest physician, a very respectable medical man, but wholly behind the actual state of the profession. He gave the lady water, as hot as it could be swallowed, in large quantities, hoping no doubt to evacuate by vomiting. But the hot water rendered the poison more active by dissolving it, and she fell a victim, most probably, to unwise management. Had a stomach-pump and tepid water been employed freely, the poison

* The national perturbation induced by the poisoning of so many individuals in public life, at the National Hotel, in Washington City, a few months since, has invested the subject of arsenical poisoning with vast interest. Many valuable lives have been sacrificed somehow, and it is very desirable that a full and complete solution should be given to the problem which is yet shrouded in mystery. Was it not a case of *compound arsenical poisoning* on a mammoth scale, putrid *rats* entering largely into the melee? If somebody killed rats by the thousand with pounds of arsenious acid, and these rats found their grave in the great water-tank of the *National*, we have something like a stand-point for observation and inference. But who will disclose the reality of the case?

might have been sufficiently dislodged to have saved her, even though the usual antidotes had been forgotten.

How much of this article will kill a person, or display the veritable signs of *poisoning?* To this query we reply that very much will depend on the actual condition of the patient, both as to his general system and also in respect to the stomach, while not a little is due to habit in our attempts to solve the problem. It is reported that two grains (and probably a less quantity) have killed an adult. But Dr. Perrine swallowed a drachm at once, and yet got well. His case is furnished in detail by himself in the *American Journal of Medical Sciences* for 1832. He intended to have taken some bark and calcined magnesia, but his pupil added arsenious acid in place of the latter. The dose was swallowed early in the day, and the doctor started in his gig to make his usual visits. The presence of the bark no doubt retarded the deleterious action of the arsenic; but after having rode about four or five hours he found himself so uncomfortable that he rode home as fast as possible. The mistake was discovered, and by the course of treatment which he details he recovered with very little loss of time.

The *London Medical and Surgical Journal* gives the case of a Tyrolese peasant who took daily in his food ten grains of arsenious acid without injury. This was a very singular habit, and as remarkable for the power of endurance and freedom from suffering. It may be that this man's stomach had lost its sensibility by the previous use of opium and other stimulants.

A child was poisoned by eating paste made for killing rats. The child died, and the only special item in the case was that, although but twenty months old, very natural sleep occurred and continued for about three hours and a half after the paste was swallowed.—*Ranking*, vol. i. p. 324.

A workman engaged in the manufactory of arsenical candles had an abrasion on one hand which probably introduced the poison and led to a fatal result in a few days.—*Ranking*, vol. i. part 1.*

The *Provincial Med. and Surg. Journal* for January, 1842, relates the case of a young man aged seventeen who took two drachms of arsenic with a view to self-destruction. He repented the act, and made disclosure in a quarter of an hour. As soon as practicable six grains of tartar emetic were administered, and an additional dose soon after. Vomiting at length came on, and was kept up by the use of warm water for the space of two hours. Nothing remained on his stomach for hours. He complained of severe gastric and intestinal pains, was bled and purged by injections. A blister was applied to the epigastrium, and effer-

* Very recently we have learned that the *arseniate* of copper on wall-paper, in a sitting-room, has induced mild symptoms of arsenical poisoning.

vescing draughts occasionally administered. In a few days he was as well as usual.

The *symptoms* visible in several cases of arsenical poisoning in the same house, at the same time, are various, and go to prove that the article is a *narcotico-acrid* poison, or an *irritant and narcotic* combined. If the individual who has taken the poison be an intemperate man, the sensibility of his stomach very much blunted, he may realize nothing worse than a smart attack of colic. In other persons the same dose would develop mortal symptoms. There is almost always a sensation of heat and acrimony in the mouth and throat, spasmodic pains of the stomach and bowels, constriction of the œsophagus and whole alimentary canal, increased flow of saliva, inflammation of the eyes, itching of the face and neck, vomiting and purging, sometimes bloody discharges, now and then great prostration of the vital forces, cold sweat, pulse scarcely perceptible, great anxiety and distress in the countenance, purple spots on the surface, the whole frame convulsed. All these features will not be seen in each separate case that may occur, but I have seen them all in a family of six persons, under the poisonous influence at the same time.

Some persons have supposed that the symptoms of arsenical poisoning are very much like those of *milk sickness*, and hence this disease has been attributed falsely to the agency of arsenic. I have examined water brought to me a distance of fifty miles to determine whether or not it was impregnated with arsenic. Men and women and cows had sickened, and in some instances died, as was conjectured, from drinking the water.

It is proper to remark that in persons having the slightest paralytic predisposition, the poison greatly develops that predisposition; and although life may be prolonged for months, death will finally ensue from general palsy. Nor is it unlikely that this result may sometimes follow arsenical poisoning, where there is no tendency in the system to palsy, or at least none that is apparent.

The *remedies* or *antidotes* for arsenical poisoning have been quite numerous. By an *antidote* we understand some substance which, by the chemical change it is capable of exerting on the arsenical matter, destroys its poisonous quality or very greatly enfeebles it. In this view, some of the articles employed at various periods do not merit the name of antidotes, and can at most be regarded only as *remedies* of greater or less power. Milk, oils, soap, demulcents, and other articles equally feeble, were the only expedients resorted to for a long while, if we except attempts to empty the stomach by vomiting. None of these can be called an *antidote*, in the proper chemical sense.

There can be no doubt that free vomiting, followed by the above, or vinegar, or lemon juice, may be effectual; but we should not feel disposed to rely on them.

Magnesia has long been employed to counteract the poisonous operation of arsenic. Some have regarded it as a *remedy* merely, while others esteem it an excellent *antidote*, in the true sense of the term. Bussy has insisted on its antidotal power, and others have, like him, contended for the formation of an insoluble arsenite of magnesia, by chemical union with the arsenious acid. Many who gave the article in milk thought that this fluid, by its coagulating power, enveloped the arsenic and so protected the stomach. The mention of coagulation brings to mind a curious story told of a girl in whose stomach was found a sac containing an ounce of arsenious acid; it is conjectured that milk was employed in that case, which involved the arsenic in a coagulum, while inflammatory action threw out coagulable lymph to form the sac in which it was found enclosed. The girl recovered from the first effort, but fell a victim to a second experiment, made after the lapse of a year from her first arsenical adventure.

The best calcined magnesia is said to answer much better than the carbonate, and it may be given in milk almost *ad libitum*.

Finely pulverized *charcoal* is, as I know from *actual experience*, capable of accomplishing all that is desirable in this relation, no matter whether it be regarded as a remedy or as an antidote. In determining the powers of charcoal Bertrand acted the part of a hero, taking five grains in an emulsion made with charcoal, with no unfavorable result save a little spasmodic pain, which soon passed off. We know that arsenious acid is decomposed out of the body by charcoal and reduced to a metallic state, in which it is harmless. Why may it not be so changed in the stomach? Christison thinks it acts merely by precipitating the arsenic from its solution, not doubting at all that it does really nullify the poison; but his explanation is wholly unsatisfactory, as mere precipitation could not change the essential quality of the arsenic.

In a family (that of Dr. Hays, of Cincinnati) consisting of five persons, I employed the charcoal because there was a large quantity of it in the house and no other article as proper for the occasion. It was given by the mouth, in water, and molasses and water and milk, as fast as it could be taken, and also administered by injection. All the symptoms before named were found in this family, though each case was different in some respects from every other. All the persons poisoned were soon restored save the father of the family, in whom there had been slight tokens of palsy for several months. That disease was

greatly aggravated, and soon became universal, terminating in death at the end of twelve months after the poison was administered. From the knowledge subsequently obtained the family must have swallowed very little less than half an ounce of the poisonous substance. This affair was made a matter of judicial investigation, and the negro who administered the poison was sentenced to fourteen years' imprisonment. The case is noticed in my *Elements of Chemical Philosophy*.

Tobacco is next named rather as a *remedy* than as an *antidote*. The standard works are silent on this part of the subject, and, as I think, unwisely so. The whole history, brief as it is, commends itself to the consideration of all medical men. How the remedy acts is, of course, not certainly known; but that it does act a salutary part is known, and this is by far the most important feature in the case. My own opinion is, that when it comes in contact with the arsenious acid a *tertium quid* is the result; a sort of *compound poisoning*, in which the original poisonous quality of both articles is lost. Christison furnishes many cases in point; as, for instance, the mixture of laudanum and corrosive sublimate, both of which separately will poison, while the compound has failed to do serious harm. The first notice of the use of tobacco for the end stated appeared in a country paper in New England, and was copied into volume thirty-one of *Silliman's Journal;* and several other cases of the same nature were subsequently reported on the highest authority. In the first case, that of a young lady, the poison had been taken by mistake, and in a region considerably remote from a physician or an apothecary shop. It was supposed that an emetic would give relief, and as nothing offered excepting tobacco it was resorted to in the hope of exciting vomiting and thus dislodging the poison. A decoction or infusion was prepared and rather cautiously exhibited, fearing it might act with too great violence. Dose after dose was given, and time passed away and no emesis could be had, and the result was that the lady was not seriously injured. The success of the new remedy led to its employment in the other cases referred to and with equal success, but in every instance *there was no vomiting*. All the patients were females, and unaccustomed to tobacco, and this is an important part of the history. It is more than probable that an inveterate chewer of tobacco could not be saved by the exhibition of any quantity of this article. In the cases reported I take it for granted that the tobacco and the arsenic united to form a new and inert compound, for it is known that an infusion of tobacco would develop more or less of poisonous action in stomachs unused to its influence just as certainly as arsenic would. The facts as above were referred to in my

Elements of Chemical Philosophy, published in Cincinnati in 1832.

The *hydrated peroxide of iron*, for a few years past, has been regarded by many as *the* antidote by pre-eminence. For a time there was some discrepancy of opinion as to its powers, but as experiments were repeated in various parts of the world confidence was more and more settled in its favor. This antidote was prepared first by Bunsen, a German, who made it thus:—Four ounces of iron filings added to eight ounces of aqua regia (or nitro-muriatic acid) were gently heated in a glass vessel until the solution was complete. Then sixteen ounces of water were added, and subsequently by slow degrees three ounces of aqua ammonia, to throw down the oxide of iron. The whole mixture was next well shaken and filtered, the mass on the filter being well dried for use. This oxide is evidently a peroxide, and is called *hydrated* peroxide or *hydrated oxide*. For further particulars see the *American Journal of Pharmacy*, volume for 1839, page 266.

The usual adult dose of this preparation of iron is an ounce, but there is no danger of a larger quantity. The proper course is to administer, by the mouth and by injection, as much as can be given, either in barley water, thin starch, or gruel. Maclagan says that twelve parts of the peroxide are required to neutralize one of arsenic, and advises to give a teaspoonful every five or ten minutes when it is known that a large quantity of arsenic has been swallowed. The irritation thus excited almost always sets up active vomiting, and thus the poison with the antidote is ejected. If vomiting should not come on, or be inefficient, it would be needful to employ the stomach-pump.

The chemical change induced by the hydrated peroxide of iron is the formation of an insoluble arsenite of iron, which is inert. The successful action of the antidote could be shown by the citation of cases almost without number. The following may suffice:—A man in a fit of delirium tremens took nearly two drachms of arsenic. In a half-hour subsequent to the act he took the antidote freely, so that in less than twelve hours about five ounces were disposed of. The result was, at the end of twenty-four hours he was as well as usual, having suffered no very severe pain.

In all cases of arsenical poisoning it is well at once to fill the stomach with milk and water, or demulcents, and to provoke vomiting, so as to empty the organ as much as possible. Then the antidotes already named will be administered with greater probability of success.

In all cases of poisoning, whether the person poisoned is re-

stored or dies, it may be necessary for the physician employed in the case to give evidence touching the nature of the poisonous agent. He must be able to detect its presence, and as it may appear under various aspects it is his duty to be familiar with them all. Parcels of brown and white sugar have been sent to me, over and again, suspected of combination with poison, and especially with arsenic. If the brown sugar be carefully inspected small white particles may be seen, which, on being detached and collected, can readily be tested by burning coals, as formerly stated. Thus I have in a few minutes demonstrated the presence of arsenic in brown sugar. It is not quite so easy if the sugar be white, because then the contrast of color is absent. A simple experiment will soon show how much, if any arsenical matter is present in the sugar. Add small quantities of cold water until it dissolves all the sugar, pour off the solution, and the arsenic, if there at all, will remain at the bottom of the vessel and can be tested in the way to be detailed presently. When the arsenic has been added to coffee it may be seen in the mass, in white particles, which on being detached and placed on burning coals will give the garlic odor and fumes.

Besides the above expedients to determine the presence of arsenic it is sometimes necessary to examine the matters ejected from the stomach or found in the dead body. And before we enter on this part of the subject it is important to attend to an item that demands special consideration. *How long after the death of an individual may the presence of arsenic in the body be satisfactorily made out?* It will be recollected that hydrocyanic acid cannot be detected after a longer lapse than seven days, because of its ready decomposition and comparative volatility. But in respect of arsenic the opposite qualities obtain, so that it is not easy to assign any period beyond which its detection is impracticable. The mineral origin and nature of arsenic give it a kind of perpetuity that forbids its disappearance spontaneously, while its antiseptic property preserves the stomach and other organs in a condition that favors the detection. The case on record which presents the longest period between death and detection of the poison shows that fully *seven years* had elapsed. The arsenic was found in large quantity, and the stomach was nearly entire and of the usual form. Cases have occurred in this country in which from four to fifteen months elapsed from the date of poisoning and the death of the victim to the actual detection of the arsenic. The *antiseptic quality* and the *indestructibility* of the poison render its discovery in the body almost a matter of certainty, even though twenty years should pass away before suspicion should lead to examination.

I am aware that a great deal was said in the progress of the celebrated Laffarge case in France, some years ago, about the presence of arsenic in the human system as a natural constituent, and also of its presence in the glass tubes employed in experiments made in that case; and I remember that these quibbles were raised expressly to save a guilty woman from merited punishment. If the doctrine then laid down by a distinguished chemist had been sustained by the court, it would have made a precedent whose operation, all the world over, would have been to shield and protect the most abandoned murderer charged with the crime of arsenical poisoning.

Another feature in this subject calculated to embarrass investigation a little is the allegation that in a case of real and fatal poisoning by arsenic the poison may not be found in the stomach nor intestines, but may be detected in the liver and in some other parts.

It is well to bear in mind that all quibbles are worthless as to the native presence of arsenic in the economy when we find it actually present in the stomach or bowels in quantities so large as to yield the most satisfactory proofs on the application of the more ordinary tests. When such proofs are not conclusively reached, humanity and common sense dictate the propriety of erring, if at all, on the side of mercy.

I will suppose the case of a man poisoned, or supposed to be, with arsenic, the discharges from whose stomach have been collected in a glass vessel and allowed to settle. It is seen that at the bottom of the glass a quantity of grayish-white pulverulent matter has collected. As yet you know not what it is. But all the symptoms of the case were those peculiar to arsenical poisoning, and there are, perhaps, other circumstances leading you to believe that the precipitate in the glass vessel is really arsenical.

The first thing to be done is to collect this pulverulent precipitate on a filter, which can be accomplished by carefully pouring into another vessel all that is above. Let the wet powder be placed on a filter and allowed to dry, after which collect and preserve it for examination by the *liquid tests*, and also by the *reduction process*. The liquid tests to which I refer are the ammoniaco-nitrate of silver and ammoniaco-sulphate of copper, the former giving a *yellow*, the latter a *green*, precipitate. To make these tests, dissolve nitrate of silver and sulphate of copper in two separate bottles containing pure water, so as to make concentrated solutions. Add first to one and then to the other bottle the liquid ammonia until it begins to make the solution a little turbid. Then stop each bottle perfectly tight, and it is fit for use. It is proper to have at hand half a dozen glass rods

from six to nine inches long and a quarter-inch thick, hollow or solid, as the case may be, and, besides, some clean watch-crystals or pieces of clean white writing paper.

Then take half of the dried pulverulent matter collected as above and boil it in pure water, in a clean glass vessel, by means of a spirit-lamp. A very few minutes will suffice, because if the powder be arsenious acid the whole will thus be held in solution. Dip a glass rod into this liquid and drop what adheres to it on two watch-crystals or two pieces of white paper, then dip rods into each of the liquid tests (one in each) and let fall a single drop on the crystals or pieces of paper. If the solution contained arsenious acid the silver test will strike a bright *yellow*, while the copper test will give a *green*, and these operations being repeated two or three times will fix the results more perfectly in the mind.

As there is a possibility of deception here, and as the life of an individual may, to some extent, depend on the experiments made, it is very important to confirm or nullify the results as above stated by what has been called the *reduction process*. And it may be well to remark that this is a very simple affair, and every physician who desires to excel in such investigations should make himself familiar with the subject by repeated experiments with variable quantities of arsenious acid.

In conducting the reduction process we take the residue of the pulverulent mass spoken of already and mix the whole or a part with an equal quantity of black flux, or fine powder of charcoal. Let them be well rubbed together and placed midway in a clean glass tube four or five inches long and three-eighths of an inch thick. Fit a cork tight to one end and have a soft plug of cotton for the other, so as to arrest the passage of vapors. A spirit-lamp being kindled, the tube is held by the operator with the cork end lower down than the cotton extremity, so that the tube shall exhibit an inclined plane and the blaze act on the mass in the centre of the tube. In a minute or two a metallic crust is deposited by sublimation on the upper side of the tube, having the sparkling appearance of antimony, though, perhaps, a little darker colored. It is evidently metallic, and has resulted from the decomposition of a metallic oxide or a metallic acid by the reducing power of the carbonaceous matter blended with it. The question to be decided is, what is the nature of this metallic crust? Is it arsenic, or is it some other metal?

To decide this important question we take the tube and remove the cork and cotton; then, with a file drawn across midway, we prepare the way for an easy fracture of the tube into two parts, carefully detaching all the metallic crust with a fine penknife, and collecting it on clean white paper or in a dry

watch-crystal. No matter how small the quantity of this crust, it will suffice. Divide into two equal parts, adding to one in a watch-crystal a few drops of water and a drop of diluted nitric acid. Hold the glass for a minute or two over a spirit-lamp to dissolve the crust, and try the solution with the silver and copper tests, as before detailed. If the bright *yellow* and the *green* colors be struck, your first experiments are confirmed. Drop the other half of the crust on a red-hot iron plate or on burning coals, and if the garlic smell and fumes appear the presence of arsenic is established. With such proofs no man need hesitate a moment in appearing to give testimony before a court and jury.

Marsh's hydrogen lamp test is very satisfactory, but not always at the command of country practitioners, and it is by no means indispensable. The process of Reinach, as given in No. 31 of the *British and Foreign Medical Review*, is much more feasible. Copper foil cut into pieces an inch long and one-eighth of an inch in width, or fine copper gauze, must be heated almost to boiling. Then a very little muriatic acid (a one-sixteenth part) is added to the supposed arsenical solution, and speedily it is decomposed, a thin steel-like coating of metallic arsenic being deposited on the copper, which may be separated from it again by dissolving it off with nitric acid, or by heating in a tube, when it will sublime in the form either of a ring of the metal or as sparkling crystals. These may be dissolved and the liquid tests applied. The process is said to be so delicate as to detect one-two-hundred-thousandth part of arsenic.

In cases where the stomach presented no pulverulent matter, it, as well as part of the small intestines, having been cut into small pieces, should be boiled in pure water for half an hour. Let the whole be filtered while warm and the solution be tested before it becomes cold. This expedient is based on the fact that arsenical matter may be lodged in the folds of the mucous membrane so as to escape observation. Boiling in pure water will reveal its presence if it be there, and the liquid tests are competent to decide that point, especially if corroborated by the *reduction process*.

We have gone sufficiently into detail on this very interesting subject for a work like the present, and refer the reader for additional facts to the books on medical jurisprudence, and also to the excellent *Hand-Book of Chemistry*, by Abel and Bloxam, (1854, Philadelphia edit.) in which will be found a more extended view of the means for detecting the poison, and some new tests which we fear are too complex for practicing physicians.

Arsenite of ammonia has been employed as a substitute for *Fowler's solution*, but it has no special claims.

ARTEMISIA SANTONICA. The Tartarian Southern-wood, or *Wormseed.*—The seeds are small, light, and oval, possessed of stomachic, emmenagogue, and anthelmintic properties. One to two drachms of the seeds may be taken twice a day by an adult.

We notice it chiefly because of a non-azotized, crystalline body, obtained from the seeds, called *santonin*, which has been a good deal employed as an anthelmintic, and is said to be an important item in some of the most popular nostrums for the cure of worms.

Mr. Perry, of Droxford, England, has employed the santonin to expel the round and thread-worms that infest the intestinal canal. He gave three grains to a child two years old, followed in two hours by an aperient powder. The child voided thirty-seven worms on the next morning, some a foot long, and of the lumbricoid ascaris sort. Two children were treated in the same way, but in another family, and between forty and fifty worms came from each as soon. In a family of four children one hundred and twenty-four worms were voided at one time, and many more afterward, each child having taken but one dose of the santonin. After the worms are expelled Mr. Perry gives a tonic mixture containing muriated tincture of iron and muriatic acid, changing the diet from a vegetable one to that of meat and bread.

Santonin is a perfectly safe article, and is best given between bread and butter; two hours after, a dose of calomel and jalap should be given.

ASPARAGUS.—As an article of food all are familiar with this vegetable, and none can be ignorant of the fact that it speedily gives its qualities to the blood, by the evidence furnished in the altered odor of the urine; an odor which Franklin was the first to obviate by chewing a few tears of white turpentine. It is probable this well-known effect of asparagus led to its use as a *diuretic.* The medicinal power is obtained thus:—Take five ounces of dried tops of the plant, proof-spirit two pints, also five pounds of fresh tops of the plant; bruise and press out the juice, evaporate at a low temperature to one pint, and strain; then add a pint of rectified spirit. This is the *Tinct. of Asparagus.* From half a drachm to two drachms of this tincture added to any ordinary diuretic that may not have acted well, is very sure to induce copious diuresis.—*Association Medical Journal*, May, 1855.

ASPIDIUM FILIX MAS. *Male Fern.*—The roots and buds of this plant have been employed, time out of mind, for the destruction of *alimentary worms.* More recently the oil of the fern has been preferred because of its smaller bulk; and in several of

our best journals we notice high encomiums on its efficacy. Cases are cited in which all the usual appliances, and especially turpentine, have failed, but in which the oil of the male fern was successful. The ordinary adult dose is one drachm, followed in an hour by an ounce of castor oil. Such a dose caused the ejection of a large tapeworm of great length. It escaped in about an hour after the castor oil was swallowed. This is a sample of the numerous cases to be found on record.

Peschier, who introduced this remedy many years ago, says that a half-drachm of the oil or oleo-resin is equal to three drachms of the powdered root. He prepared it by digesting the largest buds of the plant in sulphuric ether, and the product was named by him the oleo-resin of male fern. He says this remedy was used in two hundred cases of tapeworm in Guy's Hospital, more than thirty years ago, with large success. Young children may take it safely. Half-drachm doses to children four years old will be quite proper; for Dr. Gill gave it to a child two years old in doses of a drachm and a half. In about four or five hours after the first dose the worm is expelled; but this result has sometimes come in one hour after the dose was swallowed.

Theophrastus, Dioscorides, and Pliny, speak of the filix mas, or male fern, and its anthelmintic powers are of very ancient date. The plant grows in our own country, as well as in many parts of Europe, Asia, and Africa.

ASSAFŒTIDA. *Ferula Assafœtida. Fetid Gum*, or rather a *fetid gum-resin*.—Few articles of Materia Medica have a more ancient history than this, and it has been very highly esteemed for its medicinal powers. The tree is a native of Persia, the root being perennial and sending out every year fresh leaves from the cut stem, which is often more than two inches in thickness; the height of the tree varying from eight to ten feet. The thick stem, cut off near to the ground, pours out a copious milky juice, which gradually concretes and presents the gum-resin. The yield is said to be greatest and best when the trees are four years old. As we receive the gum-resin from abroad it is of various colors and contains more or less foreign matter; but the native juice is nearly colorless as it issues from the fresh-cut stem.

In cold weather the fetid gum loses the adhesive and tenacious quality acquired by elevated temperature. In the one season it can be reduced to powder, and in the other it may be formed into pills with very little effort by the thumb and fingers.

The odor so characteristic of this drug is evolved by a volatile oil, which is lost by long or bad keeping. To preserve the article properly, glass-stoppered bottles should be used; but as it is com-

paratively cheap, the loss at any rate is trifling. Yet for medicinal purposes it should be kept as already advised. When lumps are broken, as they may be in cold weather, the inner surface presents various colors, as yellow, pink, white, red, while the exterior perhaps was an unmixed brown or yellow.

As the article is not wholly a gum nor a resin, neither water nor alcohol will entirely dissolve it. Hot water takes up enough to make a decidedly medicinal preparation, to which the name of *lac* or *milk of assafœtida* has been given because of its milky appearance. Brandy or diluted alcohol will dissolve the whole, and thus we have a *tincture of assafœtida*. If to this tincture water be added, the whole becomes milky, because the predominance of water effects the precipitation of the resinous portion. We can also dissolve a good deal of the gum-resin in strong vinegar, but the mixture is not much in use.

The smell of this article is exceedingly odious to many persons, while some make no sort of objection to it and can even carry it about their persons. The Persians have employed it as a condiment from time immemorial. The Italians and Portuguese eat it on beefsteak and in soups in preference to garlic and onions. The smell is, however, an obstacle to its medicinal administration in many instances. Some ladies feel almost insulted if the article is proposed for their benefit, because they think it implies an hysterical temperament, which, however real in their own persons, they are seldom willing to admit as appertaining to them in anywise. Nevertheless, it is a good medicine, and often exactly suited to the hysteria and hypochondriac eccentricities of both sexes.

In making an estimate of the therapeutic powers of assafœtida some have taken a pretty wide range. They have called it *stimulant*, *antispasmodic*, *expectorant*, *cathartic*, *anthelmintic*, *emmenagogue*.

In regard to the *stimulant* power, I remark that it is very feeble, but that even though feeble it would seem to be improper in cases of high arterial excitement. The *antispasmodic* quality is relative. Spasm depends on different causes most obviously. If it proceed from excessive flatulence, as it often does, assafœtida will relieve by expelling the flatus. The *expectorant* action is also relative. If there be a strictured or spasmodic state of the bronchi, this medicine may relieve by subduing that state and enabling the patient to expectorate freely. The *cathartic* action is often witnessed when large doses are taken, and small ones very frequently and closely repeated. In such instances high irritation is sometimes set up in the rectum and verge of the anus. The *anthelmintic* and *emmenagogue* powers

are spoken of by some as though they were of frequent occurrence. I regard them as accidental, and of little value.

We have said that the gum can be made into pills very readily in warm weather. If the weather be cold, and the medicine be gently heated, pills can then be formed also without difficulty. From three to ten grains may be taken at a dose.

The *milk of assafœtida* is easily prepared. In the absence of pestle and mortar, a lump of the size of a nutmeg may be put in a teacup half-full of hot water and gently broken down with a spoon. In a few minutes nearly the whole will be dissolved, making a milky-looking mixture. The medicine is improved by the addition of a tablespoon even full of powdered gum Arabic, and a little more hot water. Sugar also may be added, if desirable. The whole, after due trituration, may be placed in a bottle furnished with a good cork. The dose for an adult is a tablespoonful; for a child, from a teaspoon half-full to three times that quantity, repeated frequently.

The milk of assafœtida is a capital article for drunkards bent on reformation. It keeps up a desirable and salutary excitement in the stomach, calming nervous irritation of the whole system, and at length acting gently on the bowels. No fear need be entertained that too much will be taken. It is also a good medicine for curing the vile habit of opium-eating, and very soon performs well the office of a substitute. It is, I am very sure, vastly to be preferred in the diseases of young children to all kinds of opiate mixtures, which kill hundreds and thousands of the infantile part of society annually. *All sorts of opiate doses gradually destroy the tone of the stomach and bowels, perpetuate indigestion and costiveness, and render necessary acrid cathartics, which only augment the mischief.* The worst *infantile colic* is more certainly, speedily, and safely relieved by doses of the milk of assafœtida by the mouth, or by injections of the same, than by the best opiate in the world. These remarks are advanced with great confidence, because they are based on much experience in the management of young children. I have found an injection of the milk, as well as the dose by the mouth, to act like a charm, expelling flatus copiously, subduing spasms, and putting the child to sleep very promptly. In the absence of the milk the tincture of assafœtida will answer the same indications.

In the treatment of *influenza* no medicine has pleased me so well as the milk of assafœtida, especially when old persons were the subjects. It removes the obstacle to free breathing, promotes expectoration, unloads the bronchial tubes, and allays general irritation. A tablespoonful may be given every one or two hours. In some cases of that disease a diarrhœa was super-

added, as in the epidemic of 1828, near Philadelphia; and in that emergency the following prescription was a favorite:—

℞.—Gum fetid, ʒij;
Powder of gum Arabic,
White sugar, āā ʒss;
Sulph. morphia, gr. i;
Mint-water, ʒviij.

Rub the fetid gum with a little hot water till it is dissolved; add the gum Arabic and sugar, then the mint-water and salt of morphia. Triturate the whole to make a perfect mixture. A tablespoonful is an adult dose.

The simple milk of assafœtida without an opiate is well adapted to many cases of *spasmodic asthma*. It was Cullen's favorite, and called by him, from its effects in that disease, *antispasmodic*. In ordinary *hooping-cough*, and in purely *spasmodic* or *non-membranous croup*, the milk is often an excellent medicine, given alone or with an equal quantity of syrup of squills.

Injections of assafœtida are highly praised by M. Ancelon in the treatment of the advanced stage of *pertussis*. For infants two years old three injections are ordered, each containing fifteen grains of the gum and two drops of Sydenham's liquid laudanum, in the smallest quantity of a vehicle, as flaxseed tea, that will answer. The first is to be thrown up in the evening, the second on the next morning, and the third on the following night, say about twelve hours after the second. Associated with frictions of turpentine on soft flannel, this plan, it is said, will speedily arrest the disease.—*N. Amer. Medico-Chir. Rev.*, May, 1857.

A *plaster*, made by triturating three or four drachms of the fetid gum with a drachm of camphor and whisky, or strong acetic acid, has been very serviceable as an application to the chest or between the shoulders. It is slightly counter-irritant, and protects the parts from the action of cold, removes stricture, and promotes expectoration.

The fetid gum is supposed to act on the spinal nerves chiefly. Its successful operation by the rectum, as well as by the mouth, renders this more probable. If it evidently disturb the stomach or heart, or respiratory functions, it is likely there is organic disease of the brain or spinal marrow, and it should be discontinued.

Astringents.—The term astringent is employed to denote the condensation or constriction of animal fibre by remedial agents, and on this ground they are supposed to act in restraining hemorrhage. Much has been written to determine the precise action of this class of agents. Mere contraction of fibre is not decisive of the action of an astringent medicine, for galvanism and electricity cause violent contractions. And the action is often relative, too; for while an unripe persimmon will constringe the mouth it will not at all affect the skin of

the hand. Writers attempt to account for the operation of astringents on the living body by referring to the agency of such bodies in constringing dead matter; and this is certainly plausible.

Among the agents that seem to act as astringents on animal matter we name the following: *cold*, *alcohol*, *acids*, and *tannin*. Let us look at their action and see what light it can cast on the general operation of astringents on living matter. *Cold* is a negative something, the absence of a positive, viz., caloric; the usual effect of which is to enlarge bodies, while its abstraction lessens. In other words, caloric tends to weaken the cohesive attraction between particles of matter, while cold strengthens that cohesion or makes the particles coalesce more firmly. On this principle a soft skin acquires firmness and strength; and this is frequently exemplified in the living body. Excessive heat induces relaxation and debility, while cold weather braces the man and he feels invigorated. It is ascertained that a thong of untanned leather or skin which will bear a weight of ten pounds at 85° or 90°, will sustain a greater weight at 40°, which proves the condensing or cohesive effects of cold, or loss of temperature. We are aware that in dead matter an important influence is absent, viz., vitality, which gives efficiency to astringents and makes their effects more permanent. As respects *alcohol* we find results not dissimilar. Dead flesh placed in alcohol is soon condensed or hardened, and hence this fluid is said to act as an astringent. I know that a chemical operation ensues, that water is absorbed and albumen coagulated, and that hence condensation results. But if alcohol be applied to the web of a frog's foot, the globules of the blood seem to stagnate and become compact in the vessels, so that vitality is suspended or destroyed. The long-continued use of alcohol internally condenses, hardens the stomach, so as to impair or destroy its sensibility. It becomes thick, hard, callous to impressions, so that the most energetic stimulus fails to affect it. Such is its condition in the delirium tremens of old drunkards. *Acids* also constringe dead animal matter, condensing and making it more firm by coagulating the albumen and forming new compounds. Some deny that they act thus on the human body, but I see no reason why they may not gradually develop the same results there, though to a less obvious extent. We err in our judgment sometimes by overlooking the difference of sensibility in different structures. An acid may constringe the mouth and not affect the stomach at all. Even the acrid semi-mature persimmon evinces this diversity.

All vegetable matters that contain *tannin* have a constringing power more or less manifest. In their action on dead animal matter we have the clearest proof of this agency in the formation

of leather. In such cases the tannin combines with the gelatine of the dead matter, forming a solid insoluble compound, which resists the action of water and does not become putrid. Something analogous flows from the action of tannin on the living body, as is seen by mixing catechu and other astringents with fresh-drawn blood, coagulation being much more speedily induced than if astringents were not present. If catechu be injected into the veins of a dog, the blood is found coagulated in the heart and large vessels. These facts render it probable that astringents act on the living body very much as they do on dead matter. Yet we do not affirm that the action in both cases is precisely alike. We know, indeed, that some things called astringents display the constringing power, in virtue of a superadded quality, in part at least. Sugar of lead has far less obvious astringency than alum or persimmon, and yet it is decidedly superior for the arrest of hemorrhages.

It may be affirmed, as a general principle, that astringents operate as *excitants* or *stimulants*, yet we must always distinguish between *astringents* and *stimulants* and *tonics*, though some one article may seem to possess all these properties.

The agency of astringents in arresting hemorrhage cannot always be explained apart from their passage into the blood and on to the points of leison. In a frightful bleeding from the prostate gland large doses of Ruspini's styptic succeeded after all other means failed. The styptic was repeated twice, and the bleeding ceased entirely in half an hour. In like manner a few grains of sugar of lead have often put a stop to an alarming hemorrhage. In such cases, whatever may be due to the action on the nervous system, there can be no doubt that a salutary impression is made on the blood and blood-vessels.

In all true *profluvia* astringents are no doubt proper, excepting in those cases in which there is high arterial excitement and over fullness of the vessels. The previous use of the lancet or local depletion is obviously demanded by such a condition, which will frequently arrest the discharge and render astringents unnecessary. This distinction should ever be borne in mind.

ATROPA BELLADONNA. (See *Belladonna*.)

AURUM. *Gold.*—The preparations of gold were introduced originally as substitutes for mercurials in the treatment of *syphilis*, in the belief that they would be equally efficacious and yet avoid the unpleasant salivation induced by mercury. They are all highly poisonous, and hence the dose has always been very minute. The best, because the safest and the most easily taken, is the *ethereal* or *potable* gold, made by shaking a very strong watery solution of chloride of gold with an equal bulk of pure sulphuric ether. The ethereal solution collects on

the surface, while a heavier fixed liquid remains below. The lighter liquid is to be decanted and kept in opaque glass bottles, to guard against the action of light.

The chloride or muriate of gold is made by digesting fragments of gold in nitro-muriatic acid and evaporating to dryness with a gentle heat so as to drive off all excess of acid. The dose is from one-sixteenth to one-eighth of a grain in pill.

The *chloride of gold and soda* has been highly spoken of by the French. To make it, dissolve ninety-six grains of pure gold in nitro-muriatic acid, evaporate and crystallize. Then dissolve the crystals of gold so made in pure water, and add thirty grains of dried muriate of soda; evaporate and crystallize as before. The resulting compound is a double chloride, which, being quite deliquescent, should be kept in tight bottles of glass. It is employed in Paris and London thus:—

℞.—Chloride of gold and soda, gr. j;
White sugar, ʒss.
Mix, to make twelve powders, one of which to be taken twice or thrice a day.

The better plan is to put the powder on the tongue and rub it against the roof of the mouth until quite dissolved. Some discoloration takes place, but it soon disappears. *Chancres* are reported as yielding to this medicine in from eight to twelve days without any sort of local application. In the *New York Medical Repository*, vol. iv., new series, Dr. Delafield has given the result of its use in eighty-one cases of *syphilis*, and his report is favorable. He gave the medicine in pills containing one-sixteenth of a grain, and he rubbed into the gums from one-eighth to one-fourth of a grain, mixed with powder of liquorice-root, daily. Dr. Wendt, in *Rust's Magazine*, tells of eighteen cases of *dropsy*, consequential on intermittents, treated with the same medicine; of the number, seven were cured.

Hypertrophy of the tongue has been successfully treated by the same preparation. One-fifth of a grain was given in milk for a dose, and the tongue rubbed with a grain mixed with ʒss of lard. In a few days the tongue regained its natural size and appearance.

In *Rust's Magazine* we have an account of its exhibition by Dr. Jahn, of Menningen, in *diseases of the eye*. He particularizes *impetiginous*, *scrofulous*, *gouty*, *rheumatic*, and *simple chronic* inflammations, and also the *purulent ophthalmia of infants*. His usual mixture consisted of two grains dissolved in six ounces of pure water. A few drops were placed between the eyelids, and linen compresses moistened with the same laid over the eye. The practice is said to have been successful. This local treatment is hardly ever proper apart from the use of

remedies to correct constitutional disorder, especially as found in the stomach and bowels.

A strong solution of the chloride of gold is *escharotic*. For this purpose dissolve six grains in a drachm of nitro-muriatic acid and apply the solution on lint to the sore. The application is not painful.

AUSCULTATION.—This is not, in the common acceptation, an article of Materia Medica, but it is so closely interwoven with a wise system of Therapeutics as to claim the attention of all practitioners who expect to make accurate diagnoses in obscure cases. We do not hold to the omnipotence of this aid, as some seem to have done, and yet we are sure that some doubtful forms of disease can be more certainly defined by its help than by any other mode of research. Hundreds of blunders have been perpetrated by physicians, in points of judgment and practice, that might have been avoided by a little attention to this point. We name, by way of illustration, hydrothorax, the rational symptoms of which are not decisive proofs of its actual presence. If, however, we detect the special physical signs of that disease, we are no longer in doubt. Many persons have been treated for hydrothorax who never labored under that malady, and the error might have been averted by the timely aid of auscultation.

It does not matter whether we employ the naked ear or a stethoscope in exploring the chest or abdomen. Auscultation is the exploration by the ear in some way or other of the cavity or organ under inspection; and every case must determine whether the investigation shall be by *mediate* or *immediate* auscultation. The intention is to compare the actual sounds of the lungs or heart, or contents of the abdomen, with the natural and healthful sounds, and this comparison must necessarily be the result of careful observation in order to be accurate and of any practical value.

Percussion, which is usually made with the ends of two or three fingers on the chest or elsewhere, gives its monitions on the same general principles, and is essentially of the nature of auscultation. This, as well as the stethoscope, or even the use of the ear alone, will necessarily call for perfection in the organ of hearing. A deaf man, or one whose hearing is even dull, can derive no assistance from this means of investigation, and is compelled to base his judgment on the symptoms alone.

We feel it to be our duty to urge upon the young members of the profession the importance of much study of this subject. It will fill up many an otherwise vacant hour very profitably and pleasantly, while it will insure to them a valuable auxiliary in their future practical duties. They will never see the day when such an appropriation of leisure time will be regretted. They

may, as they grow in years, feel competent to decide on the evidence of symptoms only in most cases, yet now and then they will be compelled to test the powers of auscultation in doubtful cases, if competent to do so by previous study.

I know of nothing more satisfactory in the nature of diagnosis than the determination of the question of doubtful pregnancy. Many cases of this kind are invested with peculiar delicacy and call for great circumspection. The common signs of pregnancy may deceive, for various reasons that need not now be detailed. It may be impracticable to make a per vaginam examination. The abdomen is very large, and the lady protests that she is dropsical, and that pregnancy is an impossibility. Now, under such a state of doubt and uncertainty, the physician is called upon to give his opinion. If by any sort of stratagem he can be permitted to apply a stethoscope over the abdomen in several spots, covered by a sheet so as to avoid exposure, the mystery may be cleared up in a few minutes. If two sets of pulsations be detected, the one with sixty in a minute, the other with one hundred and thirty or one hundred and forty, the nature of the dropsy is disclosed, and the fact of pregnancy established. The natural pulsations of the mother's system and those of the fœtus in utero are infallible guides.

In a work like the present we cannot enter into details on the subject of auscultation. The reader will do well to consult the small work of Barth and Roget, which will give all needful information and abundantly qualify any intelligent man for this important part of professional duty.

Avenæ Farina. *Oatmeal.*—This is the basis of the best kind of gruel for invalids. It is a safe, pleasant, and sufficiently nutritive diet. To make it aright, the best article should be selected, the freshest and sweetest. A tablespoonful or two will make nearly a quart of gruel. Before boiling, the meal should be well rubbed with enough water to make a paste, so as to get rid of lumps. Then add the balance of the water and boil from ten to fifteen minutes, stirring frequently. A new, clean earthen vessel is preferable in preparing this article. Sugar and spice may be added, as may be agreeable.

This gruel is a good vehicle for administering medicine by the mouth, or by injection. To induce free and continued purging, add a half-ounce of Epsom salt to a quart of thin gruel and give a wineglassful every hour or two through the day. A decidedly sedative result will soon be obvious.

Baccæ Juniperi. (See *Juniper Berries.*)

Balsam.—We introduce this term to give the proper explanation, and for little more. It means any vegetable juice, liquid,

or otherwise, of a resinous nature, and containing more or less *benzoic acid*. The article *copaiba*, so often called *balsam copaiba*, does not contain benzoic acid, and is therefore not to be regarded as a balsam. Much of the unblushing quackery of the present day is emblazoned under the pompous name of *Somebody's* balsam, who perhaps never lived, or never heard of such a medley in his lifetime. Very few articles really entitled to the name of balsam have ever been known to the regular medical profession. We shall notice only one.

Balsam Tolu. *Tolu Balsam.*—The *myroxylon Peruiferum*, which yields the Peruvian balsam, is said also to yield also the *Tolu balsam*. Incisions made into the bark of the tree cause the juice to flow freely, and this, collected in mats, soon hardens and takes on a dark-brown color. In cold weather this balsam is quite brittle and may be pulverized. In warm weather it is soft, very tenacious, and adhesive. The odor is peculiarly grateful, though when burnt it emits a strong, disagreeable smell. Distilled with water it yields volatile oil and benzoic acid. Alcohol dissolves it entirely; but not a particle can be taken up even by boiling water, which, however, is strongly impregnated with the balsamic odor.

The balsam, tincture, and syrup are all possessed of *expectorant* qualities, and are usually called *stimulant* expectorants. In dry, chronic coughs, with no inflammatory action, twenty grains of the balsam may be given three times a day in pill, or in emulsion made with gum Arabic, or yolk of egg. A teaspoonful of the tincture is an adult dose, and may be repeated according to the urgency of the cough. This tincture is the basis of *Hill's balsam of honey*, which the common people used to gaze at as though it were enchanted, because mixture with water rendered the whole of a pure milk white. This change is a necessary effect of the addition of water to a resinous tincture. Two or three ounces of balsam Tolu and a quart of alcohol make a good tincture.

The compound tincture of benzoin, called sometimes *Friar's balsam*, contains balsam Tolu, and has long been esteemed a good application to wounds and ulcers.

The *syrup of Tolu* is made by boiling an ounce of the balsam in pure water and straining the mixture. A quart of water is usually employed, and it is impregnated with the odor of the balsam. To the liquor add two pounds of refined sugar, and simmer for fifteen minutes over a gentle fire. The dose is a tablespoonful often repeated. The syrup is also made by adding an ounce of the tincture to a pint of simple syrup.

The late Dr. Rush was very partial to a mixture of digitalis,

Tolu, and opium, in the coughs of old persons. The proportions were as follows:—

℞.—Tinct. digital.
—— opii, āā ʒi;
—— Tolu, ʒi.

Mix. The dose is a teaspoonful at bedtime in a little water, and occasionally through the day.

Turlington's balsam and *Hill's balsam of honey* were formerly regarded as among the very best medicines for the relief of severe colds. Both contain the balsam of Tolu in considerable quantities, as will be seen from the formulæ subjoined:—

Turlington's Balsam.

℞.—Gum benzoin, ʒxviij;
Storax, liq. ʒviij;
Bals. Tolu, ʒvi;
—— Peru, ʒij;
Pulv. aloes, ʒiv;
—— elemi, ʒiij;
Alcohol cong. ℔ij.

Add enough liquorice ball to give a dark color, and digest for ten days.

Hill's Balsam of Honey.

℞.—Gum opii, ʒi;
Bals. Tolu, ʒij;
Flor. benzoin, ℈ij;
Mellis opt. ʒiss;
Alcohol, ℔i.

Mix, and digest for a week or ten days.

Water added to a teaspoonful of either of these mixtures changes it into a milky liquid, and much of the supposed virtue of the medicine depends on this *wonderful* change.

Bark, Peruvian. (See *Cinchona*.)

Bathing.—This is a very copious theme, and vastly important to society. We have long felt that medical men were too reluctant to advise on this point, especially in reference to the young. And therefore we introduce our remarks by referring to bathing as practiced by the youth everywhere, in the hottest weather; going into the water half a dozen times a day, with a burning sun pouring his intensest rays on the unprotected head. Very much of the indisposition of young persons is induced by this very hurtful habit. To bathe every day, either early in the morning or late in the afternoon, will rarely injure any one, provided a single bath will satisfy. More than this cannot be necessary, and may do harm.

To men of business, harrassed and perplexed not only by pecuniary troubles but by the heat and dirt of a city, a bath at

night in water from 85° to 100° is very refreshing. From ten to fifteen minutes will suffice for this operation, which cleanses the surface and promotes a healthful equilibrium of all the organs.

In all *febrile diseases* tending to cerebral congestion, with pain and heat of the head, and especially after bleeding, provided arterial excitement be great, cold bathing to the scalp will prove very salutary and grateful. Ice in bladders to the head, and a hot foot-bath at the same time, will often give speedy relief. In *chorea*, *tetanus*, and *hysteria*, the cold-bath and the shower-bath are frequently of great value.

Many skin diseases are more certainly relieved by warm than by cold bathing. Water applied quite hot will frequently allay the most terrible pruritus, and the patient will soon fall asleep. In regard to local applications, as to the eye, the question of *hot* or *cold* must in some measure be regulated and decided by individual peculiarity or idiosyncrasy.

It has occurred to me that nothing better can be presented in the further notice of this subject than the following quotations from the work on diet and regimen by Dr. Robertson. The statements of the writer seem to be in close agreement with the dictates of common sense and the generally received principles of medical philosophy:—

"On the propriety of regular and frequent ablution as a means of cleanliness it is needless to enter fully. But a brief consideration of the physiological effects of water, whether applied to the surface of the body or taken into the stomach, may be useful.

"It will be necessary to premise my observations on the effects of water applied to the surface by some short account of the skin itself.

"The skin is to be regarded not only as a covering to the body, as a protection to the softer and more delicate and more sensitive structures placed beneath it, but as being also intended to subserve many other offices no less important, although some of these offices will possibly be now first made known to the reader. The skin is constantly performing the necessary function of expelling a considerable portion of the residue of nutrition and digestion. 'To man,' says Bichât, 'it is a sensitive limit placed on the boundaries of his soul, with which limit exterior forms incessantly come in contact to establish the connections of his animal life and thus bind his existence with that of all that surrounds him.'* Eminently a bad conductor of heat, it maintains the elevated temperature of the body by confining its heat,

* Bichât's "General Anatomy."

and prevents external heat and external cold from necessarily and at once destroying life. Protected by this power of resisting the passage of heat, life continues under the severest cold, and is able to endure with comparatively little inconvenience almost incredible elevations of temperature. Supplied with an enormous amount of nervous filaments to endow it with sensation, it not only acts as a sentinel against danger, as the mind's ready and most accurate informant on all points connected with external things, but it is a ready means by which the mind may be made to endure extreme suffering and the sensorial functions be materially and directly injured. It is a ready means by which the nervous system may be soothed, quietude and tranquil feelings brought back, and even cheerfulness and mental acuteness substituted for melancholy and mental torpor. Furnished with a vast amount of blood to supply to its own substance constant renewal, to supply its secreting organs, and to keep up the energy and healthiness of the nerves which are dependent on the supply of blood, the skin is to be looked upon as an important organ, by influencing which a very large quantity of blood may be suddenly thrown into the system, and there, in an incredibly short time, produce perhaps irreparable injury; as an organ, by attracting the blood, to which the internal organs may be relieved at once from a load of blood and enabled to resume the performance of those natural and necessary functions which it is their business to discharge and which that gorging of the vessels had interrupted. When it is considered that probably the extent of the skin in a man of ordinary size is not less than 2500 square inches,* we can scarcely wonder at any, however extravagant, estimate of the quantity of blood which it always, when healthy, contains; we can scarcely feel surprised if we are told that it contains more nervous matter than that which forms the brain or the spinal marrow.

"The skin, properly so called, is covered by a much thinner layer, called the cuticle, a layer which may with little impropriety be called inorganic; a structure which is destitute of nerves or blood-vessels, without feeling or sensation of any kind, and in fact without life. This structure is then intermediate between the body and external objects; it protects it from being irritated by contact with those objects without preventing it from feeling them. This is not renewed in the way that other parts of the body are, by absorption of the old and deposition of new particles, but by a constant deposition of small scales or powder, the particles of which adhering to the subjacent surface and to each other constitute the cuticle. By friction these are partly

* "The Principles of Physiology," &c. By Andrew Combe, M.D.

rubbed off, likewise by ablution. If neither rubbed nor washed, the deposition going on, these scales or particles accumulate and form a thick crust on the outer side of the cuticle, a fact of which any person who has neglected to wash his feet may readily satisfy himself.

"Under the cuticle, between it and the skin, is situated what is sometimes, but as it would seem erroneously, called a coat or layer, the rete mucosum, a net-work of vessels of excessive minuteness: a net-work which, according to Bichât, consists of two distinct sets of vessels; the one containing colorless fluids, which set supplies the exhalants, and consequently produces the perspiration; which, although usually filled with colorless fluids, may, by excitement of the heart's action, by exercise, or emotions, or passions, or by exciting the vascular action of the part by friction, be filled with red particles, with blood, as after running, as in blushing, &c.; and another set in which there is always a languid circulation of fluids, those fluids being of different colors in the different races of men,—black in the negro, white in the European, &c. Well, this delicate net-work, whose important effects I shall presently have to enlarge upon, is penetrated by papillæ, which come into contact with the cuticle and are the seat of touch—these papillæ arising from the skin—which, a highly vascular and nervous structure, flexible, elastic, and contractile, is loosely connected to the subjacent textures by cellular tissue; the interstices between those textures being more or less filled up with fatty matters, give roundness and smoothness and contour to the form.

"After this brief but perhaps sufficient notice of the structure and functions of the skin, I shall shortly notice the effect which temperature produces upon it.

"Warmth at first increases the action of the vessels of the skin, causing a more considerable efflux of perspirable matter; the skin is sensibly reddened; and if the heat is increased still further, inflammation, blistering, contraction, wrinkling of the tissue, and blackening with disorganization ensue.

"Cold at first stimulates the skin, reddening it; continued, the vessels contract, the rete mucosum no longer circulates its fluid, perspiration is no longer evolved, the skin becomes pale, and if the cold is increased in intensity loss of feeling and death of the part, if not of the individual, ensues.

"This supposes that the individual does not change his medium—that the skin is still surrounded with air. The effect of water is somewhat different. If the body is in a state of vigor and in full possession of its heat, the skin being unchilled, the effect of immersion in warm water is much the same as that from moderate heat applied in other ways, except that the breathing

is somewhat more laborious and that the skin more actively pours out its secretions. The effect of immersion in cold water under the same circumstances is at first a rapid chilling, varying in degree according to the powers of the system, the fullness or emptiness of the stomach, the previous heat of the body, and the temperature of the water. This, if all things are favorable, is speedily followed by a brisk reaction, the body rapidly regaining its temperature; and if now the person leaves the bath, before the heat has once again begun to diminish, and has his surface instantly protected with clothing, the consequent effects are a much-increased action of the vessels of the skin, and a relative increase of the amount of its secretions, and a relative increase of its temperature.

"This does not, however, include the whole difference between the effects of hot water and those of cold. The cold water not only clears the surface of its scurf and of its unctuosity as thoroughly as the hot water does, but it has this further effect, the vascular excitement into which the hot water throws the skin, and especially the rete mucosum, is readily and easily checked by cold air, or any depressing influence, acting either on the heart's action or on the skin itself; whereas, the vascular excitement into which cold water throws these textures is rather increased by cold air, is less liable to be materially or suddenly lessened by any depressing influence.

"I have said that the first effect of cold water on the skin is that of rapidly chilling it. Cold water acts on its vascular system as a direct sedative, checking its circulation and stopping its secretions, and throwing a large quantity of blood on the internal organs. If the water is not extraordinarily cold and the powers of the heart and arteries are in full vigor, they are roused by this sudden rush of blood into extraordinary exertion, and, driving the blood back again to the skin, cause the circulation to be resumed with even unwonted briskness; the warmth of the surface is restored, and reaction has taken place. This state of things will continue a longer or shorter time, according to circumstances, and then the heart and the arteries become no longer able to counteract the cooling effects of the cold water; they are overpowered, and, no longer able to dispose of the quantity of blood which the rapidly refrigerating powers of the water are constantly throwing back upon them, they become loaded with blood; their action becomes oppressed and less energetic; the skin is now once more chilled, its circulation is once again languid; shivering, loss of feeling, stupor, and, the cause still continuing, death ensues.

"I have said above that in order to the heart and arteries being able to repel the blood again to the skin, which the im-

mersion in cold water had thrown upon them, several conditions are necessary. I will now glance rapidly at each of these.

"1st. The water should not be extraordinarily cold: this must vary according to the circumstances presently to be mentioned; but, generally speaking, the temperature of the water should not be lower than sixty degrees. The heat of the body being generally about ninety-six degrees, a bath, even at the temperature of eighty degrees, will usually at first feel somewhat cold to the bather. But it must not be forgotten that, provided speedy reaction does come on, and provided there is no organ or function in such a state as to be injured by the influx of blood, the colder the water, within certain bounds, the greater and more genial, and more beneficial, will be the reaction.

"2d. As to the length of time a person should remain immersed. The colder the water the shorter time should the immersion continue. It is seldom prudent to remain longer in a cold bath than ten or fifteen minutes. The invalid should hardly continue in it so long as that.

"3d. The effect will vary according to the degree of energy with which the heart and arteries are acting at the time. There cannot be a more dangerous nor more imprudent practice than cold bathing while the body is fatigued, no matter how, whether from excessive muscular action, or from heat; whether it be the consequence of high mental excitement, or of long-continued mental exertion, or loss of sleep, or however else brought about. The heart and arteries acting languidly—the cutaneous circulation being therefore feeble, it requires very little cold, or other depressing cause, to load unduly the heart and arteries, having already almost more to do than they can perform without inconvenience; and in this case there is either no reaction or the reaction is only partial. Long-continued shiverings, great prostration of strength succeed, followed perhaps by local determinations of blood, or by a generally disordered state of the system, inflammatory affections, &c. I will illustrate this by the often-quoted case of the late Dr. Currie, as recorded by himself in his wonder-working book, the *Medical Reports*. The case will most probably be unknown to the reader.

" 'On the first of September, 1778, two students of medicine at Edinburgh set out on foot on a journey, a considerable part of which lay along one of the rivers of Scotland.* They started by sunrise, and proceeded with alacrity in the cool of the morning. At the end of eight miles they breakfasted, rested for an hour, and then resumed their journey. The day grew warm as it advanced, and after a march of eight miles more they arrived,

* The Tweed. The journey was from Edinburgh to Moffat.

heated but not fatigued, on the banks of the river above-mentioned about eleven in the forenoon. Urged by the fervor of the day and tempted by the beauty of the stream, they stripped instantly and threw themselves into the river. The utmost refreshment followed; and when they retired to the neighboring inn this was succeeded by a disposition to sleep, which they indulged. In the afternoon they proceeded, and traveling sixteen miles farther at a single stretch, arrived at the inn, where they were to sleep, a little after sunset. The afternoon had been warm and they perspired profusely; but the evening was temperate and rather cool. They had traveled for some miles slowly, and arrived at the end of their journey stiffened and wearied with their exercise.

"'The refreshment which they had experienced in the morning from bathing, however, induced one of them to repeat the experiment, and he went perfectly cool into the same river, expecting to relax his limbs in the water and afterward to enjoy profound sleep. The consequences were very different. The Tweed, which was so refreshing in the morning, now felt extremely cold, and he left the water hastily. No genial glow succeeded, but a feverish chill remained for some time, with small, frequent pulse, and flying pains over the body. Warm liquids and frictions brought on at length considerable heat, and toward morning perspiration and sleep followed. Next day about noon they proceeded on foot, but the traveler who had bathed was extremely feeble; and though they had to perform a journey of a single stage only, as some part of it was difficult and mountainous, he was obliged to take the assistance of a carriage which overtook them on the road. It was several days before he recovered his usual vigor. This relation will not, I hope, be deemed of the less authority because it is given by the person who suffered by his imprudence.'

"4th. The effect of immersion in cold water will vary according to the heat of the skin, to the vigor with which the cutaneous circulation is going on at the time. The hotter the skin the greater the vigor of the circulation, the more safe is cold bathing. But it must be especially remarked that this supposes the heat to be caused not merely by the sun's rays, or any similar external heating cause, but to be partially produced, and such as might be almost accounted for, by the energetic action of the heart and arteries. In fact, the hotter the surface of the body under such circumstances the quicker the reaction. It is, therefore, not well to stand any long time after undressing before plunging into the water.* Such a practice chills the

* Currie's "Medical Reports."

body very much more, and in many cases renders bathing, which would be otherwise profitable and advantageous, absolutely unsafe.

"5th. The effect of immersion in cold water will vary according to the fullness or emptiness of the stomach; according to the period of digestion; according to the facility of digestion. It has been remarked elsewhere that the stomach during digestion, and particularly during the first stages of digestion, is supplied with a very large quantity of blood. Bearing this in mind, let the reader think of what must necessarily be the effect of either warm or cold bathing while the stomach is in that state; and more especially if the quantity of blood sent to the stomach is barely sufficient for the purpose of digestion; more particularly if the action of the stomach is weak or disordered. The quantity of blood either directly or remotely directed to the skin by either warm or cold bathing would lead the reader naturally to preconceive that a more or less severe fit of indigestion would follow. But this is not the only risk which attends the practice of cold bathing under such circumstances: so large a quantity of blood being directed to the stomach the whole energies of the heart and arteries are not at immediate command; the skin is chilled, and the blood thrown on the great vessels; these are unprepared to devote all their powers to the restoration of the circulation in the skin; diverted by the demands of the stomach and those of the skin, both duties are but partially performed, unless the powers of the system are very great and quite unimpaired; and not only are the functions of the stomach interrupted, but reaction is not immediate, and much risk is run of causing a disordered condition of the whole vascular system and local and perhaps serious disease.

"6th. The effect of immersion in cold water will vary according to the state of the mind. The influence of the mind on all the functions of the body, and particularly on the heart, are well known to be great. The palpitation which attends excitement of the mind; the blush which accompanies a sense of shame; the pallor of the skin, and shiverings which attend fear; the local determinations of blood, as apoplexy, &c., which so often follow violent passions or severe mental exercise, are all demonstrations of this fact. If the mind is languid, debilitated, worn out, lethargic, desponding, the bodily functions are almost always disordered in their action, and the use of the cold bath will most commonly be attended with risk; it will not be followed by instantaneous and necessary reaction. The hot bath, in cases of this kind, by determining a large quantity of blood to the skin, and so relieving the brain and the greater masses of the nervous system from a large amount of blood, is to be preferred in many

such cases, and, as a means of temporary relief, is, in many of them, infinitely better than the major part of the remedies to which the student and the melancholic too commonly fly.

"Of the value of muscular exercise and friction of the skin while the person is bathing too much can hardly be said. Swimming calls into action almost every muscle of the body, and hence it is valuable as a kind of exercise; but when it is considered how much this must assist the heart and arteries in circulating the blood, and so lessening the risk of irregular distribution—internal congestion—of the blood, or of unduly diminishing the circulation of the blood in the vessels of the skin, and, by thus equalizing the distribution of the blood, how efficient must be its action in preventing depression of the vital powers, its value will be more fully appreciated. In the ordinary baths, however, swimming is impossible, and its place should, as far as possible, be supplied by constant, and, if not specially contra-indicated, even violent exercise of the muscles of the trunk and extremities, while the individual remains in the water. In the warm bath even this can hardly be done, and frictions, and the nearest imitation of that important remedial measure, shampooing, should be made use of. A vigorous use of the flesh-brush, and *kneading* the muscles well with the fingers, will commonly be found to be useful adjuncts to the warm bath.

"A description of what shampooing is will, perhaps, better enable the reader to imitate the process. Such an imitation will not be comparable to what shampooing is when scientifically performed by a second person; yet it will not be valueless. The following, decidedly the best that I have met with, is taken from a treatise on the vapor-bath, 'By F. Gilney, M.D., London, 1824.' It is after the use of the vapor-bath that the practice is most commonly had recourse to.

"'After exposure to the bath, while the body is yet warm from the effects of the vapor, the shampooman proceeds, according to the circumstances of the case, from gentle friction, gradually increased to pressure, along the fleshy and tendinous parts of the limb; he kneads and grasps the muscle repeatedly, presses with the points of his fingers along its course, and then follows friction in a greater or less degree, alternating one with the other, while the hand is smeared with a medicated oil in the specific influence of which the operator has considerable confidence. This process is continued for a shorter or longer space of time, and, according to circumstances, is either succeeded or preceded by an extension of the capsular ligament of each joint, from the larger to the smaller, causing each to crack so as to be distinctly heard; which also succeeds from the process being extended to each connecting ligament of the vertebræ of the

back and loins. The sensation at the moment is far from agreeable, but is succeeded by effects not dissimilar to what arises from brisk electrical sparks taken from the joints in quick succession.

"'This operation upon the articulations of the limbs is much less frequently repeated than the other parts of the process of shampooing, and in its effects on disease must be considered as generally unnecessary and often mischievous; but this should not be said of friction, from which, by ancient usage as well as modern experience, we are instructed how much can be derived when practiced with judgment and patient perseverance.'

"Many persons, it is well known, are much benefited by an occasional use of the warm bath just before getting into bed at night, and the practice is not, under these circumstances, followed by any inconvenience; but if they use the warm bath at any other time, it is followed by a sense of chillness, and is not unattended with danger. This is attributable to two distinct but co-operating causes. 1st. The oleaginous secretion that is on the surface of the skin is removed by the bath. 2d. The cutaneous vessels are much excited by the heat of the water, and that excitement is often followed, especially if the system be weak, by corresponding exhaustion and depression, and during that state the circulation of the blood in the skin is easily checked by contact with the cold air; the blood is thus thrown upon the internal organs, and congestive or inflammatory disorders of those organs often ensue. It is then well, under such, and indeed under all ordinary circumstances, to use the hot bath at bedtime in preference to using it at any other period; for the bed and bed-clothes defend the surface from the cold air until the oleaginous secretion has again been poured out, and until the excitement that the heat has produced has gone off, and the corresponding and resulting depression has likewise departed, and a natural and proper degree of vigor and activity of the cutaneous circulation has returned.

"I have hitherto only considered the effects of *total* immersion in *pure* water. These effects may be and are considerably varied by additions to the water of salines, &c.; by only part of the body being immersed; and by the water being merely applied to the body, either poured over it or the body being sponged with it.

"1st. The effect which the addition of salt to the water produces is very decided, probably by its stimulating effects by irritating the skin; but at all events, in some way or other, it assists the reaction. In other words, a system which would be depressed by immersion in merely cold water, in which reaction would not come on after such a bath, would be only momentarily

depressed by immersion in salt and water, reaction coming on almost immediately thereafter. Hence many of the weak and invalided can bathe in sea-water, but cannot bathe in fresh-water. Hence, in cases of dyspepsia and debility, it is usually advisable to add salt to the water: about half a stone of common salt to the ordinary sized bath may perhaps be considered to be an average quantity.

"2d. If only part of the body is immersed. In this case the chilling is not so great. But except as a means of ablution, partial bathing is not, under ordinary circumstances, of much service.

"3d. If the water is merely applied to the body. The shower-bath seems to chill even more than the plunge-bath, but the reaction takes place much quicker; and therefore in some cases it is to be preferred. The shower-bath is a convenient mode of bathing, one readily introduced into a house, one in which, as I have just said, reaction soon follows; but it is certainly not comparable, as a remedial agent, to bathing by immersion, and should in very few and rarely occurring cases be preferred to it. Even in cases of head-affection, to which, of all kinds of cases, the shower-bath is generally thought to be best adapted, if the precaution were taken of dipping the head in cold water, and wetting it thoroughly before entering the bath and frequently while in it, the plunge-bath is, I think, almost always the better.

"There are few customs so conducive to health as sponging the surface of the body all over with cold water every day. From this the chill, unless at first, or unless the system is debilitated, is trifling, the reaction instantaneous, and the benefit, I am satisfied, not to be credited until after trial. I have said that the skin is constantly secreting a fluid called perspiration; but besides this it is always covering itself over, when the system is in a state of moderate health, with an unctuous or oily secretion, probably as a means of preserving its elasticity and softness and of rendering it a still worse conductor of heat. Now this unctuous secretion is not, like the perspiration, soluble in the air, but it remains on the skin, and, mixing with the exfoliated scales, or particles of the cuticle, forms a crust over the skin, a crust partially, but only very partially, removed by the movement of the limbs and body or by change of clothes. This crust not only irritates more or less, giving rise to many indescribable and perhaps highly injurious and certainly very annoying feelings of uneasiness and discomfort, but it actually interferes with the proper and adequate exercise of the functions of the skin. Sponging the surface removes these unctuous and scaly particles, frees the skin from sources of irritation and in-

cumbrance, and enables its functions to be discharged without impediment. If this were the whole advantage which attends the practice it is probable that enough would have been said to make every thinking reader adopt it; but this is not all the good which the regular use of cold water, as an external application, involves. No matter how used, whether by sponging, or the shower-bath, or immersion, cold water excites the action of the vessels of the skin, gives them tone, enables them to resist the influence of the ordinary vicissitudes of the weather, and thus wards off disease to a very remarkable extent.

"If sponging with cold water alone produces too great a chilling of the surface, is not followed by brisk and speedy reaction, vinegar, or better still, salt, may be added to the water in the proportion of one part of vinegar to three or four parts of water, or a pound and a half of salt to the gallon of water.* If even this is not followed by quick reaction, if the system does not readily recover its warmth, a little warm water may be added at first, gradually adding less and less warm water to it until it is brought down to cold.

"Another practical fact must be mentioned. The skin is covered over with an oily secretion, which subserves many important ends, not one of the least of which is to increase the non-conducting powers of the skin in defending the body from the effects of an elevated temperature, and in checking the evolution of its heat when it is placed in a temperature lower than its own. One necessary effect of sponging the surface is to remove this oily secretion, and the skin is therefore not so protected until the oily matter is again evolved in sufficient quantity to cover its surface. This, if the man is in perfect health and in full possession of his powers, takes place in a very brief space of time; but if the person is out of health, his secretions irregular, and his system debilitated, it will probably be several hours before it is accomplished. Under such circumstances the sponging should be used only at night, just before or even after getting into bed, for the body is then protected by the bed and bed-clothes from the influence of the cold air, and in the morning the skin is once more covered with the oily secretion and once again prepared to come into contact with the cold air without risk.

"While on this subject, I will just allude to the practice in which many unthinkingly indulge of washing themselves, par-

* I am in the habit of ordering four or five pounds of salt to be dissolved in a bucketful of water, and placed in the bed-room or dressing-room, and this to be changed once or twice a week. This will be found to be often enough, and the convenience is much greater than making every day a fresh solution of salt.

ticularly during the winter months, in warm water. There are few habits which so predispose the system to suffer from the effects of cold. I have traced many cases of frequent sore-throat to this practice alone, and their recurrence has been prevented by simply washing the face and neck with cold instead of warm water.

"Friction alone is generally a useful and advisable and energetic means of giving vigor, activity, and tone to the vessels of the skin. The flesh-brush furnishes us with the best means of using the remedy; and a remedy it is in many cases of lingering disease, or protracted convalescence, or where, as in spinal cases, muscular exercise is not to be obtained. As an adjunct to bathing, the shower-bath, or sponging with cold water, friction is invaluable; every bather ought invariably to resort to it as a means of accelerating the reaction and increasing it in degree: the towel with which he dries his skin can hardly be too rough."*

BEBEERINE. *Laurus Bebeerus.*—Sir Andrew Halliday, in his work on the West Indies, speaks of this tree as far superior to any of the cinchonas for the cure of intermittents and remittents. He names Mr. Rodie, a naval surgeon, who resided in British Guiana, and who made the preparation called *bebeerine*, and which he regarded as fully equal to the sulphate of quinine.

The bark and seeds of the bebeeru tree contain two alkaline bodies, called *bebeerine* and *sisseerine*, from the Indian and Dutch names of the tree; and the sulphate contains both of these bases.

Dr. Watt, of West Demarara, found from a scruple to half a drachm of the salt sufficient for a common *intermittent*. He sent some to a medical friend in North America, who cured a patient with nine grains. Dr. Blair, of the Seaman's Hospital, tried it in place of quinine in *yellow fever*, and found it to answer well in many cases, but came to the conclusion that it was inferior to the salts of quinine.

Some who have tried it a good deal affirm that it is preferable to sulphate of quinine, as it does not induce that unpleasant ring-

* As the warm bath is very generally employed in *asphyxia*, and especially in the case of new-born infants, it is proper to refer here to the sage remarks of Dr. Marshall Hall on this subject.

He says, the warm bath, by accelerating the circulation and increasing the carbonic acid, poisons the system positively; and by excluding the depoisoning process, is negatively poisonous also. It interferes with all proper efforts to restore or promote circulation and warmth. Very aptly does he refer to the history of the *Grotto del Cane*, in which the plunging of a dog into the dense carbonic acid so as to asphyxiate the animal has a prominent place. The dog, on being taken out, apparently dead, is plunged, not into a *warm* bath, but into the water of an adjoining lake, and he is restored at once.—*London Lancet*, Dec. 20, 1856.

ing of the ears nor the nervous uneàsiness so often complained of as caused by the salt of bark.

It is important for medical men to bear in mind the facts as they are presented, for it is quite possible that the supply of sulphate of quinine may at no very distant day be exceedingly uncertain.

For the severest *diarrhœa*, the sulphate of bebeerine is held to be *almost a specific* by Mr. Mathews, of Manchester, England. In half an hour he has seen a patient pass from intolerable anguish to perfect ease, under this treatment. He gives at first a pill containing two grains of calomel and half a grain of opium, and sometimes applies a sinapism to the navel. Then the following:—

℞.—Sulph bebeerine, grs. xij;
Acid, sulph.,
Ether, do., āā gtts. xij;
Aq. cinnamon. ℥vi.

Mix. Give an ounce every four hours.—*Dublin Hospital Gazette*, Sept. 1854.

Beef, Essence of.—This was a favorite article of diet with the late Dr. Parrish, of Philadelphia, and it is often a very useful thing. To make it, take a pound of good beef, free of fat, cut into small bits, and put it in a porter bottle furnished with a cork, which must be kept in loosely. The bottle is to be placed in a kettle of water and kept there until the water has been boiling at least half an hour. As the ebullition goes on the cork may be made a little more secure, to prevent the contents of the bottle from escaping. The juices of the beef are thus forced from the fibre and collect in the bottle, constituting the essence. This is to be seasoned as may be most agreeable. It is exceedingly nutritious, and has the advantage of containing much nutriment in a very small bulk.

Beef Tea.—This is sometimes confounded with the *essence*. It is a much weaker preparation in point of nutritious qualities, and yet often found useful. It is made by boiling beef without fatty portions in a given quantity of water, so as to impart to the latter the taste and the nutritive quality of the flesh. Even if a pound be boiled in a quart of water, and for the space of an hour, the fluid will be far below the essence as a means of nutrition. It is taken in larger quantities however, and, with grated crackers or toasted bread, makes a pleasant kind of soup. It should be seasoned as may be most agreeable and proper.

Belladonna. *Atropa Belladonna. Deadly Nightshade.* The leaves and berries. *Atropa*, from *Atrophos*, one of the fates; *belladonna*, a beautiful lady.—Either the leaves or berries will induce delirium, stupor, dilatation of the pupil, convulsions, efflorescence of the skin, and death if taken in large quantities.

It sometimes happens, from peculiarity of constitution, that an ordinary dose will bring on alarming symptoms and compel us to lay the medicine aside. And, owing also to some unknown constitutional state, or possibly to some defect in the article, forty-six grains of the extract have been exhibited at one dose without serious injury. There was a general scarlet redness of the surface, with dilatation of the pupils, but prompt treatment prevented a fatal issue.

The *Journal de Chimie Médicale* for 1839, reports the case of a man who recovered after having accidentally taken two and a half drachms of the extract. He became drowsy, agitated, and delirious. His tongue was very red and dry, pulse one hundred and twenty, face injected, eyes suffused, pupils dilated to the maximum. The delirium increased so that six persons could scarcely hold him. He was bled freely, and vomited with tartar emetic. Acidulated drinks were given, clysters employed, and a little ether administered. Leeches were placed on the epigastrium, and the warm bath resorted to. The recovery was rapid. In the *London Lancet* for February 2, 1839, mention is made of recovery after nearly an ounce of extract had been swallowed. The particulars are not given. We presume that the extract had been spoiled in the preparation and therefore lost its power.

In *Buchanan's History of Scotland*, it is said that the invading army of Sweno was destroyed by the Scots with the juice of belladonna berries mixed with wine, with which they supplied the Danes during a truce. High intoxication followed, and the Scots, taking advantage of it, fell on them and nearly exterminated the whole. It is also matter of history that one hundred and fifty soldiers were poisoned by the berries, which they ignorantly gathered near Dresden. And young children, unaware of the nature of the article, have often been poisoned in the same way.

Koestler, in the *Medicinische Jahrbucher*, reports the symptoms in a family poisoned by eating more or less freely of the berries. The family consisted of the father, two sons, and two daughters. The youngest children ate the most, and in them the effects were most striking. They became restless and delirious. Their ravings were on lively subjects only. They experienced loss of vision, extreme dilatation and immobility of the pupils, spasms of the face, great heat in the œsophagus, difficulty in swallowing, high excitement of the genitals, and involuntary discharge of urine. Frequent bending forward of the trunk of the body, and constant motion of the hands and fingers, (symptoms noticed by some writers,) were not seen in these cases.

But cases of fatal issue from eating the berries are very nume-

rous; and if the one sometimes cited, in which a pound was swallowed, be founded in truth, there must have been something peculiar about it to protect the system from the poisonous influence. The man might have taken a large dose of laudanum or some other narcotic; or he might have swallowed a portion of tartar emetic, so that the berries would have acted as an antagonist force, and thus the system might have escaped unhurt.

In some cases so much of the poison has been swallowed as to paralyze the stomach and render it necessary to administer prompt emetics. These should be given immediately, or the stomach-pump should be resorted to. After the poison is ejected vinegar and water should be administered, to restore the lost tone of the stomach. An Italian, Dr. Chiovitti, has announced the flowers of zinc as an antidote. He gave it to a favorite horse accidentally poisoned with a half-ounce of belladonna. Three ounces of the antidote were given, and in twelve hours the horse was well.

To test the quality of the leaves or the extract we must ascertain its effect on the eye. An infusion, made of a drachm of the leaves added to a half-pint of boiling water, should induce dilatation of the pupil of several hours' duration simply by dropping it between the lids and covering the eye with a pledget soaked in it for fifteen minutes. The extract, softened into a thin paste with warm water and rubbed over both eyelids, should have the same effect in the same length of time, or, at furthest, in half an hour. It is important to know by these means what is the quality of the medicine before we attempt to put its *preventive power, in reference to scarlatina*, to the test. If the article be good for nothing, of course no sane man would censure belladonna for a failure. Now in making the extract it happens that, from a desire to finish the operation speedily, too much heat is applied, and in place of mere evaporation of the strong decoction the inspissated matter is actually burnt, decomposed, ruined. It is not difficult to prepare a good extract. All we have to do is to make the strongest possible decoction of the leaves, and gradually to evaporate the filtered solution to a paste. This will become sufficiently dry for use spontaneously. Made thus, the extract has a yellowish-brown color, smells like the plant, and is soluble in alcohol and water. One grain dissolved in a drachm of cold water will make a mixture strong enough to dilate the pupil if a few drops be made to fall between the lids. The vision will be confused for twenty-four hours.

Such an article it was, doubtless, that Hahnemann first employed to prevent attacks of *scarlatina*, a power which I believe the medicine in its genuine state really possesses. And I am forced to conclude that the rejection of the preventive, uncon-

ditionally, by some physicians who profess to have tried it, must be ascribed to the fact that an inferior or inert article was tried. That a good extract will set up a state of the skin resembling true scarlatina is certain, and, added to this, we generally find dilatation of the pupil as a concomitant.

Hahnemann first published on this subject, in 1801. The next writer of any note was Dusterling, who announced his experience in 1820; his paper appeared in *Hufeland's Journal*. Scarlatina was then prevalent in Gusterlop, Germany, as an epidemic; and he gave daily, to all the children who had never had the disease, from ten to twenty drops of a solution made by dissolving three grains of the extract in a half-ounce of cinnamon or canella-water. All who took this medicine for one week escaped the disease, while the rest suffered. In 1829, Dr. Oppenheim gave the belladonna to the troops and citizens of two adjacent villages in Germany. He mixed thirty-six grains of the extract with one pound of softened liquorice ball, and gave ten grains of the mixture to each adult morning and night. The success was great, beyond expectation, for only twelve out of twelve hundred thus treated took the disease. The extract was given in an aromatic water to one hundred and sixty children in a Prussian asylum about the same time with similar success. Dr. Maclure published his experience in the *London Medical Gazette* for 1838. He succeeded completely, but says that the preventive does not always induce scarlet efflorescence nor dilatation, even when it prevents an attack of the epidemic. He gave twenty drops every night of a solution made by adding eight grains to an ounce of dill-water. This dose was probably for adults.

In *Valenciennes*, in 1846, four hundred children were treated with the belladonna to save them from scarlatina, then prevailing as an epidemic in the vicinity. All escaped, although only six had any efflorescence, and in one hundred and forty-five there was no apparent local manifestation of any kind.

Dr. Newbigging has recently tested the preventive powers of belladonna in a public institution, where seclusion had failed to arrest the spread of the disease. He gave the extract in doses of a sixth of a grain with marked success.—*Edinburgh Monthly Journal*, September, 1849.

Bell's *Bulletin of Medical Sciences* for February, 1846, contains American testimony equally satisfactory; and I add, that I have employed the extract with such decidedly *preventive* efficacy that it would be folly or madness to doubt. Again and again have I prescribed the aromatic solution, and have not only gained the desired result, so far as the *prevention* was concerned, but have allayed the perturbation of nervous mothers effectually by exciting their confidence and enlisting their fixed attention to

its careful administration. This alone is worth all the trouble of the prescription.

The practice I prefer is this:—supposing the children to be four or five in number and to vary from eighteen months to seven or eight years of age, a mixture of three or four grains to the ounce of cinnamon-water is directed to be given three times a day to each child, in doses of from half a teaspoonful up to a teaspoon and a half. This course is pursued for a week, and the medicine is then intermitted for two or three days, and then resumed as before. I have never yet seen any untoward results from this administration. Children like the dose, the parents are gratified, and the end is gained.

Hahnemann at one time gave forty drops in seventy-two hours of a solution of which one drop contained a millionth part of a grain of the extract of belladonna, as a preventive of scarlatina. Would not a candidate for graduation richly earn a diploma by figuring out the precise quantity of extract taken by the patient every hour and weighing out each dose?

While the journals everywhere contain very high encomiums on these alleged prophylactic powers, it is but just to add that many physicians have no confidence whatever in the statements. We have; and are sure, at all events, that no mischief can result from a wise trial.

Several English, German, and American writers speak favorably of the extract of belladonna in the treatment of *pertussis*. To a child eight years old an eighth of a grain dissolved in a little syrup or cinnamon-water is given every four hours. This dose may be increased to a fourth of a grain, if need be, with safety. The coughing spells are lessened in number, and their violence is abated. The medicine usually sets up a slight efflorescence, with some fever, and suffusion if not dilatation of the eye, a little headache, and perhaps dimness of vision. Indeed, these symptoms have sometimes predominated for a time so as wholly to suspend the spasmodic cough.

In 1784, Dr. Buchhave, of Copenhagen, published his experience in the use of belladonna in *hooping-cough*. He employed the powdered root, and found it to induce efflorescence of the surface, dilatation of the pupil, &c., and to shorten the disease very obviously. This practice most probably led to the use of the extract for the same end.

The powder and infusion of the leaves, as well as the extract, have long been employed in *epilepsy*, *chorea*, and *mania*, and in all the *neuroses*. But at present few physicians resort to the medicine in either of these diseases.

The extract of belladonna has acquired some repute in the management of *incontinence of urine*, especially in a hospital

for sick children in London. Children laboring under the infirmity from the day of birth have been relieved and cured by the use of small doses persisted in for the space of two or three months. To a child eight years old an eighth of a grain was given at first, night and morning, and the dose was gradually enlarged to a sixth of a grain.—*British Med. Journal*, March, 1857.

Inhalations of the vapors emitted by a strong decoction of the leaves of belladonna have been successfully tried in *asthma*. The *Gazette Médicale* for December, 1834, has some interesting facts in this relation. Two drachms of the leaves were boiled for ten minutes in a pint of water, and the inhalations made while the fluid was hot and continued as long as the patient could bear. It is added that the inhalations were specially suited to *dry* asthma, with convulsive cough, and that it is necessary to increase the strength of the decoction so as to have a half-ounce of the leaves in a pint. Of eleven patients nine were cured and the others much relieved.

The *external medication* is often very important. The ointment of the leaves, made by gently stewing a drachm of the fresh article in an ounce of hog's lard, is an admirable application to the perineum for the relief of *chordee*, and is often very soothing to *irritable ulcers*. A softened extract made into a plaster has been applied over the region of the heart to allay *palpitation*, with excellent effect; and the same has also been laid over the perineum, to relieve the bladder in a state of irritation, with prompt effect. The extract should be spread on soft leather and renewed every few hours.

Dr. Hall, of Scotland, has published some very interesting remarks on the agency of extract of belladonna in allaying inflammation and pain. He thinks it has special power to arrest inflammation. He gives the case of an inflammation and enlargement of the testicle from a wound, accompanied with severe pain, in which the usual remedies failed. The parts were coated with a strong solution of the extract, or rather a paste. He made the application with a soft brush, and found that a single trial gave obvious relief, the pain and swelling being much abated. Under three applications made in the course of three days the parts regained their natural appearance. Dr. Hall says he has often tried this plan in cases of *erysipelas* and *orchitis*, or inflammation of the testicle and spermatic cord.

The softened extract is also very useful in many cases of *neuralgia* and *rheumatism* of a strictly local nature.

The following account of the use of extract of belladonna was given to the *Academy of Sciences* in Paris, in April, 1853, by

M. Poggiale, who read a memoir on the subject. He called the disease *sciatic neuralgia*. The formula is as follows:—

Extract of belladonna,	5 parts;
Hydrochlor. morphia,	1 part;
Simple ointment,	16 parts;
Lard macerated with stramonium leaves,	1 part;
Essence of lavender,	30 drops;

Mix intimately, and apply by gentle and prolonged friction.

Ten cases were cured, all having been remarkable for their long duration, failure of previous remedies, and the rapidity and perfection of recovery under this treatment.

The paste of the extract alone, applied to a raw blistered spot on the spinal column, has given prompt relief.—*London Lancet*, 1850, vol. ii. p. 263.

In December, 1856, Dr. Goolden published an article on the use of extract of belladonna to arrest the secretion of milk; and another paper, in confirmation, has been given by Mr. Burrows, of Liverpool, in a foreign journal for March, 1857.

The extract, reduced to a soft paste, was painted over the areola around the nipple pretty thickly, and in thirty-six hours after the breast was cool, pale, and placid, the knots much softened and lessened in size. The painting was repeated, and in three and a half days after the first application the knots could scarcely be felt. The secretion was also satisfactorily checked.

Dr. Willey, of St. Paul, Minnesota, has published some cases in the *Cincinnati Medical Observer* for April, 1857, confirming the above account of the use of belladonna extract.

One of the most striking results of the use of the softened extract is in the treatment of *delirium tremens*. A blister having been applied to the upper portion of the spinal column, and the cuticle removed, the softened extract is applied to the raw surface. The effect is very speedily to quiet the patient, and ultimately to put him to sleep. Sometimes the counter-irritation is severe, and it is necessary to remove the plaster for a few minutes. The reapplication insures a return of quietude and even sound sleep.

I have no doubt that a similar use of the extract would be an excellent auxiliary to the best modes now in use for the treatment of *tetanus* and *hydrophobia*.

The proximate principle of belladonna is called *atropia* or *atropine*, containing all the power of the plant in a concentrated form. It is extracted by digesting the leaves in diluted sulphuric acid, after which potash is added to detach the acid and throw down the atropine. This is collected on a filter and well washed and dried. The dose is from one-sixteenth to one-fourth of a grain, and it is regarded as a direct *sedative* and eminently *poisonous*.

Belladonna may be administered so as to prove *stimulant*, *narcotic*, *diaphoretic*, *diuretic*, *rubefacient*, and *counter-irritant*.

Benne Plant. *Sesamum Orientale.*—The seeds, leaves, and oil are used. It has been known for many centuries, and esteemed for its remedial qualities. Though a native of India, it has been cultivated in the West Indies and in this country, where it grows and thrives. It is an annual plant, bearing reddish-white flowers, and yielding an abundance of oleaginous seeds, which constitute an article of food in some places. The seeds yield an oil by expression, which is a good substitute for sweet oil.

The leaves contain a good deal of mucilaginous matter, readily extracted by water, and so furnish a mild demulcent drink, highly esteemed for the relief of catarrhs, bowel affections, and irritation of the urinary organs. For a time the summer-complaints of children were treated largely with this article, and it still retains its popularity to a certain extent. Two or three leaves placed in a half-pint tumbler of water will soon make the desired mucilaginous drink. If the leaves be green cold water will answer; if dry hot water is better. Being a very bland article it may be taken without limit. The demulcent quality is well suited to allay irritations of the eyes, bladder, skin, &c.

The seeds can be had in any of our seed-stores, and should be sown in good soil in April or early in May, and the plants should be set out a foot apart when they reach the height of four inches.

Bignonia Ophthalmica. *Eye-root or vine. Akuserunee*, &c. &c.—The juice of this plant is reported by Dr. Chisholm, of Grenada, as a remedy long employed by the Indians for inflamed eyes. A single drop of the juice pressed into the eye affords obvious relief, and a repetition on three or four succeeding days completes the cure. It is named as a very peculiar circumstance, that the moment the drop of juice is placed in the eye the patient has a sweetish taste on the tongue. (See *Med. Commentaries*, vol. x.) I know nothing of this plant from any personal observation, but think it may be entitled to consideration.

Bismuth.—This metal has a silvery lustre and color and a foliated texture, melting at 460°, with a specific gravity of 9.5. In its metallic state it is wholly inert; and the only preparation having medicinal properties is the *white oxide*, called *dinitrate* and *trisnitrate*, the latter indicating its real composition, viz., three equivalents of oxide of bismuth to one of nitric acid. Dissolve an ounce of pure bismuth in an ounce and a half of nitric acid, to which six ounces of water have been previously added. The solution is next to be filtered, and three pints of distilled water added to the clear liquid. In this process the trisnitrate is thrown down as a white powder, which must be collected on a filter, washed with pure water, and dried. The pow-

der thus obtained is of a dull white, is inodorous, tasteless, nearly insoluble in water, easily soluble in nitric acid, changed to a gray color by exposure to light, and of course should be kept excluded from the light as much as possible.

This preparation has the property of arresting secretion by virtue of its *astringency*. But it has been chiefly used for the relief of painful affections of the stomach, as *gastrodynia*, when it is supposed to act as a *sedative*, although some regard it as *tonic* and *antispasmodic*. Some thirty-five years ago this medicine excited a good deal of interest in the profession. Then *dyspepsia* was the great medical hobby, and everybody was looking to remedies suited to its cure. Dr. Moore, of New England, wrote a thesis on the use of the white oxide of bismuth in dyspepsia, and lauded its powers very highly. He found that it improved the digestive organs, invigorated the appetite, and soothed the gastric pains. Hence he came to the conclusion that it possessed *tonic* and *sedative* properties. The best form of exhibition was found to be in pills made with soft bread or dough. The dose was four grains three times a day, gradually increased to twelve or fifteen. If it occasioned obvious gastric uneasiness, a soothing dose of opium was added. Very large portions induced gastric distress, giddiness, cramps, &c. There is at least one case of fatal *poisoning* on record, induced by two drachms swallowed by mistake at once, death occurring on the ninth day.

The old-fashioned doses of this article sink into utter insignificance when contrasted with the bold prescriptions of M. Monneret, who has given the results of his experience in *Gazette Médicale* for June, 1849.

In various forms of *diarrhœa*, in *cholerine*, the usual precursor of Asiatic cholera, in *gastralagia* and *vomiting*, he gives it most liberally. So large are the quantities named in his prescriptions that the apothecaries hesitate to put them up. "From whatever cause pain manifests itself during digestion," says Dr. M., "we may relieve it by mixing the sub-nitrate freely with the articles of food." He has never given less than two or three drachms daily, nor more than *twenty*. He declares that he never saw any inconvenience to follow these doses, and that he gives it to children in his hospital by tablespoonfuls, without observing nicer exactitude, so innocuous does he regard it.

We are not prepared to deny the truth of these statements, but really it does seem to us that such wholesale administration looks very like an argument in favor of the poetry of homœopathy.

Prof. Caizergues, of Montpelier, administered the remedy in more moderate doses, combined with extract of belladonna. Thus:

℞.—Sub. nit. bismuth, 160 grs;
Ext. bellad. 16 grs.

Mix, to make forty pills, two of which to be taken night and morning.

Pereira says he has derived advantage from the white oxide in the form of ointment to *ulcers of the septum nasi*, and to some cutaneous diseases. For this end he added a drachm of the powder to an ounce of spermaceti ointment. Hahnemann advised two or three grains of the powder to be dropped into the cavity of a decayed tooth as a remedy for the *toothache*.

It is well to know that after the internal use of this powder for a very short time the stools are very much altered in color, assuming almost a black appearance, owing to the chemical action of the sulphuretted hydrogen gas in the bowels. This gas, contained in a bladder, has been designedly brought in contact with the oxide on the cheeks of ladies, employed as a cosmetic, with a like result. The hue instantly changed to black.

Touching the poisonous action of the white oxide of bismuth, we have to say there is no antidote. All that can be done is to empty the stomach speedily, and then to give emollient or mucilaginous drinks freely. If inflammation of the stomach supervene, leeches must be applied to the epigastrium, and the antiphlogistic treatment pursued.

Bitter Apple. (See *Colocynth.*)

Bittera Febrifuga.—The practitioners of Martinique have sent to Europe very favorable accounts of the febrifuge virtues of a plant found there, to which the name *bittera febrifuga* has been given. It is popularly known at Martinique as the *bitter ash*. The active principles reside in a bitter resinoid and in a substance styled *bitterine*, analogous if not identical with *quassine*, obtained from the quassia amara.

The plant is given in powder, infusion, and extract, and the bitterine itself in pills. M. Delioux has, as yet, tried only the extract made into pills, of which he gives from one to fifteen grains during the pyrexia. This practitioner holds the new article to be inferior to the salts of quinine, but superior to arsenical preparations. Its intense bitterness makes it repulsive. —*Med. Times and Gazette*, April, 1857.

Blackberry. (See *Rubus trivialis.*)

Black Drop. (See *Opium.*)

Black Lint.—In a recent paper in the *London Lancet* for June, 1850, Mr. Higginbotham gives a formula for what he calls *black lint*, an article employed by him in the treatment of large *ulcers*. It is as follows:—

Nitrate of silver, two drachms;
Distilled water, four ounces.
Mix, and make a solution.

Saturate an ounce of fine lint in the solution, expose it in a flat, shallow vessel, and thus let it dry by evaporation. The

ulcer is to be covered with a piece of the black lint so prepared, and over this is to be laid a plaster of *neutral* ointment, consisting of lead plaster, eight ounces; sweet oil, eight ounces; prepared chalk, four ounces; distilled vinegar, eight ounces; all thoroughly incorporated so as to make a homogeneous mass. These are confined by means of compress and bandage, and require to be renewed only every third or fourth day. The salutary action of the nitrate of silver is constant, and hence more effective than when applied once in a day. We think the expedient worthy of particular notice. It has been resorted to for the arrest of bleeding from leech-bites, in burns and scalds, erysipelas, &c. &c.

BLISTERING-POINT. (See *Cantharides.*)

BLOOD-LETTING. *Venesection, arteriotomy, cupping, leeching.* —*General* bleeding includes venesection and arteriotomy, while *local* bleeding is performed by cups and leeches.

The *primary* or *direct* effect of blood-letting is *sedative.* It reduces the actual quantity of the vital fluids, and abstracts a portion of the vital power directly. Sometimes the sedative effect is very transient, and high reaction ensues, with a bounding pulse and general glow of the system. So great is this reaction often that free depletion is needful to subdue the pulse to the natural state. During life and in tolerable health the blood-vessels have a certain state of tension by which the force of the system is kept up. Blood-letting usually diminishes that tension, and relaxation and debility ensue. Under such circumstances the effect of detracting blood is decidedly sedative.

The train of symptoms attending loss of blood is pretty uniform. After a certain quantity is drawn a slight amount of dizziness is felt; singing in the ears; loss of consciousness; respiration more or less hurried; pulse enfeebled; face becomes pale and moist with perspiration, and there is some sickness of stomach. This combination of effects indicates impairment of the functions of the brain by reason of abstraction of its natural and needful stimulus; and, as an immediate consequence of this state of things, respiration suffers more or less. The enfeebled action of the heart and arteries results from defect in quantity of the blood and want of proper change in the lungs.

The constitutional effect of the detraction of blood depends much on the mode and circumstances under which it is done. If the orifice is very small the blood dribbles away, and a long time is required to get a few ounces; and hence no impression is made on the disease. If the operation is performed when the patient is standing or sitting, and from a large orifice, so that the blood is drawn rapidly, the system is promptly impressed, even though a large quantity be not abstracted. The tension of the vessels is

quickly subdued; so suddenly often that time is not allowed to adapt themselves to the change. For the same reason arteriotomy induces syncope sooner than venesection. The practical application is obvious. If you wish in a short space of time to induce syncope, and thus secure a prompt impression, bleed from an artery, or from a vein with a large orifice, and in the erect posture. I shall never forget the first time I witnessed the effect of bleeding a patient while on his feet. A raving maniac in the Pennsylvania Hospital was bled in both arms under these circum stances. Before twenty ounces of blood had escaped big drops of perspiration began to fall, the face became pale, and the man fell. He was calm and subdued. Four times as much blood taken in the horizontal position would have failed to do as much.

Arteriotomy is not often resorted to excepting in very urgent cases, as *apoplexy*, *phrenitis*, &c. It enables us to make a more direct and permanent impression on a violent disease of a very important organ than we can induce by venesection.

There are some circumstances related to the operation of blood-letting that claim particular notice. As a general rule you can bleed with more safety between the ages of eighteen and forty-five than at other periods. We do not mean to say that infants, young children, and old persons, should never be bled; by no means. In grave diseases of the brain or lungs we may resort to this remedy no matter what the age may be. Yet I am well satisfied, from a good deal of observation, that patients have often been bled needlessly at all ages. In my early medical career I bled almost everybody for almost every complaint. The remedy was prompt, and often did good undoubtedly. As I became more and more occupied, and in a country location, too, it was found that time could not be spared for the performance of the operation, and to economize time the lancet was less frequently employed. Other means were tried, and with equal success, and hence blood-letting fell into comparative disuse. Still, however, it is a valuable remedy, but calls for discretion.

In all doubtful cases the young practitioner as soon as he opens a vein should place his finger on the pulse to watch the effect. If it flag evidently, the orifice should be closed. If it rise and expand in volume, let the stream flow till you are satisfied the remedy has done its work. The *oppressed* pulse is directly opposed to a pulse *depressed*. The former will rise as you bleed, while the latter will rapidly sink.

The *irritable* pulse is often very embarrassing. Often, too, it is an artificial result, and the doctor has no one to blame for it but himself. He has bled and bled again because he erred in regard to the pulse, and he has only augmented the existing irritability. He fancied there was tension when careful observation

would have discovered nothing but debility. Mild tonics and good diet meet the case far better than the lancet, and sometimes active stimulants are called for. This is often true in the debility induced by uterine hemorrhage, as all experienced practitioners know.

It is not my purpose to name the forms of disease in which blood-letting is proper and even demanded. But it seems to be right to notice the experience of distinguished physicians touching the effect of this remedy in *Asiatic cholera*, as that fatal disease may again desolate our country. There has been much diversity of opinion as to the value of bleeding in this disease, and we desire to impress on all minds the truth that even cholera may be so modified by place and circumstances as that the same remedy shall succeed and fail in different places. We see these opposite results in respect to yellow fever and other diseases, and it should not excite our wonder. It is very certain that some of our own physicians have had remarkable success in the use of the lancet in cholera, and the failure of others to find the same result cannot nullify the positive testimony on this subject.

The following article, taken from the *New York Journal of Commerce* of January, 1849, contains important testimony, which merits attention.

"Extracts from a letter from Dr. Evan to Dr. Jubres, dated Sevoor, (in the Deckan,) August, 1818:—

"'As the cholera is still prevalent here, I think it may be acceptable to you to learn how matters are going on, and particularly as I have it now in my power to afford you the most convincing proof of the decided superiority of bleeding in European subjects. Since the 21st of last month, when the disease appeared in his majesty's 65th regiment, to the 10th of this month inclusive, one hundred cases of the disease have been admitted into the hospital. Of that number eighty-eight were bled freely on their admission, and only two have died; while of the remaining twelve who were not bled no less than eight have fallen a sacrifice to the disease. This simple statement speaks volumes. In the first two days, Dr. Burrell, the surgeon of the 65th regiment, did not employ the lancet, but speedily found out the inefficiency of the common treatment. Of the twelve patients who were not bled, the greatest part were admitted on the first and second day, and about three or four since, with such symptoms of sinking as did not appear to him to render bleeding advisable. He now laments extremely that the scarecrow of imaginary debility should have deterred him from employing the only remedy which could have promised a successful result, as the appearances on dissection have but too well proved the necessity of such treatment.'

"Again Dr. Evan adds:—'Dr. Moyles's practice in the Horse Artillery, and Dr. Campbell's in the 17th Dragoons, prove equally illustrative of the good effects of depletion.' Again: 'The irritable and susceptible fibre of the natives of India will well account for the greater rapidity with which symptoms of exhaustion take place, and therefore there is the greater necessity for checking the disease in the very bud, if the patient can be had at this early stage. Dr. Burrell's lancet has done this with great success. He has bled all the native patients belonging to the regiment, and the cases have been at least as numerous as those of Europeans, and exactly with the same result. But he gets them while there is yet a little vitality in the pulse and surface; and however short this stage may be, it is a certain one, and the cure almost as certain. Upon the whole, this is his rule:—

"'In all cases where the stomach and bowels are affected, or when there are any spasms, even though the pulse is obscure and the extremities cold, open a vein and draw blood till an abatement or relief is procured. But in many cases it is necessary to bleed once and again, particularly if the spasms are violent, or the breathing oppressed, or the head affected. There can be no doubt that death in many cases takes place rapidly from the spasms extending to the large blood-vessels and heart itself. Such cases must exhibit an almost instantaneous appearance of sinking and debility; but as in this case the powers of life are oppressed and not exhausted, I am confident that taking blood would remove the alarming symptoms.'

"Dr. Coates, another eminent surgeon in the East India Company's service, on the Bombay establishment, writes as follows, about the same date as the last letter:—

"'The symptoms you are already well acquainted with, and these symptoms were followed in every case that did well, after an interval of from twelve to twenty-four hours, with a feverish reaction; that is, the skin became hot, the face flushed, and the pulse quicker and rather full. It does not appear to me that there is any necessity for such large doses as twenty grains of calomel. The laudanum and opium should not be pushed further than to stop the vomiting and purging, and to allay the cramps and pains. It soon occurred to me that the small, oppressed pulse could not proceed from debility, but must arise from temporary interruption of the flow of the blood through the heart. I therefore had early recourse to bleeding, and with the most marked good effects. In one case, that of a robust young man named Mapel, now belonging to the auxiliary horse, there was extreme suffering. He was quite frantic with pain, and there seemed even to be some delirium. A large dose of laudanum and calomel produced no relief. But when thirty ounces of

blood were taken from him he was immediately relieved and fell asleep.'

"The grounds upon which Dr. Jubres based his practice are briefly stated by him as follows:—

"Without at all adverting to the origin or immediate exciting cause of this very formidable disease, it must be quite evident to every common observer that if the blood which now fills the vessels and warms the extremities should from any cause be withdrawn from them that blood must be somewhere in the system. It has not been withdrawn. It is not annihilated. It is not now in the superficial veins, for they are collapsed. The pulses at the wrist have ceased to beat, or beat very languidly, and, in short, the swollen appearance of the hands and the feet at once bespeak the abstraction of the vital fluid from all these parts. It must be quite evident, then, that some of the internal vessels must contain a very undue proportion of blood, and dissections have proved this to be the case in the most satisfactory manner. What, then, I would ask, are the inferences which such theory and such facts oblige us to draw? Surely in the first place to relieve the congestion of the internal vessels by copious bleeding, and in the next place to stimulate the heat and the vital powers into action. There is nothing more immediately stimulating to the internal system than heat, and hence the hot bath is strongly indicated, and my own practice substantiates the truth of this theory.

"From what I have said above it will naturally be inferred that I should try the effect of blood-letting and the hot bath alone. The first case of cholera which occurred here, however, so strikingly exemplifies the advantages of bleeding and the hot bath, after calomel and opium had been given without any apparent effect, that I will shortly detail it.

"A native soldier of the detachment which escorted a State prisoner from the Deckan to that garrison, was the first person seized with the disease. He was attacked about 7 A.M. and was sent to the hospital about 9 A.M., when my assistants had already given him twelve grains of calomel and forty drops of laudanum with peppermint. I saw him about half an hour after he had taken this dose. He still complained of great pain about the scrobiculus cordis, and generally over the whole abdomen. He bent forward with pain, his hands and feet were cold, with strong tendency to cramps in his legs, and there was a general restlessness and anxiety about him. He had vomited some calomel in fluid; his pulse was very slow and oppressive, only forty-five in a minute; he had not vomited since taking the calomel and opium, but as it had not afforded him the least relief, and the dose appeared smaller than had been usually

administered, I immediately gave him five grains more of calomel and twenty drops of laudanum, making altogether seventeen grains of calomel and sixty drops of laudanum, with a proportion of ammonia and peppermint. Hot fomentations were applied as early as possible, and I ordered a hot bath to be prepared for him. It was as hot as he could bear it; and after he had been in it for a few minutes (at eleven o'clock, A.M., the bath was 112°) the pain in the stomach and abdomen had left him and he felt much relieved. His pulse was now full and strong, and 110 a minute, but intermitting irregularly. Notwithstanding the pain about the scrobiculus cordis had ceased, there was still a strong tendency to cramps in his legs. I bled him while in the bath to thirty ounces. The pulse no longer intermitted, and the tendency to cramps was quite removed. He felt, he said, quite free from pain. He was now put to bed and covered with blankets. One P.M., a general glow of heat upon the skin, which was moist; but as he complained of some little pain about the scrobiculus cordis, forty drops of laudanum were repeated. Five P.M., feels quite well; but having had no discharge from the bowels I gave him a purging draught, which completely relieved him. It is worthy of remark, perhaps, that no relief was in this case obtained from the calomel and opium, though it had been taken two hours and a half, and he was relieved in considerably less than ten minutes after he had been in the hot bath, and the tendency to cramps which still remained in his legs, as also the intermission of the pulse, were quite removed by bleeding.

"As I am of opinion that cases illustrate facts in the clearest point of view, I cannot deny myself the pleasure of relating one case of the prevailing epidemic which was cured by bleeding and the hot bath alone, and, so far as I know, it is the first case that has been so cured.

"A middle-aged man was attacked by the disease about two P.M. He walked with great difficulty to the hospital, supported by two of the nurses. He complained of excruciating burning pain about the scrobiculus cordis. He was bent double with pain, but he had not yet vomited or purged. His pulse was small and rather frequent, and the disease appeared to be making rapid strides. A hot bath was immediately prepared, and he was placed in it without delay. It was as hot as could be borne, and indeed it was some little time before he could bear it to be applied to his body. Measured by a thermometer it was 114°. The bath alone reduced the pain considerably about the epigastric region, but not immediately. I opened a vein while he was yet in the bath, and the orifice being large the blood flowed very rapidly. I allowed it to do so till the burning pain about the scrobiculus cordis had entirely ceased. At the time about twenty-six ounces of blood

had been abstracted. Taking him out of the bath he could scarcely be supported to a bed within five paces of it, when he fell senseless upon it. It was, indeed, a most complete fainting fit. He was covered with blankets, and I gave him a few drops of ammonia; but it was some little time before he recovered his perfect warmth. In five hours he was so perfectly recovered that he left the hospital and went home, contrary to my advice and without my knowledge. I have seen this man repeatedly since, and he has not had the slightest return of pain."

The use of the lancet, cups, and leeches, was once very fashionable and successful, too, in *pneumonia;* but the times have changed, and practice too. Yet we discover that Dr. Addison has been bold enough, despite the objections urged by the sympathizers with homœopathy, to resort to the old way in Guy's Hospital. He bled his patient to twelve ounces, gave him calomel and tartar emetic every six hours, with arrow-root for diet. The patient was cured.

Blood Root. (See *Sanguinaria.*)

Blue Mass. } (See *Hydrargyrum.*)
Blue Ointment. }

Boneset. (See *Eupatorium Perfoliatum.*)

Bread Pills. *Pilulæ Panis.*—The philosophy of the use of bread pills as a remedy is more complex than some may imagine. The prescription is an exceedingly simple thing in itself considered, and owes its success not so much to any inherent medical property as to the effect induced on the mind of the patient by the contingencies of the case. In other words, we accomplish good results with bread pills by inspiring the patient with *confidence* in the means, and by our wisdom in the device. His confidence is essential to salutary results. Without it, we prescribe in vain.

The following case, which occurred during my pupilage, may serve as an illustration. A female consulted my preceptor (a worthy member of the Society of Friends) in relation to a disease of long standing. It was plainly a hypochondriacal affection, protracted and made worse by her sedentary habits. There was no evidence of organic disease in the system, and the good lady pretty clearly stated the case by announcing her desire to have something prescribed that would *settle her nerves.*

The doctor listened to a long story with a pretty large measure of the patience of Job, but very soon decided what was to be done. He whispered in my ear to get some soft bread and make a box of forty pills, well scented with the oil of anise, and the suggestion was promptly carried out. With the box in his hand, the physician thus addressed the patient: "My friend, I think my student has made thee some pills that will be of great benefit,

if taken according to my directions. Hast thou a clock or a watch at home?" The lady gave a negative reply. "Thou canst borrow a watch of a neighbor, perhaps?" "Yes, I think I can," was the rejoinder. "Well, then," said the doctor, "precisely at nine, twelve, and three o'clock in the day, three of these pills must be taken. Mind and be particular to the minute, or I cannot give thee any encouragement. Everything now will depend on thyself. Do as I direct, and call when the box is empty and let us know the result." The patient's whole mind was concentrated on a single point—her confidence in the doctor was full and complete. She retired under the deep conviction that the doctor had fully analyzed her case, and that the pills would cure her.

After the lapse of some days the patient was again at the office, and could scarcely find words to express her gratitude to the doctor. She declared that she had been improving every day since she began to use the pills, and now felt better than for ten years past. The box was renewed once or twice, and the recovery was complete.

The expedient in the case named was every way justifiable, and it can be employed in similar cases with the most perfect honesty. There are hundreds of persons in every large community who are wretched for years, imagining the presence in their systems of various diseases that the most accurate diagnosis cannot detect. The brain and nervous system are more implicated than any other portion of the economy, and the remedies addressed to that system, though powerless as articles of Materia Medica, often achieve valuable results.

BROMINE. *Brome.*—A simple or elementary substance resembling in some respects chlorine and iodine. It is obtained from the hydrobromate of potash found in sea-water. As the word imports, the article is exceedingly fetid. It is a reddish-brown dense liquid, emitting suffocating fumes.

Both the simple substance bromine and the compound hydrobromate of potash have been employed in medical practice, though not extensively. Dr. Pourche gives some account of it in the *Journal de Chimie Médicale* of 1828, having tried it in *scrofula*, *goitre*, &c. He found that scrofulous tumors were dissipated by friction with an ointment of the hydrobromate of potash, or by poultices containing the aqueous solution of brome. In *scrofulous enlargement of the testicle* the same practice succeeded, aided by the internal use of bromine. One part of brome to fifteen parts of water will give a proper solution. The dose is five drops in a little sweetened water, gradually increased.

Bromine in any form acts on the glandular and absorbent system as does iodine. It is also *rubefacient*, and leaves a stain

on the skin like that of chlorine and iodine. Sea-water is no doubt dependent on hydrobromate of potash for some of its good effects.

Dr. Glover has published an article in the *Edinburgh Medical and Surgical Journal* for July, 1842, in which he says:—"The tonic and diuretic effects of bromine and its compounds were experienced by a syphilitic patient who took the medicine." He also affirms that frictions of bromine induce an erythematous affection, preceded by a prickly sensation.

The best antidote for the poison of bromine is starch, liberally administered in watery solution.

BRUCIA. *Brucine.*—This is a vegetable alkaloid found in the angustura bark, in St. Ignatius bean, nux vomica, &c. It is very acrid and bitter, soluble in cold and yet more so in hot alcohol. Nitric acid strikes a red color with brucia, which is changed to violet by adding proto-muriate of tin. It has the properties usually ascribed to strychnine, and possesses one-sixth of the strength of the latter. The dose is a quarter-grain five or six times per day, made into pill with crumb of bread or syrup of acacia. Brichteneau and others prefer it because it may be safely given in much larger doses than strychnia. It has been administered successfully in bad cases of lead palsy. Beginning with one-third of a grain, it may be gradually augmented to twelve grains in a day.—*Bulletin de Therap.*, January, 1851.

BURDOCK. (See *Arctium Lappæ.*)

BUTTERNUT. (See *Juglans Cathartica.*)

BUCHU. *Buku. Diosma Crenata.* The leaves.—This plant is an evergreen, and a native of the Cape of Good Hope. The word *buchu* is peculiar to the Hottentots, and has been variously spelled.

An inexperienced eye might mistake the buchu for senna, from which it differs chiefly in its odor. It has a strong, diffusive, rather disagreeable smell, and a bitterish taste. The chief therapeutic property is that of a *diuretic.* It sometimes acts as a tonic, improving digestion by virtue of its slight bitterness. Carpenter, of Philadelphia, prepared a compound syrup which has been employed a good deal in *gleets* and *gonorrhœas.* But any one can readily make the infusion or decoction of any desired strength, and the clear liquid can easily be converted into syrup; and, if desirable, cubebs can be added. A half-ounce of the leaves added to a pint of boiling water will give the ordinary infusion. The dose is an ounce, repeated every three or four hours.

Some of the medical journals report favorably of the use of buchu for the relief of *irritable bladder*, especially in old persons. Mr. Coulson, who has written ably on this subject, found nothing

so efficacious as buchu infusion persisted in for several weeks. The editor of the *Medico-Chirurgical Review* testified to its salutary action. Dr. M'Dowell, in the *Dublin Medical Transactions*, praises the infusion for cases of irritable bladder, with enlarged prostate, depending on badly-managed gonorrhœa too hastily cured by astringent injections.

I have prescribed buchu advantageously in *gleets*, and regard it as worthy the attention of medical men. A strong syrup, made as already indicated, should be freely taken, so as to exert a decidedly diuretic effect.

Burgundy Pitch. (See *Abies Excelsa.*)

Cajeputi Oleum. *Oil of Cajeput.*—The *melaleuca cajeputi* is the plant yielding this oil. *Kyapootie* is the original native word employed in Amboyna and Borneo, where the shrub grows abundantly. By distillation the leaves yield a greenish oil, and that is its appearance as we receive it from abroad. Some have fancied that the color is derived from the copper flasks in which it is placed for exportation. But there is not a trace of copper in it, the tinge being really caused by chlorophylle, or the green coloring principle of vegetable matter.

This oil has a very agreeable odor, and its taste is pungent. It is lighter than water, and soluble in alcohol if not adulterated with turpentine. It is volatile.

In Bengal the oil of cajeput has long been employed in the management of *Asiatic cholera*, in doses of from twenty to fifty drops every half-hour, given in a wineglassful of warm water, until the spasms cease. In this country the oil has been administered in connection with anodynes in the same disease. What the American theory of the *modus operandi* is I know not; but the Bengalese doctors tell us that the pestilence is caused by a worm in the alimentary canal, which they are pleased to call the *cholera worm*, and that the oil kills the worm and so cures the patient. In plain language, they hold the remedy to be powerfully *anthelmintic;* and whether they are right or wrong in this, no matter, if the medicine will really kill the worm and so arrest the cholera.

The immediate effect on the stomach and bowels is to excite a very perceptible glow, subsequent to which the circulation is accelerated and perspiration induced.

During the period of my pupilage the oil of cajeput was a very popular medicine in *chronic rheumatism*. It was taken in doses varying from five to twenty drops, gradually increased, and repeated several times a day. The effect was often perceptible in the diaphoresis set up, and which generally gave relief. Sometimes it was rubbed into the pained part morning and night, so as to operate as a *rubefacient* and *counter-irritant*.

Its *stimulant* and *antispasmodic* properties have been recognized in its favorable action when given for the relief of *spasmodic colic* and *nervous affections* generally. Rubbed smartly on the temples it has often relieved *headache*. For external uses it may be employed alone or mixed with a little sweet oil.

CALCIS AQUA. (See *Calx.*)

CALOMEL. (See *Hydrargyrum.*)

CALUMBO. *Calumba. Calumbo. Calumb.*—The sliced root of the *cocculus palmatus*. It is said to be a native of Columbo, in Ceylon, though it comes also from Mozambique, on the eastern coast of Africa, where it is called *calumb*.

The root is round, and hence that is the form of the slices which come to us in bags or sacks. These slices are said to be concave on both sides; but this is not uniform, and therefore is not, as some have said, a test of purity. The evident shrinking of the slices in drying depends on the spongy quality of the interior portion. The best pieces have a bright color and are perfectly sound and very bitter, slightly pungent and aromatic.

Brande very correctly affirms that the *aqueous infusion* is the best mode of exhibition, yet he gives the usual formula for the *tincture*, viz., an ounce of the bruised root to a pint of brandy. The infusion should be prepared only as it is needed, as it is liable to ferment in hot weather. To prepare it macerate two drachms of the bruised root in a half-pint of boiling water for an hour or two, and strain. The operation is best conducted in a covered earthen vessel, and a little ginger or cloves will improve the infusion for most purposes.

The aromatic infusion just named is often an excellent medicine in *diarrhœa* and *dyspepsia*, and subsequently to the usual treatment of *cholera morbus*. We may add, when desirable, any of the alkalies or the acids, or the saline aperients or solutions of iron. If inflammation be wholly absent, this infusion will speedily allay irritation of the stomach and bowels, and a chief advantage is that it does not constipate. It is also highly beneficial in the troublesome *sick stomach of early pregnancy*, especially if a little calcined magnesia be taken occasionally, to neutralize acid in the stomach. In the debility consequent on *infantile diarrhœa* much advantage is derived from the infusion as follows:—

℞.—Infusion of calumbo, (fresh,)
Mint-water, each six drachms;
Carbonate of soda, a scruple.

Mix, and give a teaspoonful every two hours to a child from eighteen months to three years old.

The *flatulence* and *heartburn* of gouty persons, who have a

red deposit in the urine, is relieved by a like prescription, increasing the dose to suit the age.

The *tonic* powers of calumbo are undoubted. Alone, in the dose of from five to twenty grains three times a day, or with the rust of iron and some aromatic, it accomplishes much in the restoration of a system debilitated by disease. The *tonic powders*, as they are usually called, are prepared thus:—

R.—Carbonate of iron,
Powder of calumbo, each a drachm;
——— of ginger, half a drachm.

Mix, and divide into twelve powders, one to be taken three times a day in water or syrup.

Very delicate females, or others with weak stomachs, may use, in addition to the powders, an infusion made with cold water, as a common drink. Three or four slices of the root steeped in cold water all night will make the liquid sufficiently bitter.

It is stated that the aqueous infusion of *true* calumbo strikes a beautiful blue-black with tincture of iodine, and does not change the color of a solution of the sulphate of iron. Thus it is distinguished from the *false* or *spurious* calumbo.

Calumbine has been announced as the proximate principle of calumbo, prepared by digesting the root in sulphuric ether, filtering and evaporating. It possesses all the bitterness of the root, but is an unimportant article.

Calx. *Lime.—Oxide of Calcium*, formerly called an *alkaline earth.*—Pure lime, or *quicklime*, is lime free of carbonic acid. The process of lime-burning acts so as to free limestone of its carbonic acid and present the lime in its pure or separate state, being still, however, an oxide of calcium. Oyster-shells exposed to a high temperature give the same result. Pure lime is *caustic.* If accidentally blown into the eyes in very fine powder it excites severe inflammation. In this way laborers working at the building of houses are often injured. The best remedy in such cases is the injection of sweet oil between the eyelids. The lime joins the oil and forms a bland liniment, which acts pleasantly on the inflamed mucous membrane.

The following prescription is given by Gilbert in the *London Lancet* for August, 1843, as well suited to relieve the itching of *porrigo*, &c.:—

Take of quicklime two drachms;
Carbonate of soda,
Laudanum, each half a drachm;
Lard, an ounce.

Mix well, and apply at bedtime, after washing with milk and water or soapsuds.

Aqua calcis, or *lime-water*, is frequently a very useful article.

It is made by adding a half-pound of fresh-made lime to twelve pints of water. The mixture, set aside for a few hours, presents a solution of the lime to as great an extent as the water can take up. If ten times more lime were employed the water would hold no more in solution. The clear liquor is to be poured off and kept in well-stopped bottles, to exclude the air entirely. If left exposed it absorbs carbonic acid from the air, which unites with the lime, forming an insoluble carbonate, which falls to the bottom. Very long exposed, every trace of lime would be lost to the solution, and, of course, it would cease to be lime-water.

Lime-water is *antacid*, and hence much employed by *dyspeptics*. The usual dose is a tablespoonful with as much new milk, which improves the taste. Some suppose that lime-water acts in such cases, not by its antacid quality simply, but also as a feeble *tonic* and *astringent*.

For the removal of *uric* or *lithic acid deposits* in the urine lime-water is also exhibited largely. Many regard magnesia as preferable; but, in my judgment, it is better to alternate all the antacids than to give any one persistently, as all act, evidently, by neutralizing excess of acid, whatever else they may do.

Lime-water has been found useful in various *affections of the skin*, either alone or mixed with calomel or corrosive sublimate. The *black mercurial wash* is formed by the action of calomel on lime-water; the *aqua phagedenica*, or *yellow wash*, by dissolving corrosive sublimate in lime-water. These additions to lime-water are of variable strength, to suit individual cases.

Injections of lime-water alone have been salutary in *herpetic eruptions* of the lining membrane of the nose. I knew a very obstinate case cured by injecting lime-water daily for three or four weeks. In *leucorrhœa* it has been employed in the same way.

Linimentum calcis, or *lime liniment*, is a very pleasant application to *burns* and *scalds*. I know of nothing more grateful to such a state of the surface. To any quantity of lime-water add sweet or linseed oil until a soap is formed, shaking well all the while. This direction is better than the usual statement of *quantities*, which must always vary with the purity of the lime-water. The liniment can be applied by a feather, or spread on a soft thin cloth. It should be renewed two or three times a day, or oftener. If the liniment be well made and kept in a bottle with a good glass-stopper, it will retain its desirable qualities for any length of time.

Carbonate of Lime. Creta Preparata. Prepared oyster-shells. Prepared crab's claws. Common chalk.—These several articles are, chemically, nothing more nor less than carbonate of lime. The *prepared chalk* (creta ppt.) is kept in all the drug stores,

and answers well the ordinary purposes of an *antacid*. The fine powder is also called *absorbent*. The antacid dose is from ten to forty grains. It is insipid, inodorous, and nearly insoluble in water.

The most agreeable form of administration of prepared chalk is the *chalk* or *cretaceous julep*. It is well suited to *diarrhœa*, accompanied as it often is by an acid state of the stomach and bowels. There is some danger of accumulation of the chalk in the alimentary canal, which should always be borne in mind, and obviated by giving an occasional cathartic. The julep is thus prepared:—

Take of prepared chalk,
White sugar, each half an ounce;
Powdered gum Arabic, an ounce;
Cinnamon-water, a pint.

Rub the solids well together, and then gradually add the water, triturating the whole.

The bottle should be well shaken before the dose is given, as the chalk tends to subside to the bottom. If there be much pain, from one to three grains of sulphate of morphia may be added. The adult dose is a tablespoonful every hour or every two hours.

The above quantity of the cretaceous julep is too large to be prepared at once in warm weather, as it is liable to ferment unless kept in a cold place.

Chloride of lime is an article of more recent date than the carbonate, but is extensively employed. It is, chemically, a chloride of an oxide, or chlorine combined with lime, or oxide of calcium. It is made by passing chlorine gas freely into diluted slacked lime. The strength of the chloride depends on the quantity of chlorine gas it contains. The bleachers, who employ it very largely, can tell pretty accurately what the strength of the article is by the taste. It is called by them *bleaching salt*. A more accurate method is to ascertain its power to bleach a solution of indigo.

The disinfecting power of chloride of lime is now acknowledged all the world over. It stands first on the list of *disinfectants*, and deservedly so. Chlorine steadily escaping from it neutralizes offending gas. On this principle I have advised it to be washed over newly plastered walls that were offensive in consequence of foul hair mixed with the lime. The expedient was speedily effectual. The walls of dissecting-rooms and privies are thus treated in order to subdue foul odors; and the chloride scattered about in rooms or thrown into pits will soon exert a correcting influence. So, likewise, when hospitals or infected districts are desired to be purified as far as practicable, chloride of lime is freely spread about, and the result is obvious. During

the prevalence of Asiatic cholera in Philadelphia, in 1849, the vapor issuing from the sewers was exceedingly offensive, but the application of the chloride freely at the opening so corrected the exhalation that its unwelcome effluvia were no longer perceived.

"Christison, in his work on toxicology, says:—'It is an interesting fact, that during the epidemic fever which raged over Ireland, from 1816 to 1819, the people of the bleaching manufactory at Belfast were exempt from it.' A strong fact, when we consider the length of time, &c.

"Desgenettes, the celebrated surgeon, gives, in a letter to the 'Institute,' presented by Cuvier, the following strong evidence of the disinfecting powers of chlorine. After stating that he had continually used chlorine fumigations in the military hospital of Paris for the space of one year, he adds:—'The houses of military arrest in this capital regularly furnish to the military hospital cases of adynamic fevers, which were not only aggravated in our wards, but were communicated, very frequently, to the patients in the neighboring beds and to the attendants. It is certain that, for the space of a year, these communications have not taken place. Very extensive gangrenes among the wounded have also been limited to the unfortunates who were first attacked,' &c. &c.

"In Johnson's *Medico-Chirurgical Review* for 1828, p. 458, is an interesting report of the surgeon of the Windsor Castle East Indiaman, Mr. Docker, on the virtues of the solution of chloride of lime:—'During their stay at Sangur Island, in the mouth of the Ganges, the gun-deck was regularly sprinkled, morning and evening, with the solution. The consequence, he thinks, was a comparative immunity from cholera, which was raging fatally in the other ships. The wind blew from the shore all the time and was loaded with morbific miasmata. In China they used the chloride and escaped the dysentery, which prevailed in the river Tigris at the time,' &c. &c.

"In an article in the *London Lancet*, (1831–2, vol. i. p. 598,) prepared by its *very logical* editor to *disprove* the anti-pestilential properties of chlorine, are to be found the following very satisfactory experiments, which were performed in London, viz.: 'Smallpox matter, both on glass and on linen cloth, was procured from the smallpox hospital. This was divided into two parcels, one of which, No. 1, was immersed for three hours in a vessel containing one volume of chlorine gas and twenty-four of atmospheric air. The other, No. 2, was immersed for the same time in a vessel in which there was only one-fiftieth volume of chlorine gas. This process was conducted by Mr. Faraday; with No. 1 the following trials were made: with the point of a

lancet three long scratches were made on the arm of a child so as to draw blood; a piece of the linen cloth, having still adhering to it much of the matter in which it had been soaked, was placed over the wounds and bound to the arm by a strap of adhesive plaster. Two other persons were inoculated in the usual manner in six places with the matter on glasses, which was previously scraped together into a small heap and moistened with a little water. All these failed to produce any disease. With No. 2, four individuals were inoculated with the same matter, in three places in each arm, with no other effect than a slight degree of inflammation around some of the punctures. All these seven persons have since been vaccinated, and have had the disease in the most perfect and regular way, thus showing their susceptibility to have taken the smallpox had not the virus been deprived of its contagious quality by the influence of the chlorine. Another supply of smallpox matter was obtained from the smallpox hospital, part of which was exposed for three hours, by Mr. Faraday, to diluted chlorine gas in the proportion of one volume in a hundred of atmospheric air; with this matter two children were inoculated in three places on each arm without any effect; both of these children were afterward vaccinated, and had the disease in a perfect manner.'

"The known accuracy of Mr. Faraday as an experimenter gives great force to facts, to which all the known ingenuity of the editor of the *London Lancet* can only oppose some *plausible* objections.

"Mr. Cruikshank, another accurate observer, reports that he tried, without effect, on two subjects, a portion of varioloid virus which had been exposed to chlorine, another portion of which not previously exposed to the gas produced the variolous eruptions.

"In regard to scarlet fever, although many quotations might be given as to its utility in preventing its spread among the inmates of a house, I will content myself with giving the authority of Dr. Watson, of London, as to its great value in the treatment of some of the worst forms of this disease. After describing the mode of using the compound and the good effects resulting, he says:—'From several distinct and highly respectable sources *chlorine* itself has been pressed upon my notice as a most valuable remedy in the severest forms of scarlet fever. My informants have stated, that whereas they formerly dreaded to be called to cases of that disease, they now, having had experience of the virtues of chlorine, felt no misgivings in undertaking its treatment.' Stating that he had not as yet tried the pure *chlorine* sufficiently to give a positive opinion, he adds, 'I presume that its disinfecting properties may, in part, account for the good it

does. It probably deprives the foul secretions of their noxious quality.'

"Other diseases regarded as contagious are successfully treated by the chlorine compound, as scabies, tinea capitis, &c.; and those who raise silkworms find that chloride of lime placed in dishes throughout the rooms in which the worms are fed is a perfect remedy against the infectious diseases of those insects which arise when they are much crowded together, and which formerly threatened seriously to injure the business of raising silk.

"It is a great misfortune that the chlorine compounds are too much neglected by the profession generally; and this neglect is in part owing to the unjust doubts raised by the time-serving medical journalists and scissors authors of Europe, as well as to the influence of fashion in physic.

"In answer to objections to the odor, and the irritating effects of chlorine evolved from chloride of lime in small quantities, I will add a few facts.

"1. I have often been freely exposed to it without any inconvenience, and the workmen in the chloride of lime manufactories, who are exposed to considerable quantities of the air, get accustomed to it and experience no injury.

"2. Chlorine fumigations were employed in the great Foundling Hospital of Paris without the slightest inconvenience to either infants or nurses. [*Ann. de Chim.* t. li.]

"3. Berthollet, Halle, and Vauquelin, well known as accurate observers, reported to the French Institute as follows in regard to the use of chlorine on the vessels of the fleet of Napoleon in the expedition to Egypt:—'According to the directions of the Committee of Public Health, we daily fumigated the ship *L'Orient* with chlorine, and no one complained of the least inconvenience.' It is remarkable that the whole fleet submitted to the same regimen, and made its passage with scarcely any disease, although crowded with soldiers. The same was the fact in the frigates which accompanied the First Consul."

The quotations just made are taken from an article published by Professor Peter, in the *Observer and Reporter*, of Lexington, Kentucky.

In addition to the above the following facts, being decidedly practical, will enforce the doctrine contended for. Two medical pupils who came to Lexington, Ky., early in November, 1842, to attend medical lectures, sickened during the week appropriated to introductories. They lodged in a small chamber, with two other young men, and in a house containing over twenty boarders. The one was seized with a fever pronounced to be *typhoid*, and contagious; the other had an eruption, having the appearance of

the *varioloid* disease. The latter was a practitioner, of about thirty-five years of age, had never seen smallpox, and showed a scar on his arm to prove that he had been vaccinated. His case was narrowly watched and soon proved to be *confluent smallpox;* and now the consternation in the medical class, numbering over two hundred and fifty, was very great. Some of them directly, and all indirectly, had been exposed, as they thought, to two contagious diseases. The *typhoid* fever man dreaded lest he should be infected by his room-mate, who, in turn, feared the contagious quality of typhoid poison. But, having watched these cases from the first, I directed the profuse employment of the chloride throughout the chamber and house. The man with smallpox assured me that he was sleeping in chloride of lime, and so it really appeared.

To allay the fears of the class a great many pupils were vaccinated, and all were prevailed on to remain in the city. The result of the whole affair was the recovery of both patients, and there the matter ended. Not a case of smallpox occurred in the neighborhood, nor in the city, save that of the medical student.

Our next object will be to set forth some of the numerous therapeutic uses of the chloride of lime, remarking as we proceed that the profession is by no means properly instructed in this matter. This compound is of very great value as a remedial agent.

The *external uses* have been very numerous, and, from its disinfecting and cleansing properties, when applied to the diseased surface, more benefit may be expected than from any other external application. In *itch*, *herpetic affections*, *burns*, &c., it has been employed in large hospitals and in private practice very successfully. An ounce of the chloride dissolved in a quart of water makes a solution proper for this purpose. It should be applied several times a day for at least a week. The hand or foot may be immersed in the bath for ten minutes at a time. Besides the *external* use, in skin diseases a weak solution has been at the same time taken internally, where the cutaneous disease had a scrofulous modification. For this end fifteen parts of the chloride are dissolved in five hundred parts of pure water, and of the solution a tablespoonful is taken three times a day in a bitter infusion, as quassia or chamomile.

Lisfranc treated *burns* and *chilblains* with soft lint soaked in a strong watery solution of the chloride, covering the whole with a wax cloth. Dr. Chopin lauds a solution of the chloride in warm water, as an application to wounds from surgical operations or accidents, with a view to *assuaging* pain.

Ulceration of the *gums*, emitting an offensive odor and slow

to heal, have been greatly improved by use of the following mixture:—

℞.—Chloride of lime, fifteen grains;
Mucilage gum Arabic, an ounce;
Syrup of lemons, half an ounce.

Mix, and apply on soft lint two or three times a day.

To lessen *exquisite cutaneous sensibility of the skin*, Sir Benjamin Brodie employed a lotion of two or three grains of the chloride, dissolved in an ounce of alcohol, three or four times a day. It hardens and thickens the cuticle and blunts the sensibility. (See *Ranking's Abstract*, vol. ii. No. 2, p. 123.)

Besides a watery solution, an ointment or pomatum has been successfully used in the treatment of *itch*, as we learn from the *Bulletin Géneral de Thérapeutique* for 1828. Dr. Emery gives the following prescription:—

℞.—Brown soap, an ounce;
Common salt, half an ounce;
Flowers of sulphur, half an ounce;
Alcohol,
Vinegar, each two drachms;
Chloride of lime, a drachm.

Mix, and apply freely to the parts affected, night and morning, using smart friction.

In the *Hôpital St. Louis* twelve hundred persons were cured, some in four days, and none requiring longer time than fourteen days. The remedy does not soil the clothes, has no bad smell, and is cheap.

The *pruritus* of the genital organs in both sexes is often promptly relieved by the application of a solution of the chloride night and morning. But this and all external applications will often signally fail unless the proper means be taken to correct the digestive organs.

The *internal* exhibition of the chloride of lime is more neglected than its external use. Here it acts partly by correcting the foul quality of the intestinal discharges and by its stimulant action, whereby it seems to counteract the fatal tendency of the typhoid element that so sadly depresses the system. In *dysentery* and in *low fevers* the remedy has been singularly serviceable in Europe and in this country.

Dr. Read, of Dublin, speaks very favorably of the following mixture:—

℞.—Chloride of lime, ten grains;
Infusion of calumbo, two ounces;
Water, four ounces;
Simple syrup, two drachms.

Mix, and give a tablespoonful every hour, and employ an injection of the chloride at the same time.

The obvious effects of the remedy were to control the disagreeable fetor of the discharges from the bowels, and by its gently stimulant action to check delirium and subsultus tendinum. The tongue is improved, the skin moistened, and the whole condition made better.

Mr. Grœffe, of Berlin, gave the chloride in *blenorrhagia* or *gonorrhœa*, and sometimes in *gleets*. He administered it in the form of pill and by injection.

Hydrochlorate, or *muriate of lime*.—Readily made by dissolving carbonate of lime in hydrochloric acid. The solution is of a light yellow color, inodorous, but of a slightly bitterish acrid taste. The dried muriate, exposed to a strong heat, yields *chloride of calcium*.

The late Dr. Beddoes was very partial to this medicine in the treatment of *scrofula*, and it is sometimes employed at present in that disease in connection with the external use of iodine. The adult dose of the solution is from ten to thirty drops three times a day in infusion of calumbo, or chamomile, or quassia. The continued exhibition for some weeks proves decidedly *alterative*, though a *tonic* power has more commonly been ascribed to it.

Dr. Somervail, of Virginia, reports successful use of the muriate of lime in *palsy* of the lower extremities. He gave twenty drops every two hours for a month, aided by some local appliances in the nature of counter-irritants.

An ointment of the muriate has been favorably spoken of in the treatment of *chilblains* in a state of ulceration. The ointment is soothing, and promotes the healing process.

Sulphuret of lime, made by heating and stirring for the space of fifteen minutes a mixture of equal parts of quicklime and flowers of sulphur, has been much employed as a remedy for *itch*, in the shape of a lotion which should be made pretty strong. Half an ounce to a pint of water may be tried at first, and applied night and morning. An ointment made of one part of the sulphuret and eight parts of lard has been suggested by Dr. Savardin for the relief of old *tetter*. He directs smart friction to be employed for ten minutes with the palm of the hand, or a soft flannel, morning and evening.

Dr. Beneke, of London, Dr. Stone, of New Orleans, and others, have fancied that good results attended the use of *phosphate of lime in pulmonary phthisis*, *scrofula*, &c. &c. They suppose it aids in renewing air-cells destroyed by long disease. There is not sufficient testimony on this point.

CAMBOGIA. *Gamboge*.—Gum-resin of the *Stalagmitis cambogiodes*. From *Kamboge*, a river in Siam, on whose banks the tree grows.

Incision into the bark of the tree causes a free exudation of its juices, which, being collected and gradually inspissated, yields large masses of the article. It is imported chiefly from Ceylon, in casks, well covered with flag-leaves. Some of the books have a good deal to say of spurious kinds of gamboge, and consume much more space than its therapeutic merits justify. I will not imitate their example.

In the practice of physic gamboge is held to be a *drastic, hydragogue cathartic*, by which terms we mean that it operates smartly on the bowels, causing more or less gastric pain and sickness, and giving copious watery stools. This latter property has long been known, and has caused it to be made a constituent in many empirical remedies for the cure of *dropsical affections.*

Gamboge has also been exhibited in connection with calomel, for the relief of *torpor of the bowels*, in the proportion of two or three grains to ten of calomel, to be taken once in four hours. It is sometimes a very good medicine in cases of *dysmenorrhœa*, which, however, is a disease of multifarious peculiarities that call for special notice. The following combination is serviceable where there is decided torpor of the bowels and a high degree of nervous uneasiness at the same time:—

℞.—Powder of gamboge,
——— aloes,
Fetid gum, each a drachm.

Incorporate these well with the help of mucilage of gum Arabic, and divide into sixty pills. The dose is one or two three times a day, or two at bedtime.

When the dysmenorrhœa is associated with *habitual costiveness*, or when the latter exists independently of the former, gamboge combined with sulphate of quinine has proved a useful medicine. Dr. Chevallier gives the following formula in the *London Medical Gazette* for 1834, as suited to cases where the constitutional debility is of long continuance and the bowels evidently suffering from loss of tone:—

℞.—Sulphate of quinine, twenty-four grains;
Compound gamboge pill, thirty-six grains;
(Or fifteen grains of gamboge.)

Mix, to make twelve pills, and take one three times a day.

For the relief of *dropsy*, by inducing copious watery discharges, a mixture of six grains of gamboge in four ounces of water, holding in solution two drachms of carbonate of potash, has long been in successful use. The adult dose is a tablespoonful every hour. The diuretic effect is decidedly increased by the addition of cremor tartar and squills.

Gamboge has had some reputation as an *anthelmintic*, espe-

cially for the destruction of *tapeworm*, but it is more than probable that the result depends on the drastic cathartic action of the medicine.

The fine powder of gamboge has been found to operate on the bowels promptly and efficiently when laid on an ulcerated surface. From five to ten grains will suffice. It is a very satisfactory instance of *endermic* medication.

CAMPHOR. *Camphire.*—The product of the *Laurus camphora*. Not a *gum*, but a *concrete volatile oil*. Other plants besides the *Laurus camphora* contain camphor, as the spice-wood, sassafras, &c. When first obtained from the vegetable source the article is impure, being of a gray color and evidently blended with foreign matters. The strong smell of a chest made of *camphor*-wood, and which adheres to it for an almost unlimited period, shows that the vegetable substance contains a volatile ingredient in considerable quantity. This is separated by a kind of distillation, and is collected in large quantities. The *crude* camphor, as the imported article is usually termed, is purified or refined by mixture with quicklime and exposure to a sand-bath heat in glass vessels loosely closed at the mouth with carded cotton so as to prevent the escape of vapors and prevent explosion. The lime joins the foreign matter, while the pure camphor rises and is condensed on the upper surface of the vessels. The *refined* camphor, which is easily detached by fracture of the vessels, is of a whitish color, translucent, rather tough, having the strong camphor smell, and not reducible to fine powder unless a few drops of alcohol be added. The smell of camphor is very peculiar, exceedingly penetrating, and certainly fatal to moths; and hence the preservation of woollen goods or clothing by the addition of some lumps of camphor. The volatility of the article suggests that it should not be broken into small pieces. I have known fragments an inch and a half square to disappear almost entirely in one season.

The oil of camphor is named in some of the books as a new article. But it is quite certain that something of the kind has long been known. The oil of commerce is very generally a fraudulent article, but, even if always pure, it is not likely to come into general use.

Camphor has a taste combining pungency with a sense of cooling. It is decidely aromatic, and, to most persons, grateful.

We have said that it is not a gum, and this is evident from the failure of water to act upon it. Even trituration of camphor in water will hardly dissolve any portion, though the fluid is sensibly impregnated with the odor. If water be charged with carbonic acid gas, as in shape of seltzer-water, it will dissolve more than pure water. Alcohol and acetic acid make energetic solu-

tions. The bisulphuret of carbon dissolves camphor readily, but the solution speedily evaporates. If we add magnesia to camphor, and triturate with water, we thus dissolve a larger quantity of camphor than the water singly could take up. The term *tincture* or *spirit* of camphor is applied to the alcoholic solution, while the product obtained by the solvent power of acetic acid is called the *acetic solution of camphor*. If water be added to either of these solutions the camphor is detached or precipitated.

Camphor has been called *stimulant*, *expectorant*, *anti-periodic*, *anodyne*, *discutient*, &c. &c. In very large doses it is *poisonous*.

Few medicines have been administered internally with less rational views than camphor. Many have employed it solely because others had given it before, and they could hardly tell why they gave it as a remedy or what end they hoped to accomplish by it. Still it must be conceded that camphor is sometimes a useful medicine.

During the prevalence of *Asiatic cholera* in 1832, in Cincinnati, and in 1849, in Philadelphia, camphor was frequently carried in the pocket, and a small fragment of the size of a pea swallowed two or three times a day as a sort of safeguard. The habit was a good one. It kept the mind in a state of comparative quietude, and every day's immunity increased confidence in the preventive. The man relied on his pocket-companion, and allowed his stomach and bowels to escape the shocks too often inflicted by stimulants and astringents unnecessarily taken by many who were constantly under the influence of terror.

Experience has taught that camphor will sometimes induce sweet sleep if conjoined with opium, where the latter by itself has failed. I have witnessed this result again and again. The usual proportion for an adult is two or three grains to one of opium, made into a pill. Besides the *anodyne* effect we frequently have an obvious *diaphoresis* that is decidedly favorable.

Raspail affirms that when opium and all the vegetable narcotics fail to stop that fearful insomnolence which marks the first development of insanity, a grain of camphor given in pill, and followed by an ounce and a half of hop infusion, with five drops of sulphuric ether, will procure sleep.

Camphor is sometimes a good adjunct to Peruvian bark, sulphate of quinine, volatile alkali, and the fetid gum, enabling them to perform their peculiar therapeutic functions better than when given alone. It is also very happily compounded with Dover's powder, in the course of *low fevers*, where a gentle stimulus is needed, whose ultimate effect may be to induce a

salutary diaphoresis; for this end two grains of camphor may be added to ten of the powder.

Irritability of stomach was often relieved by Cullen by the use of the acetic solution of camphor given internally. And one of the most popular medicines for *Asiatic cholera*, in which there is often terrible gastric irritability, was the *camphorated mixture* usually called *Parrish's mixture*. The *camphorated aromatic water* is essentially of the same nature, and is an excellent medicine for irritable stomachs after free vomiting. It may be made by triturating camphor and calcined magnesia with the compound spirits of lavender and water, and then filtering. A considerable quantity of the camphor is held in solution, which, aided by the spirit of lavender, exerts a happy influence. It may be made thus:—

℞.—Camphor, a drachm;
Calcined magnesia, two drachms.

Make the camphor as fine as possible by rubbing with it from five to ten drops of alcohol; then triturate the magnesia with it. Then add two ounces of the compound spirit of lavender, rubbing the whole together, and next add eight ounces of water. Mix and filter.

The dose of this mixture is a tablespoonful, taken every hour or oftener, according to the severity of the case.

The following mixture is a little different in form, but substantially the same in effect:—

℞.—Camphor, a drachm;
Calcined magnesia, two drachms;
White sugar,
Powdered gum Arabic, each a drachm and a half;
Oil of lavender, twenty drops;
Water, a pint.

Rub the solids well together, add the oil, and triturate, finally adding the water.

The mixture may be used thus or be first filtered. A tablespoonful may be given every two hours for the relief of flatulent pains, with sick stomach.

The *camphorated julep*, to which some physicians are partial in the management of *low fevers*, is made thus:—

℞.—Camphor, a drachm;
Powdered gum Arabic,
White sugar, each half an ounce;
Mint or cinnamon water, six ounces.

Mix the solids well, and add the water.

Dose, a tablespoonful every half-hour or less frequently, as the case may demand. The quantity of gum Arabic is purposely large, and is intended to act as a demulcent in reference to an irritable state of the bowels, often present in low fevers.

The simplest form of camphorated mixture for medicinal pur-

poses is prepared by digesting a drachm of pulverized camphor in a pint of boiling water for two hours in a tight vessel. From what was formerly said, none of the camphor can be thus dissolved, yet it was believed that the mixture, even after filtration, was decidedly *stimulant* in tablespoonful doses. In a very excitable state of the system it is quite probable this effect might be realized, and subsequently a diaphoretic operation.

As most of the prescriptions for diarrhœas and cholerine seizures that are often almost epidemic contain camphor, we may fitly introduce in this place a formula employed with very great success by my son in the navy, and furnished to him by Dr. Sharp, Fleet Surgeon on the West Indian station, in 1850, who reported almost invariable success:—

℞.—Aquæ camphorat. ℥iij;
Tinct. op. camph.
Spt. lavend.
Ether sulph. āā ℥ss;
Alum sulph. ℥ss;
Sacch. alb. ℥ij.

Give a tablespoonful after each evacuation. Sometimes, to the above were added two drachms of tincture of capsicum.

In the eighth volume of the *Edinburgh Medical and Surgical Journal*, Dr. Cassils proposes milk for camphor mixture in lieu of other solvents. He directs a *milk emulsion of camphor* to be made by rubbing well together a half-drachm of pulverized camphor, four ounces of milk, and seven and a half ounces of water. He affirms that none of the camphor is precipitated. He insists also on the propriety of taking milk, in lieu of brandy, to make the camphorated tincture of opium. He says a better pectoral is thus obtained.

The *antiperiodic* property of camphor is not now insisted on. In the days of Professor Hallé it was administered, in combination with the nitrate of potash, in the period of intermission, and prevented a repetition of the paroxysm.

Dr. Wilson, of Mansfield, in England, gave camphor in thirty-grain doses to a boy laboring under *epilepsy*, with marked benefit. To a girl, aged fifteen, affected with *chorea*, he gave eighteen-grain doses four times a day, and cured her. This was in 1786, and would now be regarded as bold practice. We copy these facts from *Medical Commentaries*, vol. vi.

The *external* uses of camphor are important. Sometimes it acts as a *discutient*, as when it is combined with mercurial ointment, in the treatment of *enlarged testicle* after depletion, in the proportion of two drachms of camphor to an ounce of the ointment, well incorporated, and applied night and morning. The acetic solution, made by adding an ounce of camphor to a

pint of acetic acid, is also discutient. Cream rubbed with the powder of camphor makes an excellent ointment or pomatum, which acts in the same way.

Various forms and grades of *rheumatism* have been treated successfully by the external use of camphor. In the *American Journal of Medical Sciences* for 1838, we find a case of *chronic rheumatism* of the thighs and legs, accompanied with severe pain, cured by camphor fumes. The camphor was placed on a heated iron plate, over which the patient was seated, covered with a blanket. A half-ounce of camphor was consumed at each operation, which had to be repeated three or four times. A most copious sweat was brought out, which afforded prompt relief.

Dr. Ferriar, in his *Medical Histories*, speaks in high terms of a camphorated liniment as a remedy for *lumbago*. It is made thus:—

℞.—Camphor, two drachms;
Basilicon ointment, an ounce;
Black soap, half an ounce.

Mix, and apply to the part two or three times a day, with smart friction. A scruple or two of the flour of mustard augments the power of the mixture.

The same physician also employed a solution of camphor in sulphuric ether as a lotion to parts affected with *rheumatic pains*, and occasionally a camphor poultice, made by sprinkling over a bread and milk poultice twenty or thirty grains of the fine powder of camphor.

Incontinence of urine has been completely cured in a woman, aged forty, by an injection consisting of four grains of camphor suspended in warm water with the yolk of an egg. It was repeated every night, and occasionally two or three times a day, for two weeks. (See *Ranking's Abstract*, No. vi. p. 209.)

Distressing *pruritus* of the genital organs, a very embarrassing affair, is sometimes checked by dusting on the parts two or three times a day a mixture of one grain of fine camphor powder and five grains of starch.

The *poisonous* action of camphor has never, so far as I am aware, terminated fatally. A man took one hundred and sixty grains by mistake, and, being seventy-four years old, the case was deemed rather a doubtful one. Very intense gastric heat, severe headache, indistinctness of vision, redness of the face, a full and hard pulse, were all the consequences; and these were met so favorably by almond emulsion and a mixture of equal parts of vinegar and mucilage of gum Arabic that a very copious sweat broke out and recovery ensued.

Two-drachm doses have induced high cerebral action and general morbid excitement, elevating the pulse to 180, and deeply

suffusing the eyes and face. The free use of emetics, followed with opiates, effected a cure. (See *British and American Journal of Medical Sciences.*)

The *London Medical and Physical Journal*, vol. i. p. 510, gives the case of a man who took *ten pounds and a half* of camphor in twenty-two days for the cure of *smallpox;* and, says the writer, "he died notwithstanding." What a wonderful concession!

Mr. Kingdom, in November, 1842, related to the Medical Society of London the case of a gentleman who swallowed by mistake a considerable quantity of the compound tincture of camphor. The first effect was a burning pain in the lower lip, which spread down the œsophagus, and eventually over the whole surface of the body. The symptoms were removed completely by the free use of emetics.

Another case was detailed by Mr. Clarke, in which the occasional swallowing of very small portions of camphor induced giddiness, and finally epileptic symptoms. When roused, the patient could scarcely articulate, being in a kind of half comatose condition. The stomach-pump drew out a quantity of fluid strongly impregnated with camphor. As the system exhibited signs of great exhaustion, external and internal stimulants were resorted to and continued for three hours. After this he had occasional suppression of urine for three months, and was finally cured by the use of gentle cathartics and saline remedies.—*London Lancet*, Nov. 1842.

Two short articles in the July number (1857) of the *London Lancet* seem to render it probable that in certain persons *camphor* may induce a disease very much like *epilepsy*. One case is that of a female in whom only twenty drops of the spirit of camphor, repeated every three hours, brought on vertigo, impaired vision, and insensibility, with foaming at the mouth, twitchings of the muscles, &c. The fit lasted about six minutes, and on awakening she was unconscious of what had passed. She remembered, however, that about eleven years previous the same train of symptoms ensued from eating a piece of camphor of the size of a nutmeg.

The other case is that of a young lady who was playing with a piece of camphor of the size of a marble, which was incautiously swallowed. She stated that two of her sisters had suffered from epilepsy as a consequence of eating camphor.

After all that has been or can be said, the action of poisonous articles is relative, and must be so from the nature of the case. Hence ten grains of camphor might do considerable injury to a man at one time and in a special condition who could swallow twice as much without harm under other circumstances. Even

the ordinary adult dose of five grains has sometimes affected the stomach unpleasantly.

CANNABIS INDICA. *Indian Hemp.*—This article is introduced here for two reasons. It has attracted a good deal of attention in this country as well as in Europe; and it is important that our own hemp should be properly investigated in order to determine what medicinal powers it may develop.

The resinous exudation from the leaves of the foreign hemp is the part collected and sold under the name of *churrus;* sometimes denominated the resinous extract of hemp. In Central India, men clad in leather dresses run through the hemp-fields, brushing through with all possible violence. The soft resinous matter adheres to their dress, is subsequently scraped off and kneaded into balls.

Galen speaks of hemp seeds as promoting hilarity and enjoyment. The smoking of the leaves is said to induce intoxication, which lasts for about three hours, after which sleep comes on without subsequent nausea or sickness of stomach, as is generally the case after over-stimulation by alcohol.

The resinous extract has some resemblance to opium in point of color, though it lacks the peculiar taste and smell.

The prominent therapeutic property assigned to this medicine is that of *anti-convulsive*, a new term, which perhaps could well be dispensed with. I suppose the old word *anti-spasmodic* has pretty much the same meaning. It is said that no serious consequences need be apprehended from a large dose. It does not constipate nor induce any of the unpleasant effects of opium. Dr. O'Shaughnessy, who has paid special attention to this article, says it is well suited to *tetanus*, and his views are confirmed by the editors of the *Provincial Medical and Surgical Journal* of Dublin. *Braithwaite's Retrospect*, part vi., the *American Journal of Medical Sciences* for July, 1843, and *London Lancet* for May, 1843, contain full information on this subject.

In the *Boston Medical and Surgical Journal* for June, 1846, the late Dr. Isaac Heister, of Reading, Penn., reported a case of *tetanus* successfully treated. He gave the extract in solution, in teaspoonful doses, containing two grains, which were repeated every hour until the spasms were controlled and sleep obtained. After the fourth dose the patient slept nearly two hours. The spasms returning, five-grain doses were administered, and recovery soon took place.

The ordinary dose of the resin has been five grains, to be repeated every hour or two, according to the urgency of the symptoms. The tincture in doses of from twenty to thirty drops has been successfully exhibited in *uterine hemorrhage.*

Dr. Mitchell, of Dublin, regarding the Indian hemp as a de-

cided anti-hemorrhagic medicine, administers it for the arrest of *menorrhagia*. He employs the resinous tincture in ten-drop doses, repeated every four hours; and says he has known a single dose to check a discharge that had resisted all ordinary means for months. In the debilitating dribbling from the womb, so annoying to some pregnant women, he says it is equally efficacious. (See *Dublin Medical Press*, Oct. 1847.) Dr. Churchill and others have succeeded with five-drop doses three times a day. It is believed to act partly as a sedative and partly as an astringent. (See *Ranking's Abstract*, No. 10, page 267.)

It is proper to say that some physicians who profess to have had considerable experience in the use of this medicine think it has been very much overrated. I have never employed it, and think it demands further and more extended trial to test its true value.

CANTHARIDES. *Cantharis Officinalis. Lytta Vesicatoria*, or *Blister Beetles*, or *Spanish Fly. Lytta Vittata*, or *American Fly.*—The *Spanish* fly is of a brilliant green, and when perfect and sound is entirely free of worm-holes, has an acrid, burning taste, and evolves rather a nauseous odor. The flies are said not to live over eight or ten days, and during life they are readily detected by the exceedingly fetid odor they exhale. They are caught early in the day by striking them from the trees and plunging them into vinegar, which kills them. They are afterward to be dried perfectly in the sun or in heated apartments. Their preservation in a sound state demands a good deal of care; which, being properly given, they will retain their peculiar properties for thirty years. Notwithstanding their violent action on the human tissues they are subject to the depredations of other insects, which destroy the soft organs of the fly and render it worthless. They should be kept in well-stopped bottles, covered with bladder or leather, or both; and a small quantity of pyroligneous acid, or camphor, or chloride of lime, should be put in each bottle.

The *Spanish* fly abounds in the south of France, Spain, and Italy, and is found on the ash, lilac, privet, elder, honeysuckle, plum, willow, and elm-trees. The warmer the region the more energetic are the flies.

The *American* fly is rather smaller than the Spanish fly, and of a much darker color. It abounds in particular seasons on potato vines, beet leaves, and other vegetation. In the summer of 1841, while residing near to Lexington, in Kentucky, I could have collected bushels of them from the potato and sugar-beet patches. They completely destroyed the leaf structure, with the exception merely of the fibrous skeleton. This fly was first noticed in 1800, by Dr. Isaac Chapman, of Bucks county, Pa.,

who published a paper respecting it in the *New York Medical Repository*. During the last war with Great Britain, when the foreign fly could not be obtained excepting at very high prices, the American fly was employed as a substitute with great success. I have used it externally and internally, and with the same results as are usually had from the Spanish fly.

The therapeutic uses of the fly are various. It is, *externally*, an irritant, rubefacient, vesicant; internally, a *counter-irritant*, a *diuretic*, a *narcotic*, and an *acrid poison*.

Various modes are pursued to get the irritant, rubefacient, and vesicant effects. I believe that the proximate principle, *cantharidin*, or *oil* of cantharidin, as it is often improperly called, is the neatest application to accomplish either of these ends. For children and delicate persons it is far preferable to all other forms. It is neat, cleanly, effective, and rarely followed by strangury. A piece of white paper soaked with the cantharidin, which is greenish and liquid, will answer the purpose effectively. This is laid on the part, covered with a compress, and confined by means of a bandage. From three to five hours generally suffice to insure vesication.

The *pad blister* is probably, when judiciously managed, the neatest form next to the cantharidin paper. This may be made of any desirable size by cutting pieces of cotton, or linen, or flannel of various dimensions, and quilting between several layers a portion of good powdered flies. The edges may be bound with silk or otherwise, to give a neat appearance. For use, the *pad* is dipped into hot vinegar, and after remaining a few minutes should be gently squeezed so as to force out nearly all the liquid. Apply it immediately, and confine by compress and bandage. Should it fail to act properly in three or four hours, remove it and repeat the hot vinegar.

The only objection to this form is that careless operators, failing to squeeze the pad sufficiently, have inflicted a much more extensive blister sometimes than was desirable. Laid on the epigastrium, the dripping vinegar, holding flies in solution, has begirt the body, and formed a complete blistering band. A little care will avoid such a catastrophe. I may add that the *pad-blister*, of various sizes, can be more conveniently carried about by country physicians than the ordinary ointment or plaster.

Various formulæ are given for the preparation of the *emplastrum cantharidis* or fly-plaster. The following is about as good as any other:—Melt together a pound of good flies well pulverized; a pound and a half of wax plaster; half a pound of fresh lard, frequently stirring, so as to make a uniform mixture. For warm weather, suet should be used in place of lard, to give

firmer consistence. The mass can be kept in a jar, or made into rolls, as may be most convenient.

A late writer recommends the following as having some advantages over other prescriptions. Take of bruised flies, four ounces; infuse them in six ounces of boiling water; strain, and evaporate by a slow fire to the consistence of syrup; then add four ounces of beeswax, one ounce of yellow rosin; of sweet oil and spirits of turpentine, each an ounce; alcohol, two ounces. Mix the ingredients intimately by a sufficient amount of heat to melt all the solids.

Under the belief that chloroform added to cantharides would improve the quality of blistering plaster, Dr. Landerer, of Athens, recommends that this plaster be made by digesting the pulv. cantharides for several days at a gentle heat in a sufficiency of chloroform to moisten it. The mass is then to be added to the usual blistering plaster, half cold, taking care to avoid the inhalation of the chloroform. Of course it must be kept in tight vessels and be applied speedily or the chloroform will all pass off.—*Gazette des Hospitaux*, No. 69.

A merely warming or *rubefacient* plaster may be formed by adding half a drachm of powdered flies to an ounce of melted adhesive plaster, stirring until cold. To use any of these plasters, a portion should be melted in an iron ladle, and properly spread on soft linen or leather.

The *fly ointment* (unguentum cantharidis) is a very popular article for vesicating, and many formulæ are given for its proper formation. In practice, I have rejected all the printed rules, and prefer to make my fly ointment by rubbing into basilicon ointment as much of the fine powder of flies as can be incorporated with it. The ointment is thus saturated with flies, and will raise a blister with great certainty. It is far preferable to the practice of spreading basilicon ointment on leather and covering the surface with flies. The surface blistered by this kind of plaster is apt to be more or less coated with particles of the flies, which keep up irritation long after the vesicant effect has been produced.

Formerly errors were constantly perpetrated by allowing a blister plaster to remain on the surface too long, and hence strangury was a very frequent attendant or result. In place of from twelve to eighteen hours, four or five hours are now found to suffice. And instead of waiting to have full vesication, the plaster should be removed at the end of four or five hours and a soft bread and milk poultice applied. This gives speedy relief, and insures the prompt separation of the cuticle and the copious effusion of serum. If it is desired to act on the scalp, the plaster should remain from twelve to eighteen hours, and even then

there will be only an oozing of serum, and not a separation of cuticle, as in ordinary cases.

The *strangury* sometimes induced by blisters is often a very alarming accident, and, although not at all dangerous, is a source of great disquiet. It may be obviated by the early application of a soft poultice, and the free use of diluent drinks, such as gum Arabic water, barley water and saltpetre, slippery elm infusion, &c.; the drinks should be administered from the moment of applying the plaster until the vesicant effect occurs. If strangury has actually taken place, it may be relieved by applying cloths to the pubes, soaked in hot water, by the warm bath, by injecting warm water per anum, adding from sixty to eighty drops of laudanum to the water.

Why do the same flies and the same ointment or plaster fail to vesicate one person, while another in the same house and at the same time is effectually blistered by materials taken from the same bottle or jar? Every practitioner has been compelled to ask himself this question over and again. That the material is not at fault he is positively certain, because its perfect operation, as well as its entire failure, stares him in the face. What is the matter?

I once heard a distinguished physician, who was subsequently a professor of some renown, curse a village apothecary for keeping a worthless fly ointment, which I was employing at the very same time with the happiest effect. The ointment, in both cases, had been made more than a month, and was taken from the same pot. Is there no proper explanation? I reply, unhesitatingly, *Dr. Rush's blistering point is the secret.* To be sure there are some who have ridiculed this idea as purely chimerical, but they offer no adequate substitute, nor can they. Stokes and Graves, with more good sense, have recognized this *blistering point*, and all practical men can easily discern it. The phraseology is unimportant, if we retain the idea, which is plainly this:—*There is a condition in the human economy which is essential to the right action of cantharides on the surface. If the excitement be above or below that condition, a blister will not act at all, or it will do positive mischief.* Who thinks of laying a blister plaster on the chest to relieve a man of acute pleurisy, whose pulse is full and bounding, prior to the use of cups, or leeches, or the lancet? Fortunately, a blister would not act at all under such circumstances, or, if any action ensued, it would consist in irritation, the natural tendency of which would be to make the matter worse.

Various applications are made to blistered surfaces. The cuticle, having been punctured with a sharp lancet to evacuate the serum, is often dressed with simple cerate, or fresh unsalted

lard, or with wilted cabbage leaves. Finely carded cotton was proposed many years ago by Dr. Merrill, of Natchez, as a dressing to a blistered surface, to induce speedy healing. Maclagan, a foreign physician, has claimed this as his discovery, but the merit, if there be any, is due to Dr. Merrill. When it is desirable to keep up the irritation of the blistered spot, fly ointment diluted with an equal quantity of lard, or savine ointment, will answer the end effectually. What is called a *perpetual blister* is kept up in this way, and will often prove very effectual to relieve local pain. But it is sometimes preferable to renew the application of the blister once in two or three weeks, and to change the location a little on each renewal.

It is sometimes important *to apply blisters not directly over the seat of disease, but to a part somewhat remote.* The truth of this position I have often tested most satisfactorily. My first case was that of a lady who had labored a good while under painful stricture of the chest, with occasional hemorrhage and a troublesome cough. Instead of blistering any portion of the chest directly, as had been my practice in similar cases, the application was made high up on the inside of the arm. The effect was far more salutary, and there was much less exposure of her person. The raw surface could be more easily dressed and otherwise disposed of than the breast could have been. I think that few physicians would hesitate to adopt this course after a single trial.

In conformity with the above position is a statement made by Heister, in his *Medical Observations*, published in 1755, part first. He affirms, unhesitatingly, that he could more certainly and uniformly relieve *inflammation of the eyes* by blisters laid on the crown of the head than by applying them anywhere else. The good effect was speedily realized. Every one has seen the salutary operation of sinapisms, and of a hot bath to the feet and ankles, for the relief of headache.

The external use of blisters to the chest after bleeding, in cases of *acute pleurisy*, is meant chiefly for the relief of pain by counter-irritation. The morbid excitement is transferred from the pleura to the skin; and, if the irritation and discharge be maintained by stimulant ointment, there is, in addition to counter-irritation, some depletion from the part. And the drain may be so profuse occasionally as to debilitate, in which case the cantharides may be said to act as a *sedative.* We have already seen that a blister will not act beneficially in the case, but otherwise, if there be high arterial excitement in the system.

Another happy use of external blisters is for the cure of *vesical paralysis*, which is a very tedious and troublesome affair. Mr. Laycock strongly insists on the benefits derivable from a blister

laid on the sacrum, and a repetition of the same if relief was not very apparent. He speaks of a man who had his urine drawn daily by a catheter, for three weeks, but who never required that aid after the application of a blister.

Repeated blistering has been successfully tried in *chorea* by Dr. Max Simon and others, as we learn from the *Dublin Hosp. Gaz.* for December 1, 1855. The most affected side was chosen for the place of application and repetition, shifting about so as to get a new spot for action. All the spasmodic symptoms ceased in a treatment of seven or eight days. If the head be much affected, a blister should be applied to the nape of the neck, and suppuration should be encouraged by basilicon or some other stimulating ointment. Rarely has it been needful to blister more than three times. As tonics are useful in most cases of chorea after due intestinal evacuation, the blistering practice should be followed with sulph. quinine and iron.

In *obstinate diarrhœa*, and in the last stage of *chronic dysentery*, blisters laid on the wrists and calves of the legs often give very great relief. The counter-irritation thus set up without sometimes more than balances the morbid action within, and a permanently salutary effect is visible. There is an advantage here superadded to the mere counter-irritation, which makes the blistering an important means. The raw surface affords a very good inlet to the bowels and entire system for the influence of the salts of morphia, whose direct action on the stomach and bowels might be hurtful. I have more than once witnessed the good effects of this blistering practice, followed by the endermic use of anodynes and sulphate of quinine, in cases badly managed by drastic cathartics and so converted into *low forms of fever*, designated by the injudicious prescriber as *typhoid*, *typhus*, &c. &c.

The propriety of applying blisters to young children has been discussed at some length in the foreign journals, and in some of those in our own country. But I am well satisfied, from the actual use of them in very young subjects, in my own family and elsewhere, that they are just as proper and quite as beneficial in many infantile diseases as in those of adults. The real ground of difficulty lies, not in the cantharides nor in the tender age of infancy, but in want of discretion and judgment in the application. If the high excitement of the system has been properly reduced, it matters not how young the child may be. In *bronchitis*, at the age of three months, after emetics and leeches had been employed, I found the action of a blister to be exceedingly serviceable, and no untoward result ensued. A writer in the *London Lancet* for August, 1846, very strongly advocates the importance of blisters in *infantile bronchitis*.

Similar views are held by a writer in the *American Journal of Medical Sciences* for October, 1847.

When Ricord, now a celebrated teacher in France, was in this country, he ascertained that the strong tincture of cantharides applied to parts bitten by venomous reptiles was promptly salutary. Irritation and vesication are set up, and the sting comes away with the loosened epidermis. So, also, a very strong tincture frequently applied to obstinate ulcers induces a new and healthful action to ensue.

Blisters have been employed very successfully in the treatment of *erysipelas*, and the practice originated with the late Professor Physick. I witnessed his application of them in erysipelas of the face, involving the eye, and located in other parts of the system. The blister was placed partly on the inflamed and partly on the sound spot. Piorry, of France, has adopted the same treatment.

The *internal* uses of cantharides are also valuable. The forms of administration are tincture, powder, and pill.

In *suppression of the menses* of feeble women the flies are supposed to act as an *emmenagogue*, though it is quite evident that they cure, if at all, by another agency. The following prescription has been employed with good effect:—

℞.—Carbonate of iron,
Powder of calumbo,
——— of ginger, each a drachm;
——— of cantharides, five grains.

Rub well together and divide into ten powders. One to be given every three or four hours, in syrup or sweetened water, until strangury is set up.

There is clearly a tonic property in this medicine, and the irritation induced in the neck of the bladder is propagated by contiguous sympathy to the uterine organs. The tonic action no doubt improves the quality of the blood, which is often a very important matter in the management of catamenial derangements. We are not of those who believe in the direct emmenagogue action of many medicines. If any possess this power, the number is very limited. Hippocrates held that cantharides were truly possessed of this power, and hence he gave the article in *amenorrhœa* of various grades.

In 1735, Dr. Burton, of England, gave cantharides in *pertussis*, and declares that he had almost uniform success. The following was his prescription:—

℞.—Powder of cantharides,
——— of camphor, each a scruple;
Peruvian bark, three drachms.

Mix, and give eight or nine grains every three hours to a child from three to five years old.

He gave it in a tablespoonful of water, with a few drops of copaiba. The *modus operandi* is obscure. It is probable a *diuretic* as well as an expectorant and tonic quality were combined in this treatment. *Dropsy* has been treated with preparations of cantharides in virtue of their *diuretic* action. It may be that the same agency is exerted when the medicine acts favorably on *gleets* and *fluor albus*, though it is more than likely that high irritation of the neck of the bladder, or *strangury*, has much to do in the premises. A case of *old gleet* is given in the *Edinburgh Medical Essays*, cured by taking a half-ounce of the tincture of cantharides *in a few hours*. In that case intensely severe strangury was induced.

Somewhere about the year 1693 a Dr. Groosvelt was imprisoned, in England, for administering very minute doses of cantharides internally, notwithstanding the authority of Hippocrates. The adult dose of the powder of flies is from half a grain to a grain, made into a pill, and repeated twice a day.

Dr. Vaughan, of the Leicester Infirmary, England, published what he called remarkable effects of cantharides in *paralytic affections*, in the *Memoirs of the Medical Society of London* for 1794. Several cases are referred to; but that of a young man is particularly named, who became entirely paralytic, and who recovered under the vigorous treatment employed. Besides three-grain doses of the cantharides he took also forty grains of carbonate of ammonia every six hours. The stimulant effects of the medicine, and especially the severe strangury induced, seem to have had a prominent share in the curative agency. This exhibition of cantharides, as well as of the volatile alkali, was unusually energetic and rather hazardous.

In *diabetes* and *tetanus* the flies have been employed successfully, in substance and in tincture, and in both instances the effect is due to a considerable extent to counter-irritation. The first cases on record, so far as I know, of the successful exhibition of the medicine in *tetanus*, were reported by Dr. Samuel Brown, formerly professor of theory and practice in Transylvania University. Subsequently Dr. Ffirth, of South Carolina, reported success with the same mode of treatment. The reports of both may be seen in the *New York Medical Repository*. The design of these gentlemen was to induce decided counter-irritation in the mucous membrane of the bowels and in the neck of the bladder. The dose of the tincture given in the cases reported was from thirty to one hundred and twenty drops, repeated every hour or two hours.

The *tincture* is made of very variable strength. Dupuytren employed a saturated tincture. A very good tincture is formed by macerating three drachms of good powdered flies in a quart

of brandy for eight or ten days, and filtering. The adult dose is from twenty to sixty drops. More than a hundred years ago, Dr. Morgan used a tincture made by adding an ounce of the flies to a pound of elixir of vitriol, digesting for a week and filtering. The dose for adults was from fifteen to forty drops three times a day.

The *pitting* or *scarring* of smallpox has been effectually prevented by the use of *acetum cantharides*. Mr. Startin tells us he applies it, by means of a camel's-hair pencil, to the apex of each spot or pustule on all the exposed surface of the body till blistering is evinced by the whiteness of the skin. Then the surface is to be washed off with water or thin arrow-root gruel. Between the fourth and eighth day of the eruption is the best time for the application. The after-treatment consists in keeping the parts clean.—*Med. Times and Gaz.*, February, 1857.

The acetum cantharides is made by macerating for eight days two ounces of powdered cantharides in a pint of acetic acid. The strained liquor is a prompt vesicant.

While a grain or less of the powder of flies will prove diuretic, without any strangury, a large portion will arrest entirely the discharge of urine and set up severe strangury. The usual symptoms of *poisoning* by this article are stricture of the fauces, vomiting or painful efforts to vomit, strangury, tenesmus, inflammation of the kidneys and bowels, &c. &c.

The *Edinburgh Medical and Surgical Journal* for October, 1844, has two cases of poisoning, one of which terminated fatally, the other in recovery. A man, aged thirty, took twenty grains of cantharides in some food, in a joke, probably for the purpose of exciting the genital organs. The symptoms above-named were developed. The man was saved by the exhibition of bark, wine, and laudanum.

Another man, aged forty-five, swallowed fly-plaster in mistake containing about two drachms of flies. Emetics were given, followed by mucilaginous drinks. In seven hours he was quite cold, without pulse, and died at the end of twenty-four hours. Dissection showed inflammation of the brain and stomach. The man was insane and paralytic before he committed the act.

The *London Lancet* records the case of a woman poisoned by accidentally swallowing fly-plaster in chocolate. A piece of the plaster as large as a walnut fell into the vessel in which the chocolate was boiled, unnoticed at the time. High inflammation of the kidneys ensued, accompanied by gastric distress, strangury, &c. Leeches, fomentations, aperients, and demulcent drinks constituted the treatment, and restored her.

There is another case mentioned in one of the journals that has some special importance attached to it because it is unique.

A girl lost her life by using the ointment of cantharides in mistake for sulphur ointment in the management of *itch*. It is stated that the cuticle was much abraded by the continual scratching.

The *Gazette des Tribunaux* records the case of a man whose life was attempted repeatedly by the introduction of cantharides into his food. He was seized with severe pains in his stomach and bowels, together with strangury. At length the villany was detected, and the man recovered.

The *American Journal of Medical Sciences*, vol. xvii., furnishes some facts in relation to the poison, by cantharides, of several negroes, to which the reader is referred.

No sort of oil should ever be given in a case of poisoning by cantharides, as it increases the danger by giving greater solubility to the cantharidin.

CAPSICUM ANNUUM. *Cayenne Pepper. Capsici Baccæ.*— The uses of this article as a condiment are too well known to need particular remark. A large quantity of the powder employed for that purpose is prepared in this country. The *African cayenne* is decidedly more powerful as an internal and external *stimulant*, *rubefacient*, &c.

Adulteration has been practiced even in regard to this article, by the addition of saw-dust and red lead. The latter is a dangerous combination. To detect it add water, stir a few minutes, and then allow the mixture to settle. The lead will fall to the bottom and may be separated easily. Act on it by diluted nitric acid, adding to the solution sulphureted hydrogen gas, which will make the whole quite black or of a very dark brown.

To get the *rubefacient* action digest a portion of the pepper in hot water, hot vinegar, or spirits. The strength of the preparation is increased by gently simmering for a few minutes on hot coals. It may be applied by soaking flannel in it as hot as it can be borne, squeezing out the surplus liquid, and applying close to the skin; or it may be rubbed on the surface with smart friction. It is thus employed to relieve *rheumatic pains*, *sore throats*, pains in the bowels, &c. &c., and the benefit depends on active *counter-irritation*. For the relief of sore throats, *inflamed fauces*, &c., besides the external application, the decoction of the pepper is employed as a gargle freely and often. A very useful application of the powder is to abate the extreme *coldness of the feet*, to which some persons are liable. A teaspoonful sprinkled over the inside of the stocking foot once a day, just before the stockings are drawn over the feet and legs, will generally afford the desired relief.

Dr. Trumbull, of Manchester, England, cures *chilblains* with the concentrated tincture of capsicum rubbed freely and smartly

into the parts every day for a week or ten days. (See *London Lancet*, March, 1850.)

Many females at the *catamenial periods* suffer from abdominal pains, the discharge being quite too scanty at the same time; and under such circumstances a tea, as they call it, is resorted to by the ladies with prompt benefit. A teaspoonful of cayenne to a quart of hot water will make an infusion of which a wine-glass half full may be taken every two or three hours. The condition referred to is most usually complained of in cold and damp weather, and then the remedy is particularly applicable. Severe *colic*, induced by cold and wet feet, and not dependent at all on intestinal accumulation, is often relieved by the same infusion.

Bergius, who lived and died long before the *steam-doctors* were born or thought of, employed cayenne pepper as a remedy. He treated *obstinate agues* by giving the pepper a short time before the cold stage was looked for. He preferred the infusion or decoction, and says he prevented a return of the fits of ague by its exhibition.

Some West India practitioners recommend the use of cayenne pepper in the advanced stage of *yellow fever*, in the dose of three grains every two hours in form of pill, and applying poultices of the pepper to the feet at the same time. To prevent the pills from burning the throat they may be covered with dough or wafer.

Dyspepsia, dependent on loss of tone in the stomach and bowels, has been greatly relieved by cayenne pepper in doses of five or ten grains. I have known dyspeptics to take a teaspoonful daily, an hour before dinner, with good effect.

The celebrated *steam medicine* called No. 6 is a compound tincture of cayenne and myrrh. Sometimes the balsam of fir is added, and some nutmeg. The strongest brandy or alcohol is necessary to make the best quality of this wonderful medicine. Unfortunately the steam-doctors employ this powerful stimulant internally, in violation of all the rules of medical propriety. I knew one of them to give it to a patient laboring under *apoplexy*, and at the same time employing the alcoholic vapor-bath. They give it in violent *colic*, *rheumatism*, &c., and sometimes with apparent benefit. In colic with great flatulence and no obstruction it may not be improper. But if there be intestinal accumulation it must be injurious. The common dose is a teaspoonful.

The external application is generally safe, and it may be regarded as an excellent *rubefacient*.

Capsules.—These are small vessels made of gelatin, of an oval form, having a cavity large enough to contain a small quantity of medicine the taste and smell of which it is desirable to

conceal. After the cavity is filled a cap is fixed and luted fast with a solution of the gelatin, so as to form a shut sac. The size is sufficiently small to allow of easy swallowing by the most captious patient, and then, too, he is gratified to be able to take a nauseous dose without inconvenience. The quantity of medicine in each capsule is small, and hence the necessity for several to be swallowed in quick succession if the remedy be not of the energetic class. Copaiba and cod liver oil are administered in this way. This contrivance is not suited to those in moderate circumstances, because too expensive; and, in truth, it is best to take a full dose at once, undisguised, if there be no special objection.

Carbo Ligni. *Charcoal of Wood.*—The *antiseptic* or preserving power of this article has long been known to the world, and will ever be valuable. Even the charring of water-casks presents enough of antiseptic power to preserve water for long voyages. Meats are kept by contact with charcoal, and *fetid eructations* and *foul breath* are corrected on the same principle.

In the Pennsylvania Hospital forty years ago the consumptive wards were rendered comparatively pure by the free administration of fine charcoal powder to each patient, in the dose of a teaspoonful in milk or molasses three times a day. These are advantages, certainly, flowing from the antiseptic power of charcoal, but are nothing in comparison of the real value, as judged by Hahnemann, who has devoted *thirty-five pages* of one of his works to unfold the effects of *less than the millionth of a single grain.* What do we not owe to the revelations of homœopathy?

The *external* uses of charcoal are closely related to its *antiseptic* power. The *charcoal poultice* is an excellent application to fetid or gangrenous surfaces, where it acts in part, also, as a *disinfectant.* This poultice is readily made by stirring into the common bread and milk or mush poultice enough charcoal powder to blacken the mass. It should be renewed two or three times in twenty-four hours. The same kind of application is often useful in the management of *scald head.* An *ointment* is sometimes employed in the same disease, made by rubbing eight ounces of charcoal and two of the flowers of sulphur with two pounds of lard. The scalp should be well cleansed by poultice and washing with soapsuds before the ointment is applied. Five or six nightly dressings are frequently enough to effect a marked change, provided the system be properly corrected by alteratives or emeto-cathartics.

Dr. Miller, of New York, and others, have employed charcoal successfully in *obstinate constipation*, in doses of two drachms, with as much carbonate of soda, three times a day. Dr. Jack-

son, of the West Indies, treated *gastric and hepatic affections* with charcoal. From ten to twenty grains of carbonate of soda, with six or eight grains of powdered charcoal, or two grains of ipecacuanha, in rice or arrow-root water, was the treatment, repeated for several days. He affirms that it rectifies disordered secretions very promptly.

Dr. Belloc, surgeon of hussars, reported to the Academy of Medicine of Paris the successful use of charcoal in nervous gastro-intestinal affections, both of the idiopathic and sympathetic kind, in doses of one or two teaspoonfuls taken before each meal. Dr. B. took sixteen ounces in one day. It not only acts as a cathartic, but decidedly improves the condition of the stomach. —*London Lancet*, June, 1850.

The employment of charcoal as a *dentifrice* is based on its powers as an antiseptic and disinfectant. It is well suited to clean the teeth and abate the offensive nature of any that are carious.

Charcoal in fine powder has been administered by the mouth and per anum as a prophylactic in reference to measles, cholera, &c. &c. Dr. Wilson, colonial surgeon of New Zealand, speaks in high praise of the practice, which seems to have been very salutary in his hands. He learned the use of the article from Jackson, author of the old work on fevers, who says, "It was soothing and pleasant beyond the effect of common remedies, the excess of the evacuations being not only restrained, but the matter changed from blood to mucus, putrid and offensive to natural feculence."—*Edinb. Med. Journal*, Nov. 1856.

CARRAGEEN. *Irish Moss.*—This article is held by many to be preferable to the *Iceland moss*—the *lichen Icelandicus*. Mr. Bass, an English chemist, says it is highly prized by the peasants on the western coast of Ireland as a dietetic remedy for various diseases, but especially for *pulmonary consumption*, *dysentery*, *rickets*, *scrofula*, *affections of the kidneys and bladder*, &c. &c. This moss has all the advantages of Iceland moss without its unpleasant taste or flavor, and the quantity of nutriment it yields is surprising. It is not only very nutritious, but quite bland and easy of digestion. To prepare it for use steep a quarter of an ounce in cold water for a few minutes, and then pour off the liquid. Place the clean moss in a quart of new milk and boil till the whole is of the consistence of jelly. Strain and sweeten, adding spice, &c. at pleasure. Some add candied ginger-root to make it more agreeable. Should milk disagree with the stomach substitute water in its place.

This article, as well as the Iceland moss, is altogether overrated. Neither is entitled to the encomiums bestowed, having almost no medicinal power, though being very useful as articles

of diet. They are well suited to irritable conditions of the stomach and bowels, and are almost always safe.

CATECHU. *Extract of the Acacia Catechu*, formerly called *Terra Japonica*.—It is neither an earthy nor mineral substance, but purely of vegetable origin, and is brought chiefly from Bengal and Bombay. The word *catechu* is of oriental origin, made of two words, *cate*, a tree, and *chu*, juice. The juice as it issues from the wounded bark is much lighter colored than the solid catechu, and even this differs considerably in point of color. The *pale* and *dark-brown* varieties are spoken of, but the only available test is the degree of *astringency*, which can be determined by the taste.

The astringency of catechu resides in its tannin, besides which it contains extractive, mucilage, and various impurities that are accidental. Alcohol takes up all the tannin and extractive and leaves the mucilage. Water is capable of dissolving enough to make a decidedly astringent solution.

Catechu is employed in substance, infusion, and tincture. *Relaxation of the uvula and fauces*, so common to singers and public speakers, is often relieved by chewing catechu, which is carried in the pocket for that purpose. An occasional gargle at bedtime and early in the morning is also of advantage. The astringency and tonic property of the catechu combine to restore the lost tone of the parts, and hence it is useful also in *aphonia* and *hoarseness*, which sometimes follow low fevers.

Diarrhœa is often successfully treated with catechu alone, or conjoined with prepared chalk and aromatics. The following is a good formula:—

℞.—Prepared chalk,
Powder of catechu, each a drachm;
White sugar,
Powder of gum Arabic, each a half-ounce;
Oil of cinnamon, five drops;
Water, five ounces.
Mix carefully, so as to form a homogeneous compound.

The dose is a tablespoonful every two hours, for an adult. The phial should be well shaken before dispensing the medicine.

Fissure of the nipples is treated with success, frequently, by the tincture of catechu, applied twice a day with a fine hair pencil. A few applications suffice. A strong infusion would probably answer quite as well. The *tincture* for this purpose may be made by macerating three and a half ounces of catechu in two pounds of proof spirit or brandy for the space of fourteen days, after which filter or strain. If the tincture be required for internal use add to the above ingredients two and a half ounces of bruised cinnamon bark. We often add this aromatic

tincture to the usual chalk mixture. The *infusion* is prepared by macerating in a clean vessel, not very tightly covered, six drachms of catechu in a pint of boiling water, adding also a drachm of bruised cinnamon. Strain through linen or calico, and add (for internal use) about three ounces of syrup, either simple or compound.

The dose of powdered catechu varies from ten to thirty grains, and in the same proportions when given in mixture. The usual dose of the tincture and infusion is from one drachm to a half-ounce.

It is needful for practitioners to be aware of the more important *incompatibles* of catechu. Thus, we should not administer a solution of catechu containing ipecacuanha, because the tannin of the one combines with the emetin of the other, forming an insoluble and inert tannate of emetin. For the same reason opium should not be added to a catechu solution. Tannate of morphia would be produced, and that is inert also.

We can very speedily obtain a good deal of impure yet efficient tannin from a watery solution of catechu. An ounce or two added to a quart of hot water, well stirred, and allowed to settle, will part with nearly all its tannin, which will collect at the bottom of the vessel. It should be washed and dried on a filter.

CATHARTICS. *Purgatives.*—From *cathairo*, to purge. In the literal sense a cathartic is anything that will induce a purgative operation. In a restricted sense it refers to medicinal agents taken into the stomach or bowels. Cold dash and mental impressions will often excite purging, even after medicines have failed; and they are, therefore, truly entitled to be classed with cathartics. Blood-letting and the external use of ordinary cathartics will also induce intestinal evacuations, as many practitioners have proved by experience.

Cathartics act physiologically, therapeutically, and sympathetically. The mere emptying of the canal may be purely a *physiological* act. If besides this effect the head is greatly relieved, that would be a *therapeutic* result, or some would call it a *sympathetic* effect.

The most common division of cathartics is into *laxatives*, *purgatives*, and *drastics*, to which some add *hydrogogues*. The latter term refers to the fact that very thin copious stools are discharged, as we observe when the neutral salts, elaterium, and gamboge are employed. The term *phlegmagogue* denotes bilious stools. *Cholagogue* and *panchymagogue* have also been employed, but they are now obsolete, or nearly so.

Cathartics tend to augment the secretion from the inner surface of the bowels, but in a very different degree, as we find in the use of

aloes and the soluble salts. They also promote the natural expulsive power of the canal, inducing more efficiently the discharge of its contents. They are the most potent and useful of all the eliminative medicines, meriting also to be placed among the simplest and most active antiphlogistics. So abundant is their variety, moreover, that we find no difficulty in a wise adaptation to cases as they occur. There is no class that could be obliterated with greater detriment to the practice of physic.

A cathartic merely *laxative* gently opens the bowels, giving a single discharge. A moderate use of ripe fruits, a little manna or magnesia, will often act in this way. A change in the diet even, particularly the habitual use of bran bread, will give a mild laxative tendency.

Purgatives occupy a higher and more efficient grade. They stimulate the mucous coat of the bowels longer and more actively than laxatives do, and the evacuations are more numerous and copious. Hence they form a part of the *antiphlogistic* plan of treatment, and prove ultimately *sedative.*

Drastic cathartics act with still more power, inducing also griping pains, more or less nausea, and sometimes vomiting. They are administered partly with a view to their action on the bowels as counter-irritants.

It is always important in prescribing a cathartic to name the length of time requisite for its action. If it demand eight, ten, or twelve hours, it should be given at bedtime, and then the patient will not be disturbed during the night. Saline cathartics and castor oil are best given early in the day. The resinous cathartics, sulphur, and calomel, at bedtime. It is well also to remember that the action may be accelerated by warm drinks, as molasses and water, gruel, and the like. Spasmodic pain in the bowels may retard the cathartic operation, unless an opiate be added. Under such circumstances an ounce of castor oil with ten drops of laudanum will be more prompt and salutary than the oil alone. Let it be also recollected that cathartic medicine sufficiently active for old resident citizens will fail in new comers from Europe, and if the case be decidedly febrile it may be necessary first to deplete by blood-letting.

It is important that young practitioners should bear in mind that cathartics are always most wisely administered in the early stage of fall fevers, especially the *bilious remittents.* On the first or second day they do service, and may be indispensable. The common error is to allow a favorable remission to pass away unimproved, and then to expect to compensate for the blunder by repeated doses of active cathartics at a late period in the progress of the disease. The plea then is that the right kind of stools had not been obtained, that the tongue is not sufficiently

cleaned off; and to gain these ends the cathartics are repeated, the mucous coat of the bowels irritated, perhaps ulcerated, and an incurably typhoid state is established. I know, from much experience in the treatment of the fevers referred to, that the best course is to purge actively on the first or second day, and then to profit by even a slight remission by the administration of sulphate of quinine.

We might extend our remarks on cathartics to a great length, but prefer to supply obvious deficiencies when we treat of individual cathartics.

CAUSTIC, COMMON. (See *Potash.*)

CAUSTIC, LUNAR. (See *Argentum.*)

CAUTERY. *Actual* and *Potential.*—The actual cautery refers to the use of heated iron or something of that kind. The *potential* has reference to the action of common caustic and other chemical escharotic preparations. Of these latter we shall speak elsewhere.

The actual cautery was formerly much more in use than at present. Its formidable aspect more than anything else led to its neglect. It has been revived in England, in the treatment of *gangrene of the face*, and with very happy results. That disease often spreads with ruinous rapidity; and, by inducing an entirely new action in the tissues, such as the hot iron can effect, not only is the gangrene arrested, but healthy action is promoted. (See *Edinburgh Medical and Surgical Journal* for Jan. 1844, for facts in point.)

This remedy has been successfully applied in a French hospital for the cure of contraction of the limbs, and especially for the retraction of the leg. The patient being *chloroformed*, (a new word,) the cautery was applied so as to make five or six marks of four or five inches in length round the affected and useless joint. The limb was then drawn out and confined in a metallic trough and the burnt parts were dressed. In six weeks after the operation the wounds were healed and the patient could walk on the straightened limb. Two cases were operated on in this way with success. (See *Ranking's Abstract*, No. 10, p. 142.)

The process called *firing* is also a form of the actual cautery. The instrument for effecting this consists of an iron wire shank two inches long, inserted in a wooden handle having on its extremity, which is slightly bent, a disk or button of iron a quarter of an inch thick and half an inch in diameter, making the whole instrument only six inches in length. The disc is heated to whiteness over a spirit-lamp and applied very gently to the skin, so that a hundred applications may be made in a few minutes. Often the patient is unconscious of pain because he is at once

relieved of suffering and astonished at the result. Chronic rheumatism and local palsy have been successfully treated by this expedient. (See *Braithwaite's Retrospect*, part xiii. p. 55.)

CEDRON, an article lately found in South America, is named as a new remedy for *intermittents*. The dose is from seven to fifteen grains of the powdered root daily. We know nothing further touching it.—*London Lancet*, 1857, p. 460.

CHEESE.—The extensive employment of this article as a part of our food makes its entire history quite interesting. No rule can be laid down in respect of its salutary nature that will apply to all persons. The safest advice is to eat it very moderately, and never late at night. That it is indigestible in many instances is not denied; and yet it would seem to aid digestion, as an addition to pies and puddings, if eaten in small quantity. The dry cheese is, ordinarily, more wholesome than that which is very moist; the old better than the new.

For many years it has been known that cheese, owing to some unusual quality, exerted occasionally a poisonous influence. In the German journals may be found several very interesting papers on this subject, and they go to confirm the statements so often made in this country on the same point.

It has happened that of a whole cask of cheese received from a given cheesemonger only one has evinced any poisonous properties, and that had no obvious peculiarity about it in color, consistence, or taste.

The symptoms develop themselves according to the quantity eaten, commencing in from ten to fifteen hours, but deferred now and then to a more remote period after the noxious meal. The first notes of distress are pain in the stomach, vomiting, purging, and dryness of the mouth and nose. The eyes, eyelids, and pupils become fixed and motionless; the voice grows hoarse or fails entirely; the power of swallowing is impaired; the pulse gradually flags; swoonings occur, and the skin is cold and insensible. The secretions and exertions, excepting the urine, are suspended; but sometimes there is a profuse diarrhœa. The appetite is not affected; there is little or no fever, and the mind is unclouded. Fatal cases end with convulsions and laborious breathing as early as the third, and as late as the eighth, day. If the patient recover he feels badly for weeks, and sometimes never regains his wonted vigor.

The symptoms mark this substance as belonging to the *irritant* poisons, although secondarily it would seem to merit a place among the *narcotico-acrids*.

The *morbid appearances* are inflammation of the mucous membrane of the stomach and bowels, whiteness and dryness of the

throat, flaccidity of the heart, and a strong tendency to resist putrefaction.

That cheese is sometimes poisoned with red lead that is present in the annato employed to color it cannot be doubted. Mr. Wright has furnished a good paper on this subject in the *Repository of Arts*, vol. viii. p. 262. It presents undoubted proof of the poisonous action of some fine looking Gloucester cheese, in which the red oxide of lead was easily detected by a neighboring chemist. Samples of the annato employed as a coloring for the cheese were found to be strongly impregnated with lead. This very dangerous sophistication can be readily detected by macerating a portion of the suspected cheese in water impregnated with sulphureted hydrogen gas, acidulated with muriatic acid. A brown or blackish color is instantly struck if the minutest portion of lead be present.

But the most embarrassing cases of cheese-poisoning are those in which the ordinary tests fail to discover any evidence of poisonous adulteration. These are of frequent occurrence. About twelve years ago a large nnmber of persons sickened after eating of a fine-looking and well-tasted cheese, which was one of a cask, more than half of which had been sold in the same village. There was no fatal case, but some persons were made extremely sick, and suffered great gastric and intestinal distress. I was requested to make an examination of the cheese, and portions were sent to others for the same object. After a careful research no poison could be detected by the ordinary means, and we came to the conclusion that the source of the evil must have been derived from some vegetable matter eaten by the cows.

The inquiries of Serturner and others go to make it probable that the poisonous property of cheese often depends on two animal acids, analogous to, if not identical with, the caseic and sebacic acids, which we know to be chiefly the source of evil in poisonous sausages. It is certain that caseic acid obtained from cheese will destroy the smaller animals very promptly, and that the sebacic is even more rapidly fatal.

I feel confident that not a little of the cheese that induces poisonous effects owes its pernicious quality to the same, or to a similar vegetable matter that is generally regarded as the cause of *milk-sickness* in new countries. If the milk and the cow that yields it may be poisoned, as they certainly are, what can prevent butter and cheese made from such milk from sharing in the evil?

As to the proper remedies it is plain that they must be regulated on general principles. In the cases referred to, bland mucilaginous drinks, hot fomentations, rubefacients, and ano-

dynes were employed. If I were called to similar cases a resort would be had to the endermic use of a salt of morphia in preference to internal anodynes. Let it be understood that the stomach must be freely evacuated of the poisonous cheese, either spontaneously or by art, prior to such treatment.

CHENOPODIUM ANTHELMINTICUM. *Wormseed.*—This is a perennial plant about three feet high, flowering from July to September, and growing in waste places in most parts of the United States. The seeds are small, and, like the plant, have a strong, heavy, rather disagreeable odor, which is due to a volatile oil. When quite dry the seeds are of a greenish-yellow or brownish color, having a bitter, warm, pungent taste.

Soon after the discovery of this country trials were made of the seeds and oil as an anthelmintic, and especially for the lumbricoid worms of children. Owing to the offensive taste and odor the remedy is not as popular as it should be. The oil enters several vermifuge compounds, and is the basis of their efficiency. The expressed juice of the plant and an electuary of the seeds have also been employed as remedies for worms. A decoction has been made by boiling the fresh leaves in new milk, and this is said to be a less disagreeable form than some others. The electuary is readily made by pulverizing the seeds and mixing them well with honey or syrup.

It is generally agreed that the oil is the best mode of administration, though the smell and taste are offensive. The dose is from four to eight drops morning and evening for a child five or six years old. This dose may be given on sugar, or made into an emulsion with gum Arabic and sugar.

Having never had occasion to employ the wormseed in any shape, I know nothing about it from personal observation or experience.

CHINA BOGOTENSIS is a name given to an article called *new Bogota bark*, because found near Bogota, although this name has sometimes been applied to other varieties. From it has been obtained a salt called the *sulphate of quinodine*, which has been employed by Dr. Foote, of Texas, in lieu of the *quinine* salts. Thirteen cases are reported, in none of which the head was affected, although the doses were larger than those of the quinine preparations. Its *antiperiodic* power is said to be very great. —*New York Journal of Medicine*, 1855.

CHLORINE. Formerly *Oxymuriatic Acid Gas.*—The term *chlorine*, from *chloros*, green, refers to the peculiar color of the gas, which is held to be a simple or elementary substance. Chlorine gas is very pungent and suffocating, having a peculiar odor, and an astringent, disagreeable taste. The action of diluted sulphuric acid, four parts, on eight parts of common house-salt

(muriate of soda) and three of black oxide of manganese, by the agency of a spirit-lamp or a sand-bath will speedily evolve large quantities of this greenish gas. Long ago this mixture was resorted to for the purification of hospitals, dissecting-rooms, &c. Although non-respirable itself, yet the gas acts chemically on foul odors with such promptness that its own disagreeable qualities are soon abated and finally lost. It seizes the hydrogen of those odors, combines with it, and thus destroys the native quality of the odors themselves, while the new compound it forms with the hydrogen is comparatively harmless. Fourcroy was the first to employ this agent as a disinfectant; he did so as early as 1791.

As further evidence of the power of chlorine to destroy the morbific qualities of effluvia, that are generally supposed to be the fruitful source of many epidemic fevers, it is important to bear in mind that all the operatives in and resident near to the factories of Belfast, where vast quantities of this gas were employed in the process of bleaching, were exempt from the fevers that desolated Ireland from the year 1816 to 1820. Not one of the numerous workmen experienced an attack. In view of such facts it is idle to dispute about the real cause of those fevers, whether it be malaria, or marsh miasmata, or anything else.

Chlorine gas diluted with common air, and also chlorine water, have been a good deal employed in medical practice.

The *expectorant* property of diluted chlorine gas was very satisfactorily shown by Ganal in his account of its effects in factories where it was employed constantly as a bleaching agent. Workmen who entered the factories with cough and other attendants of pulmonary disease were soon relieved and often cured. The *London Medical Review* for October, 1833, notices its successful action in *chronic bronchitis*. For this end the inhalation is made from vessels containing the aqueous solution of chlorine. Two drachms of the concentrated solution (made by passing the gas into water until it will absorb no more) are added to a pint of water in a Woulfe's bottle, to which a flexible tube is attached. The bottle is dipped in hot water to liberate the gas which is inhaled by the tube. The quantity of chlorine water may be increased gradually to half an ounce. Dr. Travart, of Marseilles, first employed this method in 1804, as may be seen by reference to the *Medico-Chirurgical Review* for April, 1834.

I had an opportunity of testing the expectorant property of chlorine in my own person in the year 1837, while engaged in my course of lectures on chemistry in Transylvania University. I had labored under a cold for several days, and expectorated

with difficulty, but was very unexpectedly and speedily relieved by the accidental fracture of the retort in which I was preparing chlorine gas for exhibition. A sudden escape of the gas, not very much diluted, by the way, almost suffocated me; but no sooner did I get access to the open air than I began to feel better. The act of coughing was more easy, expectoration soon quite free, and before the next day the unpleasant companion had left me.

Dr. John Redman Coxe, formerly professor of chemistry in the University of Pennsylvania, has published an account of morbid effects on his person from the accidental inhalation of chlorine gas. Inflammatory action was induced, which called for blood-letting and other antiphlogistic remedies. In his case the gas came in contact with structure not diseased, as was mine, and hence the difference in the result. In my person the irritant poisonous gas really operated as a counter-irritant, or contra-stimulant, and so proved salutary. In a thousand instances we may discover opposite results to flow from the action of the same cause in different persons, and even in the same person at different times.

Mr. Mann, of Clerkenwell, exhibited chlorine water with very great success in the late *Asiatic cholera* in England. He employed the concentrated watery solution with a little sulphate of soda. From one to two drachms diluted with water were given every hour until the symptoms abated. It invariably arrested the pains, purging, and vomiting. Of nearly one hundred cases treated in four days only two died. We suppose the diluted liquid chloride of soda would answer equally well. (See *Braithwaite's Retrospect*, part xx. p. 345.)

In *low fevers*, where the powers of life are greatly exhausted and a tendency to a putrescent state apparent, much benefit has been derived from the internal use of chlorine water. It acts as a *stimulant*, and seems to counteract, more than any other agent, the typhoid element of those fevers on which their fatality probably depends. Two drachms of the strong aqueous solution may be mixed with three ounces of distilled water, and a tablespoonful given at a dose, so as to consume the whole in one day. The proportion of chlorine water may be increased gradually till it reaches five or six drachms. The mixture elevates the pulse, excites gentle perspiration, and neutralizes the offensive odor of the intestinal discharges. A similar practice has been useful in *malignant scarlet fever*, and will be noticed in another place.

An Italian has reported success in the treatment of *hydrophobia* by means of a mixture of four scruples of the chlorine water with four ounces of aromatic water and a half-ounce of syrup of lemons. But the statement needs confirmation.

Some French surgeons have employed the chlorine gas and water by way of injection, in lieu of wine, for the radical cure of *hydrocele*, with success; and the fact, most probably, led Velpeau to try iodine for the same end.

Chloroform.—The notoriety acquired by this article as an *anæsthetic* agent entitles it to a short notice here. The books tell us, for the most part, that it was simultaneously discovered in 1832, by Souberain and Liebig; but I judge this to be an error. Mr. Guthrie, of Sackett's Harbor, New York, prepared what I suppose to have been the same article, substantially, in 1830; and in my *Elements of Chemical Philosophy*, published in 1832, mention is made of the fact. I infer this from the method of forming the article, as found in the books, corresponding very closely with the plan pursued by Guthrie. In the last edition of *Christison's Dispensatory*, it is said that "chloroform is *now* prepared by the action of bleaching powder (chloride of lime) on either alcohol or pyroxylic spirit." The ingredients used by Guthrie in 1830 were chloride of lime and alcohol. He designated the product *chloric ether*, which differed from the present chloroform, if at all, in the fact of a large dilution with alcohol. The properties ordinarily assigned to chloroform, apart from its anæsthetic quality, were the same with those resulting from the use of the chloric ether of Guthrie. The latter was held to be a diffusible stimulus, a good antispasmodic, and acting, in short, very much like sulphuric ether. Having had in my laboratory a quantity of the chloric ether of Guthrie, and frequently exhibiting it, my impression is quite clear that it is in no sense a different article from the modern chloroform, excepting in respect of the dilution already hinted at.

Some have described the chloroform as transparent and colorless, and such was the appearance of the chloric ether; but it is sometimes asserted that chloroform has a yellowish tinge, which is the fact. It is considerably heavier than water, having a peculiar, fragrant, ethereal, apple-like odor, with a slightly acid and intensely sweet taste, in all which respects, excepting density, it agrees with the qualities of the chloric ether referred to.

The properties assigned to chloroform are various. In very large doses it is, like all ethereals, a *narcotic poison*, and sometimes evinces *narcotico-acrid* effects. In smaller doses it is *stimulant* or *sedative*, according to the state of the system, *antispasmodic*, *anodyne*, and *anæsthetic*.

The mode of exhibition is either by inhalation or by mixture internally administered. Various contrivances have been resorted to, especially by dentists, for the easy and comfortable inhalation of the article. It will be found, however, on trial,

that as good a mode as any is to make use of a silk handkerchief, on which some twenty, thirty, forty drops, or more, are placed. In lieu of this, a clean soft sponge will answer very well. The latter, or the handkerchief charged with the chloroform, is applied to the nose, that the party may inhale the volatile matter.

The *usual effects* in what is regarded a fit subject are soon apparent. Whizzing and pulsation in the head, an imaginary change in the color of objects, sensations and feelings of an agreeable sort, more or less loss of consciousness, a soft slumber, or propensity to laugh, or to talk incoherently, or to be boisterous. This state of things ordinarily continues some five or six minutes, and after it has subsided there is frequently no recollection of what has happened, and often no remembrance of pain, though several teeth may have been extracted.

If a much larger quantity be inhaled, as a drachm or two, the cerebral effects will be more obvious, and fatal results may occur. A reference to the article *ether* will show that the inhalation of the gas of sulphuric ether has acted much in the same way. Several volumes have been given to the public setting forth the safety and happy consequences of this practice. But one of the most recent writers on parturition (Dr. W. Tyler Smith) declares that the enthusiasm of novelty having subsided, the chloroform treatment is falling into disuse. I have not space to enter into details, and can only add my own conviction that it ought to be discarded, and that in less than ten years *it will be*—I mean, as an obstetric medicine.

But chloroform has been employed for the relief of *asthma*, *puerperal convulsions*, *neuralgic pain*, in *chorea*, *hydrophobia*, *tetanus*, *delirium tremens*, *Asiatic cholera*, *epilepsy*, &c. &c. Some very interesting cases are reported in *Braithwaite's Retrospect*, *Ranking's Abstract*, and the *London Lancet*, of the successful management of hydrophobia, tetanus, delirium tremens, and epilepsy, by this remedy; and in all diseases which ordinarily resist medical treatment and prove fatal it is quite proper to give a trial to the chloroform. A case of cholera is reported by a physician as cured promptly by this medicine. It was in his own person, and he had no other article at hand, and inhaled it until he became unconscious and fell asleep; he awoke in a decidedly safe condition.

We know of scarcely a disease more distressing to parents than *infantile epileptic convulsions*, and therefore we present the following testimony in favor of the internal use of chloroform for their relief and cure. We are well aware that the cause of the disease must be carefully sought for in every instance, or our best remedies may avail nothing.

The child named by Henry Bowe, Esq., in the *Medical Times and Gazette* for Sept. 1853, was five months old when the first seizure occurred. When fifteen months old the chloroform treatment was tried, as the fits had increased to eighteen per day and the countenance had become idiotic. Five drops were given in mucilage after every fit. The child slept the whole night after taking the first dose. The medicine was continued three times daily, beef tea and arrow-root being the chief diet. From April 27, when first treated, to May 6, the improvement was rapid, and then he appeared not so well, because of difficult dentition. The dose was augmented to seven drops, and a mild cathartic was given twice a week. The attendance ceased on May 26, when perfect recovery had taken place. He was seen on July 18, and was in good health, the fits not having recurred.

We commend this case to the consideration of our brethren, who well know how often they are baffled in the treatment of epilepsy.

Mr. Childs, an English surgeon, employed chloroform with obvious advantage for the relief of great intolerance of light, attending chronic inflammation of the eyelids. One drop was let fall into each eye, daily, for several days, and with the effect of enabling the patient to look steadily at the light for some moments. The remedy seems here to exert a happy sedative influence. (See *London Lancet*, April, 1850.)

Lead colic has been happily controlled by Dr. Aran by the external use of chloroform. From one to two drachms were poured on a wet cloth, and this applied for the space of half an hour to the abdomen with pressure. On this local appliance the chief dependence was placed, although the remedy was given sometimes by the mouth preceded by a simple enema.—*London Journal of Medicine*, January, 1851.

Chloroform frictions over the whole body have arrested *tetanus* after the failure of other more common means. The frictions were repeated every half hour.—*London Lancet*, Aug. 9, 1851.

That frightful form of disease called *puerperal convulsions* has been happily relieved by the use of chloroform administered on linen in half-drachm doses, keeping up the full effect for three hours. After copious bleeding and doses of morphia had entirely failed, this appliance succeeded. For particulars, see *Braithwaite*, p. xxix. p. 285.

As internal medicines are not always applicable in cases of *chorea*, it is well to know that frictions with chloroform have been successful, especially where the disease was induced by fright. Equal parts of chloroform and oil of sweet almonds well mixed were rubbed night and morning along the spinal column. In

six days the disease was conquered. (See *L' Union Médicale*, Oct. 1850.

Dr. Laudenen, a physician at Athens, affirms that chloroform is a specific for *sea-sickness*. Ten to twelve drops suffice, in most cases, to stop the nausea, and enable those who take it to assume the erect posture and to become habituated to the motion of the vessel. If the sickness return, the dose must be repeated. The remedy was tried on twenty passengers during a very rough sea-voyage from Zea to Athens, and all with the exception of two were cured with one dose. The others recovered on taking a second dose.—*Medical Times and Gazette*, 1857.

M. Latour, in *L' Union Médicale* for January, 1857, refers to a case of very obstinate hiccough which was immediately arrested by the employment of chloroform.

I should feel disposed to try the chloroform in cases of pure neuralgic pain and irritability of the eye wholly disconnected with inflammation. It might be rubbed on the lids at first, and finally dropped on the ball of the eye.

Several writers on *Asiatic cholera*, in the *London Lancet* for April, 1850, speak favorably of the use of chloroform in effervescing mixtures, and also in ten-drop doses, every quarter of an hour, given alone. The effect was speedily to arrest the vomiting and allay gastric irritability.

M. Ricord and Dr. Escallier have lately reported to *L' Union Médicale* on the means of arresting the fatal effects of *chloroform*. It is by forcing inspiration and expiration, either by blowing into the patient's mouth, or by thrusting two fingers deep into the throat, even to the entrance of the larynx and œsophagus. Sudden expiration ensued and recovery followed. (See *London Lancet*, Feb. 1850.

M. Guersant, chief surgeon of the *Hospital for Infants*, at Paris, thinks that chloroform is much more frequently called for in the cases of infants than in those of adults, and that it is less apt to do harm. (See *London Lancet*, Jan. 1850.)

When given internally, the dose is from five to ten drops in brandy and water. This is for an adult.

That an agent like this should often excite the heart's action violently, and always accelerate its pulsations more or less, as well as develop the usual phenomena of stimulation, will not excite the wonder of any who recollect what the appropriate effects of stimuli are. And when it is borne in mind that some persons are much more easily excited than others, and realize more uniform cerebral excitement from very slight causes, it will not be matter of surprise that the indiscriminate and injudicious administration of chloroform in *dental* practice was followed by

not a few fatal results, and that for a like reason its *obstetrical* application has also been occasionally disastrous.

Chloroform has been resorted to by many distinguished surgeons to induce unconsciousness and insensibility, during which state the knife has been employed successfully. It is proper to say that the professional mind is by no means agreed in regard to this practice; some of the ablest surgeons holding it to be *bad practice*. Dr. Simpson, a distinguished obstetrician, and some American practitioners, still advocate the anæsthetic use of chloroform in natural as well as preternatural labors.

It cannot be denied that the inhalations of chloroform and sulphuric ether have been practiced on a very wide scale in this country, and with comparatively few bad results. Some prefer the ether, while others give a decided preference to chloroform. We need not say that the use of either calls for wise discretion.

A very grave question of medical jurisprudence was raised in this city not long since, involving the character of a dental practitioner not a little, growing out of the administration of one of these anæsthetics to a female. We are not disposed here to discuss the merits of that case, and will be sufficiently understood when we declare, as we do most conscientiously, that in our judgment the final act of Governor Pollock in the Beale case was just and proper. His reasons for the act accord with our views of the case while the trial was progressing.

A writer in the *Medical Times and Gazette* for Dec. 1856, (anonymous,) says he has used chloroform in at least one thousand cases, and never with bad consequences. He takes the precaution of giving the patient a glass of spirits or wine before the chloroform is administered. He prefers the spirits even for ladies, and thinks that the stimulus of the spirits keeps up the heart's action so as to prevent sinking altogether. The expedient is worth repetition.

Cholagogues. These are medicines which are supposed to stimulate the liver to greater activity and to promote the excretion of bile. Mercury is usually placed first on the list of cholagogues. The sulphate of manganese is said by Gmelin and others to possess the same quality. Rhubarb, aloes, and taraxacum, appear to act very happily on the liver. Indeed all cathartics may be said to operate, as indirect cholagogues, more or less efficiently.

Chondrus Crispus. (See *Carrageen.*)

Cimicifuga Racemosa. *Actæa Racemosa. Black-Snake root. Black Cohosh. Squawroot. Rattle Weed. Macrotys.* —This plant is a native of the United States, and is abundant in various parts of the country. The Indians knew it well, and relied much on its medicinal powers. The root is black ex-

ternally and white within, having a large head with numerous long fibres. The taste is bitter, with some astringency, and the odor not very remarkable. Boiling water extracts all the virtues, and hence an infusion or decoction will contain its active properties.

The term *squawroot* had its rise in the employment of the decoction to facilitate childbirth, and hence it has been called an *emmenagogue*. A very common use by the Indians was for the cure of persons bitten by snakes, and hence another name, viz., *snakeroot*. The *Thomsonian* or *steam-doctors* profess to make large use of the cimicifuga, and they call it *astringent*, *diuretic*, *sudorific*, *anodyne*, and *expectorant*.

We notice it here especially for its alleged powers in the treatment of *chorea*. The late Professor Physick employed it in the management of this disease nearly half a century ago. In the ninth volume of the *American Journal of Medical Sciences*, Dr. Young called attention to its remedial efficacy. In the same journal, vol. xxv., is a paper by Dr. Kirkbride confirming the views of Dr. Young. Both gave the medicine in powder, in the dose of half a teaspoonful for a girl ten years old, three times a day. Dr. K. employed a decoction also, made by boiling an ounce of the root in a pint of water twenty minutes. The dose was a wineglassful three times a day to a girl ten years old, gradually augmenting it. The late Dr. Otto and Professor Wood report favorably of the remedy in the same disease. The largest doses given by Dr. Kirkbride failed to excite the pulse, induced no pain nor heat in the head, and very little nausea, but generally proved moderately laxative.

Dr. Mears, in a paper published in one of our journals, regards it as a good medicine for *obstinate intermittents* and *chronic diarrhœa*.

The powers of this medicine have been highly extolled by Professor Green, of the New York Medical College, in a monthly journal of this year. He employs a *saturated tincture*, made of four ounces of the root to one pint of alcohol. Of this alone from twenty to forty drops may be given every two hours, in *acute rheumatism*.

In chronic *bronchial disease* and in the early stage of *phthisis* it has proved to be very efficient, combined with an anodyne and the *saturated tincture of blood-root*, which may be made as indicated above for the black-snake root tincture:—

℞.—Tinct. acteæ racemos.
Tinct. sang. canad. āā ℥i;
Sulph. morph. grs. ij;
Syr. gum acac. ℥ij.

ℳ.—Dose, teaspoonful when cough is troublesome.

The same writer is partial to the black-snake root also in *chorea* and *dropsy*.

CINCHONA. *Peruvian Bark.*—The cinchona or quinia woods of Loxa are thus spoken of in the London edition of Baron Humboldt's *Views of Nature*, (1850,) p. 390:—

The little town of Loxa has given its name to the most efficacious of all fever barks, the quinia or cascarilla fina de Loxa. This bark is the precious produce of the tree which is botanically described as the cinchona condaminea, but which (from the erroneous idea that all the cinchona of commerce came from one tree) was called the cinchona officinalis. Sebastian Baders affirms that the fever bark was brought to Alcala de Henares in 1632; but others say it was brought to Madrid first in 1640, when the Countess de Cinchon, wife of the Peruvian Viceroy, arrived from Lima, where she had been cured of an intermittent. The finest kind of cinchona is obtained at the distance of from eight to twelve miles southward of Loxa, among the mountains of Uritusinga, Villonaco, and Rumisitana. The trees which yield this bark grow on mica, slate, and gneiss, at the elevations of 5755 and 7673 feet above the level of the sea. The cinchona woods are bounded by the little rivulets Zamara and Cachyacu.

The tree is felled in its first flowering season, or about the fourth or seventh year of its growth, according as it may have been reared from a strong shoot or from seed. To procure 11,000 pounds of the bark requires the destruction of 900 trees annually. The older and thicker stems are becoming more and more scarce; but such is the luxuriance of the growth that the younger trees which now supply the demand, though only about six inches in diameter, often attain the height of sixty feet. The trees are very beautiful, adorned with leaves full five inches long and two broad, and stand very close together. The upper branches spread out, and when agitated by the wind the leaves have a peculiar reddish color and glistening appearance, visible at a great distance. The mean temperature of the cinchona woods varies from 60° to 66° Fahrenheit, but the extremes of heat and cold experienced at some parts of the temperate zone are never felt in the vicinity of Loxa.

The name "Countess's powder" originated in the fact that the bark was dealt out by the Countess de Cinchon. But this name was afterward metamorphosed to "Cardinals" or "Jesuits" powder, because Cardinal de Lugo, Procurator-General of the order of Jesuits, gave to the medicine a wide notoriety by his praise of its virtues.

Some of the books contain a great deal touching the *true* and *false* species of the bark; but that question is now of less moment to the physician than it was prior to the discovery of the

proximate principle whence we get the *sulphate of quinine.* The bark, as such, is seldom employed in practical medicine; and the manufacturers understand their interest well enough to select the best bark for the preparation of the salts of quinine. Experience has taught that a great difference obtains in the various barks as to their yield of the quinine salts, although all the varieties are tonic. Forty years ago the red bark was much more costly than any other species, and was believed to be the most valuable as a medicine. Now it is much less prized, because it contains very little of the proximate principle that renders the yellow bark so desirable. The *cinchona lancifolia* gives the *pale* or *quilled bark;* the *cinchona cordifolia* yields the *yellow* bark; while the *red* is furnished by the *cinchona oblongifolia.*

The pale bark yields the proximate principle called *cinchonine,* and is almost destitute of quinine; the yellow bark furnishes quinine largely, and almost no cinchonine.

All the varieties of Peruvian bark have been employed for centuries in the treatment of *intermittents,* and also for their in the samrties, and no one doubts that they could be employed tonic propee way and with success still. But the bulk of the medicine very frequently offended delicate stomachs, and the article was laid aside of necessity; and when the great substitute was discovered, its comparatively small dose was so important a commendation that it soon supplanted the bark in all countries where it was tried.*

The bark was given in powder, decoction or infusion, in extract, and in the form of tincture. When the *powder* could be taken for a sufficient length of time it was almost always efficacious. It was given usually in milk or molasses, or wine and water. The common adult dose was one or two drachms three times or oftener per day. The *decoction* was made by boiling two or three drachms of bruised bark in a pint of water for the space of ten minutes, adding a little cinnamon to make it more agreeable to the stomach. The *infusion* had the same degree of strength, but was not boiled, of course. The *extract,* when well prepared, was a better medicine than either of the above in

* Touching the use of Peruvian bark in fever, Dr. Sims (an old writer) thus expressed himself:—"I solemnly declare that I never saw a case of *nervous, low, putrid,* or *malignant* fever, when the patient could be brought to take this medicine in sufficient quantities, turn out unfavorably." He did not rely on less than six or seven ounces given in two days, and although some held a different opinion, many of the best practitioners of the olden time acted under the same creed. Is not this something like a basis for the free use of sulphate of quinine in the same forms of fever?

Headland thinks that all the preparations of cinchona bear the same relation to arsenic in the treatment of ague that alkalies bear to colchicum in gout. The former in each case supplies a needful material, while the latter neutralizes some morbid process.

very many cases. Two kinds have been in use, viz., the *watery extract* and the *alcoholic* or *resinous extract*. The latter is less apt to spoil, especially in hot weather; but both are good medicines when fresh and sound. These extracts can be made into pills in warm weather with almost no trouble, and in very cold weather they are reducible to powder in a mortar. A very good method for exhibition to children is in the form of syrup. Thus:—

℞.—Extract of bark, ℥ij;
Syrup of ginger, ℥ij.

Reduce the extract to powder and dissolve it in the syrup. The dose may be from one to three teaspoonfuls three times a day or more frequently, according to circumstances.

Many alcoholic and vinous preparations have been before the public. The best by far of all is the well-known *Huxham's tincture*, called after the celebrated Dr. Huxham, who wrote so ably on fevers, and who employed this tincture with so much success. Before the sulphate of quinine was introduced I resorted to this tincture very frequently, regarding it as more generally suited to the management of periodical fevers in delicate persons than any other preparation. It can be made with little difficulty, according to the following formula:—

℞.—Powder of the pale bark, ℥ij;
Bruised orange peel, ℥iss;
Virginia snakeroot, ℥ss;
Saffron and
Red sanders, āā ℥i;
Diluted alcohol, or
Brandy, ℥xx.

Mix, and digest for fourteen days and filter.

The adult dose is from half an ounce to an ounce several times a day. It is not only a good *antiperiodic*, but a most excellent *tonic*.

Peruvian bark has been employed in the shape of *beer*. A mixture of one ounce of bark, eight ounces of honey or sugar, and six pints of water subjected to a temperature of 80°, will soon take on fermentation, and a beer will be the product. I think it not at all improbable that acetate of quinine is developed in this process, but of this I am not certain. Mutis, the inventor of the article, supposed that fermentation gave greater power to the active principle of the bark, and hence the medicinal use of his beer. Alibert tried it as a tonic in slow convalescence, and in larger doses as an antiperiodic, and with decided benefit. The *bark beer* is said to be far more palatable than the old-fashioned dose of the powder.

The *bark poultice* and *bark jacket* merit a passing notice. Although I never used a pound of Peruvian bark internally, my

experience of its external application has been considerable. The poultice is *antiseptic* and *stimulant;* exciting new and more healthful action in ulcerated surfaces, and correcting the offensive nature of the discharges. To prepare it we make an ordinary poultice of bread and milk or of Indian-meal, and stir in a teaspoonful or two of the powdered bark. The poultice thus prepared should be applied twice in twenty-four hours. The *jacket* or *waistcoat* is an old expedient in the management of *cholera infantum.* It acts not merely by its tonic power, but also by the mechanical support it affords. It may be made of muslin or flannel, and is of course shaped, as a garment should be, to suit the child. Two or more layers of the fabric are requisite, and between them the fine bark is spread out equally so as to make an even surface when the jacket is applied. The layers are then to be neatly quilted together so as to prevent the escape of the bark. About an ounce of bark will suffice for a jacket, though more can be added if desirable. Three or four of these jackets should be ready, so as to have them changed daily or every two days. Sometimes it may be useful to soak the jacket in brandy or in brandy and water, gently squeezing out the surplus before applying to the body.

In addition to the above uses of the bark it has often been employed in the shape of injection, and is yet resorted to in that way by many practitioners.

The importation of *spurious* bark into this country has assumed a frightful aspect. In about six months nearly thirty-five thousand pounds were rejected by the inspector of drugs for the port of New York, because almost entirely destitute of the alkaloid that gives value to the genuine bark. This fact adds greatly to the importance of the sulphate of quinine.

Before we proceed to notice particularly the proximate principles of the bark, it is well to say that the old books of medicine furnish incontrovertible proofs of the efficacy of the bark in the treatment of all the forms of periodical fever then known, especially *intermittents* and *remittents*, including *yellow fever*, *ship fever*, *typhus fevers*, &c. &c. It can hardly be matter of astonishment that the sulphate of quinine should be equally successful in the same forms of disease.

Cinchonine was obtained by the pharmaceutical chemists of France before they succeeded in procuring quinine. Both are obtained very much in the same way, and have some points of resemblance. The cinchonine is white, crystallizable, slightly bitter, and not very soluble in water. The salts of cinchonine are more soluble, especially the sulphate, one part of which dissolves in four of water at 60°. The dose is from one to four grains three times a day, in pill or solution, alone or with other

bitter tonics.* Cinchonine and quinine are both united to kinic acid, in the bark, in the shape of kinates.

To get these bases detached from the kinic acid, diluted sulphuric acid is added to the powder of the bark diffused in water, so as to decompose the kinate, forming a sulphate of cinchonine or quinine, as the case may be. The sulphate is then decomposed by the addition of magnesia, forming sulphate of magnesia, and throwing down the quinine, which is subsequently purified by boiling with animal charcoal to make it colorless. The product thus obtained is nearly insoluble in water, but its salts dissolve in water readily. It is not difficult to make sulphate of quinine by adding the base to sulphuric acid until saturation is complete, the mixture being afterward evaporated and then crystallized.

The salt commonly called *sulphate* is really the *disulphate* of quinine, a term indicating that two equivalents of quinine are joined to one of acid. When twenty grains are mixed with an ounce or two of water, a portion settles to the bottom, and does not dissolve until ten or twenty drops of elixir of vitriol are added. Then the solution is complete, a blue tinge being imparted, and the disulphate being changed into a sulphate.

The dose of the disulphate for adults is from a half to a whole grain two or three times a day, if intended to act as a *tonic;* if designed as an *antiperiodic*, the dose varies from two to sixty grains every one, two, or three hours. Various expedients have been resorted to for the purpose of abating the bitterness of this medicine. Sugar does not answer for this end as well as aromatics, such as ginger, orris-root, &c. From some considerable personal experience, I would advise patients to take the powder in scraped apple. Placed in the centre of a small quantity and covered with the same, the dose can be taken without inconvenience. Thus managed, none will object to the bitterness, which has so often been regarded as a hinderance to its use. It has recently been announced that strong coffee, without sugar and cream, is the best vehicle for the administration of the sulphate.

It is affirmed by Burchardt that one grain of tartaric acid will neutralize three of sulphate of quinine, or perfectly dissolve it in water, removing all unpleasant taste effectually.—*London Lancet.*

Eight grains of the sulphate are fully equal to an ounce of the best Peruvian bark, in every medicinal relation; and it follows that chemistry has saved the stomach an immense amount of

* *Cinchonine* is very strongly recommended by Dr. Franchini in the treatment of *gastralgia*. He gives half a grain three times a day, in form of pill.—*Amer. Drugg. Gaz.*, July, 1857.

labor, as its powers were undoubtedly taxed in former years to evolve the active principle of the bark.

From the records in the Inspector's office in Barbadoes, it appears that sulph. quinine was first employed there in 1824, and that in 1828 it was given in *two-drachm* doses, in the remittents of *Berbice*.—Dr. Blair on *Yellow Fever*, p. 147.

The forms of pill, powder, syrup, watery and vinous solution, have all been resorted to, as well as the administration by injection, by friction, and by endermic medication. To make the pills, a little water, with or without gum Arabic, will suffice. The syrup is best made with ginger or lemon syrup, adding as much of the salt as may be desirable. If sixty-four grains are added to sixteen ounces of the syrup, each ounce will contain four grains, and a tablespoonful will be equal to two grains. The watery solution is made as already indicated, and I prefer to have it very strongly impregnated with the salt, so that the dose may contain as much of the active agent as possible.

Frictions of the sulphate, particularly in the arm-pit and on the spine, have been resorted to with the view of avoiding the bitter taste. The salt is first mixed with water or alcohol, and then smartly rubbed into the skin. The administration by injection also avoids the unpleasant taste of the medicine, and is sufficiently effective. For the same purpose, the plan of *endermic medication* has become very popular. To avail ourselves of this method a blister is laid on a given spot and the cuticle removed, after which a cerate of sulphate of quinine is applied. We can rub from half a drachm to a whole drachm, with an ounce of lard or simple cerate, and apply the whole at once. The application should be made once in twenty-four hours as a general rule.

As some persons profess to have been disappointed in the endermic use of the sulphate of quinine I desire to insist a little upon it. To make it effectual it is absolutely necessary to remove the cuticle entirely and to cover the raw surface with the quinine cerate. Not only is this method highly successful, but it secures the effective use of an article that cannot always be administered in any other way. The following case is in point:—I was called, as consulting physician, to see an old practitioner laboring under an *intermittent*, with high delirium in the febrile stage. He refused utterly to take the sulphate of quinine, declaring that a grain would kill him. I determined to manage him endermically, and gave the hint to his lady, who was sufficiently intelligent to appreciate my views. The stomach was very irritable, and that circumstance justified the use of a blister to the epigastric region. I directed an eight by ten fly-plaster at once, advising the good lady at a proper time to tear off the

cuticle entirely and to lay on the raw spot forty grains of the sulphate well mixed with a half-ounce of cerate. The gastric distress was relieved, and the old gentleman complained of a little twinging on the skin, which he placed to the account of rancid cerate. The plaster was ordered to remain until the next day. There was no return of chill, and recovery soon took place.

Not only is the unwillingness of the patient to take the medicine an argument in favor of the endermic use, but irritability of the stomach is also a valid reason for adopting that plan; and a more urgent plea, in the estimation of many, is the fact that by the endermic application we almost always avoid that troublesome thing called *quininism*. The raw surface not only allows the external use of the sulphate of quinine, but presents a favorable opportunity for the exhibition of opiates which it may not be desirable to give internally.

To show the extent to which the sulphate can be safely and successfully applied to the raw surface, I quote a case from *Dunglison's Medical Intelligencer* for August, 1841. Dr. Corbin, of Virginia, reports as follows:—"A man had been suffering from ague and fever for more than eighteen months, although treated in the usual way again and again. It was determined to try the endermic plan on a broad scale, and accordingly eight blisters were applied at once to the extremities, epigastrium, &c., one hour before the expected paroxysm. A cerate was prepared, composed of five drachms of the sulphate and four ounces of simple cerate, and the whole was spread on cloths of the size of the blisters, and in eight hours after these were applied the cerate cloths were laid on. These dressings were ordered to remain till the parts were healed, to give them fair play. The result was the permanent cure of an eighteen months' intermittent. In this case the system was at once put under the influence of three hundred grains of the sulphate, and the patient realized almost no quininism."

In a neighborhood in the Middle States where *intermittents* prevail and are comparatively mild, small doses of the sulphate suffice—as, for instance, a grain given every hour during the intermission. If the case be a simple tertian, this will answer as a general rule. But if it be a double quotidian, it will be necessary to give as much as can be administered, and as rapidly as possible, so as to make the requisite impression on the system. Often it will happen that not more than two hours of intermission can be had for the exhibition of the medicine. In the South and Southwest, where intermittents are more malignant, assuming what is there called the *congestive* form, it is absolutely needful to give the remedy with great boldness. The following

case, reported by my son, Dr. B. Rush Mitchell, of the U. S. Navy, will serve as an illustration:—

"Mr. Swan, aged thirty-five, returned from the far South to Madison, Indiana, late in the summer of 1845. He was attacked a week after his arrival with a slight chilly sensation, succeeded, in a few minutes by an intense and long-continued chill, and followed by slight fever and no pespiration. I did not arrive while the patient was in the paroxysm, but learned from those present that throughout the whole of it there was scarcely a pulsation at the wrist; the whole aspect was cadaverous, and there was a total lack of motive power, the surface being of an icy coldness. The entire aspect of the patient gave the appearance of a dying man, and it was plainly a case of *congestive intermittent*. With a view of preventing a repetition of paroxysms I left twenty grains of sulphate of quinine, to be taken in five-grain doses every hour. On the next day I was called again, and learned that the paroxysm had recurred with greater severity, and I became alarmed for his safety. I determined to remain all night, as the paroxysm recurred at ten P.M.; and fearing that another would be fatal, I resolved on decisive treatment. As twenty grains had failed to accomplish the object, I began at five in the evening with thirty-grain doses repeated every half hour. As no bad result was perceptible the doses were continued until nine P.M., and now, having two hundred and forty grains in my patient, I thought if he was not saved from another fit no means could avail. I stopped the medicine, and waited till ten o'clock. There was no recurrence of paroxysm, and I retired to rest. The medicine was continued in moderate doses for three days, and the patient completely recovered."

Other cases could be cited from Alabama and Mississippi, in which more than double the quantity of the sulphate named above was given in a shorter space of time, and with success; nor could the patients have been saved by the small doses that are proper in other latitudes, where the disease assumes a mild form. Those who have been familiar only with the simplest kind of agues are not prepared to judge correctly touching the propriety of what are called *mammoth* doses of this inestimable remedy in the very malignant forms of intermittent and remittent fever that are frequently seen in the South and Southwest. It is, of course, impossible to fix the invariable dose of this medicine, since the quantity to be exhibited can be safely regulated only by the grade of malignity with which the disease is marked in various localities. This truth being properly estimated, there need be no difficulty in reconciling the extremes of one grain and sixty grains, as the proper doses of the sulphate of quinine in the management of *intermittents*.

On the subject of large doses of the sulphate of quinine, we quote from the *British American Journal*, as copied into the *London Lancet* for November, 1845.

"In the first place, it has been shown by more than two thousand observations in this country that large doses of from ten to sixty grains, *or an ounce* of quinine, can be given without producing injury.*

"2. That it has been proved beyond doubt that these large doses do exert a curative effect on periodical and malarial diseases, and more certainly than small doses.

"3. That the cases of permanent injury resulting from large doses of quinine are not more, indeed not so numerous, as from repeated small doses.

"4. That the temporary inconvenience or disturbance of the nervous system is not so liable to ensue from large as small doses. This is stated, though our experience is to the contrary in most cases.

"5. That so far from smaller doses being more certain, they are not; the paroxysm being far more likely to occur after their use than after a single large dose.

"6. That the impression made on the system is more permanent from large than small doses.

"7. That in diseases that run their course rapidly to a fatal termination, as in the southern country, a reliance on small doses was found to prove hazardous to the safety of the patient; therefore, when it is desirable to cut short or prevent the occurrence of a violent chill, the large doses should be resorted to.

"8. That visceral diseases are not more liable to follow, if as much so, from large as from small doses of quinine."

It is notorious that persons apparently cured by this medicine have frequent recurrence of the same disease; and hence some have fallen out with the remedy. Now we apprehend that the professional mind is not sufficiently clear on this point. There are those who will not long escape renewed attacks, if they continue to reside in the malarious region where they acquired the disease at first. If they remove to a very different locality they find immunity in very many instances. But some may be secured from repetition of chill and fever and not change their residence. My advice was usually of this kind after I had arrested the disease. Keep a box of one-grain pills of sulphate of quinine in the pocket, and take one at least every day until winter or cold weather has fairly set in, and avoid all unnecessary exposure. I have never known a person to have a second seizure who faith-

* One of the most intelligent physicians in Mississippi gave me the details of a case of congestive fever *cured by the use of an ounce and a half of the sulphate given in eighteen hours.* The patient was a young girl.

fully observed this course; but instances have occurred in which a failure for a single day has been followed by a chill.

But further: I do not believe that a patient can be permanently cured of ague and fever by any quantity of the sulphate, or of any other medicine, in whose system there exists any considerable organic lesion or obstruction, and hence the great importance of attending to the liver, the spleen, the intestines, if we would make thorough work. Even *typhoid fever*, which is evidently paroxysmal or periodical to a certain extent at the onset, is often cured by this medicine when there is no lesion in the bowels to prevent the antiperiodic action; but that lesion being set up no amount of the salt of quinine can be available. The same is true of every form and grade of periodical fever.

The question, therefore, so often raised by medical men, is greatly magnified in its relations to this whole matter. Is it necessary to resort to *preparatory treatment* before we exhibit the sulphate of quinine? Does the success of this medicine really depend at all on such treatment? Let us look at this point. We speak the language of our own experience when we affirm that the sulphate of quinine can do no permanent good as an antiperiodic while obvious obstruction or enlargement of the liver or spleen is present, or the intestines much inflamed or ulcerated. The proper means for the removal of these hinderances must be resorted to effectually before we can hope to put a stop to the periodical disease so as to secure the patient from frequent repetitions. The blue pill is among the most prominent means to bring about the desired change, aided, of course, by suitable diet and regimen.

But even where there is no palpable evidence of obstruction or enlargement there may be so much gastric and intestinal derangement present as to interfere with the right action of the antiperiodic. The mucous coat of the stomach and bowels may be in a state that is not fitted for the proper operation of this remedy, and in such a case the use of emetics or emeto-cathartics, as calomel and ipecacuanha, will be very salutary. An adult should take ten grains of each of these articles, mixed, for one, two, or three days, so as to put the primæ viæ in a better condition, and then it may be expected that the sulphate of quinine will do its work effectually.

If the patient be very feeble, either from long-continued sickness or from vomiting or purging for several days, I would not hesitate to administer the antiperiodic at once in the most convenient way. It will sometimes happen that an irritable stomach will be composed by the dose, or, if that method be objectionable, let the endermic plan or the use of injections be resorted to. In such persons, even if there be some visceral obstruction, I hold

the doctrine *that the sulphate of quinine is safer than the disease. There is less danger from a supposed increase of the obstruction by the action of the remedy than from a certain aggravation by the shock of another chill.* In cases of this kind we may give the blue mass in proper doses while we are exhibiting the sulphate; and I know from experience that the anticipated good effects of both will often be realized.

In all cases of malignant attacks, assuming the truly congestive form, as seen in the far South, we may and we must give the sulphate, no matter what kind or degree of obstruction be present. There, too, however, we may combine a mercurial with the antiperiodic. The addition of twenty grains of calomel to twenty grains of the sulphate will form a compound of great value in some of those cases; the mercurial need not be given with every dose of the salts of quinine, of course, but just as often as the circumstances may demand.

Something has been said of *irritability of the stomach* being allayed by the sulphate of quinine; and it is proper here to say that Dr. Flint, of Buffalo, in a paper published in the *American Journal of Medical Sciences*, has shown conclusively that we may administer this medicine even when there is decided nausea and some vomiting. Repetition of the dose has had the effect of subduing entirely the gastric derangement, and thus the way has been prepared for a continuance of the remedy. It is, doubtless, owing to this sedative influence on a deranged stomach that the sulphate has been sometimes successful in putting a stop to the *black vomit* of *yellow fever.*

Masked or *disguised intermittents* are most successfully managed with the sulphate of quinine. These are found in families where the open and fully-developed intermittents are seen at the same time. The patient may not have a chill, nor even an approximation to it, but at a regular hour, day after day, a terrible headache or earache or bleeding at the nose may occur, and, after a variable duration, wholly subside, the signs of health returning and continuing until the dreaded hour of the next day. All such cases are to be treated with the sulphate, just as if there had been a veritable chill and fever and sweat. During the epidemic prevalence of periodical fevers in the vicinity of Philadelphia, from 1822 till 1827, I had such cases frequently to manage.

In February, 1849, while connected with the medical school in Lexington, Kentucky, I was seized with a very severe neuralgic attack in the region of the right kidney. The pain was excruciating, and I feared a serious organic disease of the organ. I was laid by and confined to my chamber for two or three weeks. A blister was laid on the part affected, and frequent doses of blue

mass and acetate of morphia taken. It began to be very apparent that the disease was *periodical* and that the pain was relieved by pressure. This determined me to try the sulphate of quinine as an antiperiodic.

Just at this time two of my medical friends called in and urged the need of emetics to clear out the stomach and bowels and to rouse the liver. I told them what my determination was, and declined their advice. After another dose of the blue mass and acetate of morphia I commenced with the sulphate of quinine, and took thirty grains in the course of the day and about ten grains on two or three successive days. My neuralgia never returned.

In December, 1849, a patient came to the clinic of the Philadelphia College of Medicine who had labored for months under a disease very much like my own. Various counter-irritants had been tried, with emetics and carthartics, to no good purpose. His attacks were periodical, though without regularity. Sometimes one, two, three, or six days of intermission occurred. He was put on the use of the sulphate of quinine, preceded by a dose of calomel and ipecacuanha, and soon got well. The quinine salt was given in ten-grain doses three times a day, and after thus being exhibited for ten days the dose was reduced, but continued for several weeks.

If it were needful many cases could be cited illustrative of the power of this medicine over neuralgic disease. The *London Lancet* for November 23, 1850, contains very satisfactory testimony from Mr. Hogg. After duly evacuating the alimentary canal he gave ten grains of the sulphate with ten drops of dilute sulphuric acid in one ounce of pure water for a dose. Rarely were more than two doses requisite.

The *Southern Journal of Medicine and Pharmacy* has the following fact illustrative of the same doctrine of disguised intermittent:—A young girl had headache for the space of four years, evidently periodical. She was cured by thirty-two grains of sulphate of quinine given in four-grain doses every hour. Previously she had been taking four grains of blue mass every other night for a week. The headache, which had recurred every other day with much severity, ceased after the use of the salt of quinine.

The following cases, taken from a foreign journal, are also instances of masked intermittent, and prove the safety of sulphate of quinine when there was a manifest tendency to inflammation, if that state was not actually present.

"John Meigs, aged sixteen, had sclerotic and conjunctival turgescence of both eyes, with pain and intolerance of light, of

three weeks' duration. He has had repeated attacks of ague, and thinks the affection of his eyes is intermittent.

"I examined this boy yesterday, when there was not the least appearance of disease; however, this morning it returned at the usual period, and I directed him to take five grains of sulphate of quinine three times a day, which cured him.

"Sarah Westall, eighteen, resides in a marshy district of Kent, and has had two attacks of intermittent fever. Now she labors under congestion of the sclerotic and conjunctival tunics, which she asserts comes on daily at noon and lasts for six hours, being accompanied with severe lancinating pain, great intolerance of light, and profuse tepid lachrymation; all of which subside together with the congestion, leaving an interval of nearly eighteen hours, in which she affirms that she suffers no inconvenience. This affection commenced ten days since.

"I satisfied myself of the intermittent character of this woman's ophthalmia, and directed as follows:—

℞.—Sulph. quininæ, ʒj;
Aq. puræ, ℥vi;
Acidi sulph. dilut. ʒj.

Of this mixture a tablespoonful to be taken six times a day."

The remedy was successful.

Enlarged spleen, so often found to co-exist with or to follow intermittents, has been declared by Piorry to be a frequent cause of ague and fever. If the physician meant to say that this disease was often reproduced by enlarged spleen the statement would be less exceptionable. It is affirmed that large doses of the sulphate do certainly reduce this enlargement, and sometimes with almost incredible rapidity. The gentleman last named declared that under the action of this medicine in sixty-grain doses he could really see the reduction going on. But supposing this to be a little poetical, there is good reason to believe that the remedy does exert a salutary influence on the enlarged mass.

In all old and obstinate cases it is important to examine the condition of the spleen and also of the liver, and suit the appliances to the actual state of things.

Many years ago I had abundant opportunity to compare the *bark and sulphate of quinine practice*, not only in *intermittents* of all grades, but in every shape of *remittents* that prevailed epidemically in my neighborhood; and while the almost uniform and speedy success of the latter was obvious, it was equally certain that it was not followed by *dropsy*, as was the feeble treatment by decoctions of bark or even by the powder. I never had a case of dropsy under my care during five years of extensive practice while the periodical fevers were epidemic, but several

came under my notice as consulting physician which were obviously induced by the exhibition of the bark. In the use of sulphate of quinine ten times as much antiperiodic power was daily developed as in the ordinary administration of the best bark. The secret was in making the right impression promptly in the shortest possible space of time.

We have the testimony of Dr. Webb, in the *Medico-Chirurgical Review* for July, 1845, in favor of the efficacy of very large doses of sulphate of quinine for the removal of *dropsy* and *general cachexia*, associated with enlargement of spleen, as the product of periodical fevers. He gave to a child four years old a half-drachm daily, and in ten days the remedy proved effectual. In this case there was probably remaining a true periodical condition, which being met by the quinine, the associates or consequents of that state also gave way and recovery ensued. Other cases are mentioned in the same journal, of dropsy in connection with enlarged spleen yielding to full doses of the sulphate of quinine.

I said, when speaking of the bark, that we had abundant ancient testimony in its favor as a remedy for all forms of periodical fever; and most assuredly there is no lack of proof to the same point touching the sulphate of quinine. In every grade of acknowledged *remitting fever* its successful exhibition is beyond doubt, and in those aggravated forms called *yellow fever*, *typhoid fevers*, &c., which some regard as specific, we have equally convincing evidence.

In the *remittents*, as they were seen for several years in the epidemic form in the vicinity of Philadelphia nearly thirty years ago, no medicine had half the efficacy that followed the use of the sulphate. The mode which I commonly adopted was to administer an emeto-cathartic, followed by the spiritus mindereri, to deplete by the bowels and skin and to secure a remission. The first token of perspiration was the signal of abatement, when the sulphate was given in doses of two or three grains every half hour. To relieve the head, ice was applied to the scalp and sinapisms to the ankles, and occasionally a tablespoonful or less of the spiritus mindereri was given. If ten grains of the sulphate could be swallowed under such circumstances it either arrested the disease at once or protracted the remission, which was regarded a decided advantage. On the next day, if need be, the emeto-cathartic was repeated, followed by the antiperiodic as before, and my patients were generally up at the end of a week, while others in the same house, and treated with feeble decoctions of bark, five-drop doses of antimonial wine and sweet spirits of nitre, were seldom as well at the end of five or six weeks, and sometimes had a dropsy as the sequel. But I noticed

this treatment when speaking of the acetate of ammonia, and need not dwell here.

In the West many physicians administer the sulphate of quinine with calomel at once, and affirm that the febrile state is no valid objection to its use. Some have imagined that the free action of emetics or depletion by the lancet always secured such a remission as justified the free exhibition of the sulphate, no matter whether the skin was moist or not. Dr. Macgregor treated the *bilious remitting fevers* of India on this general principle. Dr. Blair did the same in Demarara.

In *congestive fever* of the South, and in the worst forms of *remittents*, some physicians give sulphate of quinine largely combined with calomel, when inflammatory tokens are present. The calomel is added as an anti-inflammatory remedy. Ten grains of each have often been given every two, three, or four hours. The same combination was made long ago with bark.

Dr. Wright, an English physician, in 1794 taught the importance of adding calomel to bark, in the fever of the West Indies, when inflammatory complication was obviously present.—*Medical Facts*, vol. vii.

In the *low remittents* and *typhoid fevers* of the west coast of Africa and Rio de la Plata, the sulphate of quinine was certain to make obscure remissions very complete, to clean off the tongue, and improve all the symptoms. (See *London Lancet*, July, 1846.)

Mr. Hare, surgeon to the Bengal Fusileers, treated 421 cases of *Bengal fever*, which is often a very malignant form of remittent. His usual plan was to give scruple doses of sulphate of quinine to every patient with symptoms of fever, from the first moment of admission, and they had sometimes taken forty grains before he saw them. He remarks that although twenty grains will induce quininism in a healthy man, yet a bad fever case will often take from four to six scruples daily for three days with no bad symptom.

Again he says,—"My hospital patients took from three to six scruples of the salt of quinine in twenty-four hours. The more severe the fever the oftener was the scruple dose given, until singing in the ears and deafness ensued. Bleeding was employed sometimes at the outset, and always according to the plan of Mackintosh."—*Braithwaite*, p. xxviii. p. 36.

In the *malignant remitting fever*, called also *yellow fever*, the testimony is abundant to show the salutary action of this medicine. I know that conflicting opinions have obtained, but they are all reconcilable on philosophical principles. *Yellow fever* and *scarlet fever* assume very various and almost opposite aspects in different seasons and places, and they have been

treated successfully by means almost directly opposite. Dr. Beugnot, in a long paper in the first volume of the *New Orleans Medical and Surgical Journal*, shows beyond cavil that the sulphate of quinine was very efficacious in the yellow fever of which he treats. He says he employed the lancet to obtain a *syncopal remission*, and then resorted to the sulphate. Substantially to the same point is the testimony of Dr. Stone, in vol. ii. of the same journal. One of the army surgeons has reported decided success in the use of sulphate of quinine in the yellow fever of Vera Cruz in the year 1847, and others are equally conclusive to the same point.

In *Bell's Bulletin of Medical Science*, vol. iv., I find some extracts from a paper of the late Professor Harrison, first published in the *New Orleans Medical Journal*, in which the use of the sulphate of quinine in yellow fever is set forth most favorably. Conceding that there is no special remedy for yellow fever nor for any other fevers, but that each case must be treated according to its own character, Dr. H. nevertheless speaks in high praise of thirty-grain doses very early after seizure. He mentions particularly the case of a young man taken at one P.M. At six of the same day he was leeched on the epigastrium, and thirty grains of the sulphate was given by the mouth and forty grains by injection. The next day he was free from pain, his pulse had fallen from 120 to 84, skin cool, and every vestige of the disease had vanished. "The fever," says the writer, "*was cut short as if by enchantment.*" The case cited is given as a specimen. No one doubts that the physicians of New Orleans are conversant enough with yellow fever.

R. Birthwhistle, Esq., surgeon of the Volage, furnishes an account of the *yellow fever* as it prevailed on board that ship in 1841. She left Chatham, England, in good condition, all hands well, and sailed for the West Indies; she stopped at Madeira, Bermuda, Port Royal, Carthagena, Chagres, &c., places amply sufficient to give her crew the disease, which Mr. B. holds to be non-contagious. His remarks on the use of disulphate of quinine are very favorable. He held it to be an invaluable and essential adjunct. He did not give it till the febrile excitement was checked. He says the German and Spanish physicians gave it very early in the attack, as soon as they could detect a *remission*.

This surgeon has some excellent remarks on the changing character of the disease that are of great practical value. The very same yellow fever taking on a typhoid aspect and forbidding blood-letting, which, prior to the arrival of the ship at Jamaica, was indispensable, even to a large extent. He calls on his brethren to bear these facts in mind, as well fitted to

reconcile contradictory statements respecting the value of the lancet as a remedy. He adds, the facts teach the necessity of adapting means to the peculiarities of each case, and the great need of sound judgment to do so. (See *London Lancet*, March, 1846, p. 230.)

Thos. R. H. Thompson, Esq., surgeon of His Majesty's ship Soudan, engaged on the Niger expedition in 1841–2, refers particularly to Mr. Birthwhistle's remarks on the use of the sulphate of quinine in yellow fever, and confirms them by his own experience in the African remittent, which he evidently regards as the same with the yellow fever of Birthwhistle.* Mr. Thompson's experience of the preventive powers of the quinine salt are also important, and therefore we quote him at some length:—

"Having noticed some valuable remarks in the *Lancet* on the subject of yellow fever by Mr. Birthwhistle, surgeon R. N., of the 3d January, and in which he refers to the use of quinine in that disease, I beg to add a few statements of its efficacy as a remedy in African remittent fever, and confirmatory of Mr. Birthwhistle's observations. While acting surgeon of H. M. S. Soudan, engaged on the Niger expedition in 1841–2, I had an opportunity of trying it in conjunction with chloride of mercury in a few cases of primary fever. It certainly answered fully; but I believe it would have proved more valuable had I not restricted the quantity to two or three-grain doses.

"Of its effect in the secondary and tertiary attacks of African remittent, which are certainly attended with worse-looking and more violent symptoms than the primary, it may almost be considered a specific. The first trials I made of it were at Fernando Po, in December, 1841, when left in charge of the sick. At that time the 'harmattan' prevailed, and although this is considered a healthy season on other parts of the West Coast, it was most decidedly the reverse at that island. All the few Europeans (old residents, and well seasoned, as far as this can be accomplished by prior attack, &c.) were laid up with remittent fever of a low character; and in all their cases I gave the quinine in doses of eight and ten grains daily with perfect success. This induced me to try it in other cases of secondary fever on board ship, and although in some of them the tongue was dry, foul, and cracked, with every indication of high febrile excitement, yet it had the effect of arresting the bad symptoms. Let me give you one short extract from the official journal forwarded to Sir William Burnett, Medical Director-general H. M. Navy,

* These gentlemen had not a doubt that they were talking about *yellow fever*, with whose whole history they were abundantly familiar. Yet there are those in this country who *never saw a case* of that disease who presume to sit in judgment on veterans in the service, and even to deny their positive declarations.

(from the case of Mr. Anderson, entered on the sick-list April 30, 1842:)—'May 10th. The remissions have become very obscure, skin burning hot, occasional low delirium, rapid, jerking, but weak pulse; the bowels have been kept freely open by Seidlitz, &c. The tongue remarkably foul and dry; and the two Drs. Pritchett (who also saw him at my request) began to entertain unfavorable views of his recovery. I therefore determined to try the effects of quinine, and accordingly ten grains were given on the evening of the 10th.

"'Continued restless through the night, but slept a little toward morning, and was relieved by a gentle perspiration. On the 11th a very perceptible remission took place, and the quinine was again administered at noon, in an eight-grain dose. This was repeated for the three following days, when the fever gradually declined; and on the 20th he was so far recovered as to be discharged to partial duty, there being no other executive officer on board at the time.

"'In this case, as in all the secondary attacks of remittent fever in which this remedy was tried, it produced a most marked and beneficial effect; and, strange to mention, although the tongue was in most of them foul and dry prior to the administration of the quinine, it very soon became moist and clean.' (From *H. M. S. Soudan's Medical Journal*, 1841–2.)

"Subsequently, in 1844, while employed in the Rio de la Plata, I was induced to try it in some slight cases of typhoid fever, in which there existed considerable depression, a rapid pulse, and foul tongue, unaffected by purgatives; and it had the most rapid and satisfactory effect: and I think it well worthy of a fair trial in this country in typhus; but I should hesitate to use it in small doses, say two or three grains: my impression, as deduced from observations on its *modus operandi*, being that in small quantity it only acts as a temporary stimulant, thereby producing more harm than good; given in full doses, from six to ten grains, it would seem to have a different and specific effect.

"In all the cases in which I tried it in the African remittent, it reduced the number, but increased the momentum and roundness of the pulse. Connected with this subject, I would wish to bring under the consideration of medical officers serving on the West Coast of Africa—whether quinine in full doses has the power or not of warding off entirely the remittent fever?

"It had long been known that persons affected with any form of intermittent fever on that coast enjoyed a certain immunity from the remittent, as pointed out by the late Mr. Boyle, in his work on diseases of Africa. I therefore reasoned that if quinine was known to overcome the intermittent, that remedy might be used in full doses and produce such an effect on the system as

would prevent the attack of the other and worse form of fever, which is warded off by the presence of the intermittent.

"On my return from the West Coast, from Ascension, in 1842, I determined to commence the experiment in my own person, taking daily one or two full doses of quinine; and, although I may with truth say that I was more exposed than any other person to the exciting and predisposing causes of remittent fever—being almost continually on shore and in the woods, collecting specimens of natural history and in obtaining information about the natives of Fernando Po, Bimbia, Cameroons, &c.—I quite escaped both forms of fever. On being ordered to England, in August, 1842, I considered it necessary to reduce gradually the quantum of quinine, and just before arriving home had left it off entirely, when, strange to say, I was for the first time attacked with tertian ague in England, under which I suffered for some time; and it returned again at the same season, September, in the following year."

Some interesting facts touching the successful use of large doses of sulphate of quinine in *yellow fever* may be found in *Braithwaite's Retrospect*, part ii. p. 30. From twenty to sixty grains were given within six hours from the seizure, at one dose. The practice referred to was in the southern country of the United States.*

Dr. Cummins, surgeon of the British ship Medway, gives the result of his experience in the treatment of *yellow fever* in the West Indies in 1852. He often gave sulph. quinine as a prophylactic, and says that he always prescribed it for this end to midshipmen and others just arrived from Europe; the dose was three grains per day, taken as bitters.

He thinks the salt cannot be given too soon. The earlier in the attack of fever the better. Twenty-grain doses were administered every two hours until four doses were taken. If deafness occurred he paused till it subsided a little, and then ten grains were given every two hours. The case of a man is stated who was made almost insane by a very few grains of sulph. quinine in New York, given for relief of fever acquired at Chagres, to whom Dr. Cummins gave twenty-grain doses for yellow fever without realizing any unpleasant symptom.

This paper well merits a careful perusal.—*Braithwaite*, p. xxviii. p. 25.

The testimony in favor of the efficacy of large and frequent doses of sulphate of quinine in arresting the course of continued fever (typhoid as it is often called) has largely accumulated

* Dr. Fenner's *Medical Reports*, vols. i. and ii., published in New Orleans, abound with facts fully confirmatory of the foregoing. They merit a careful study.

during the last seven years. The testimony of Dundas, Eddowes, and others, to show the power of this medicine to *cut short* and prevent the accession of fever, is abundant. The work of Dr. Dundas on the diseases of Brazil offers many proofs. Notes of the success of this practice are to be found in the *London Med. Times* and other journals, from 1851 and onward. The most usual dose was five or ten grains every two or three hours. One day often sufficed for the full display of the abortive powers.

Dr. Fenner, of New Orleans, and other Southern physicians, feel as confident they can cut short an attack of yellow fever by twenty-grain doses of the sulphate of quinine, as Dundas, Eddowes, and other foreign practitioners are that continued or typhoid fever can be arrested in the early stage in a similar manner. Let the remedy be fully tested. As to *how* it acts, whether as an antiperiodic, a sedative, antispasmodic, narcotic, tonic, or stimulant, that is less important than *the fact* that it does act, effectually, in aborting seizures of such diseases as yellow fever, typhoid, &c. &c. Ink and paper have done what they could to solve the question of the *how*, and as much more may be consumed ere we shall be a great deal wiser. I take it that this heroic medicine can and does, under various *states of the system*, display all the seemingly opposite qualities ascribed to it by different authors. Hence the greater need of studying this fundamental basis of the right use of the remedy.

In Great Britain, France, and in various parts of the United States, we find abundant proof of the salutary action of the sulphate in all forms of typhoid fevers, whether they be designated *typhus* or *typhoid*. Nor can there be a doubt, as all these fevers are more or less periodical and paroxysmal, that the salt of quinine should have full power over them, as it has over intermittents, if given in the early period of attack, before any considerable lesion of the bowels is set up. The establishment of these lesions is the only reason why this medicine does not cure typhoid fevers in the advanced stage. We see the same failure in reference to intermittents associated with the obstructions spoken of in a former part of this article. The typhoid fevers referred to are essentially and in fact *remittents*, and should yield to the great antiperiodic, if the hinderance alluded to had no existence.

A writer in the *Philad. Medical Examiner* for September, 1849, in criticizing the philosophy assigned by another for the curative action of sulphate of quinine in intermittents, maintains that the same remedy cures *typhus* and *typhoid* fevers as well as *intermittents* and *remittents*. He fails to recognize the true explanation, viz., that all are essentially periodical, and therefore curable by antiperiodic medicine.

Dr. Fearne, an old and successful Southern physician, who practiced in Huntsville, Alabama, in 1831, speaks of the successful treatment of *continued* fevers, very much like what Dr. Bartlett calls *typhoid*, with twenty-grain doses of sulph. quinine given every half hour. The pulse fell from one hundred and twenty to eighty in a minute, and his patients got well rapidly. *Fenner's Reports*, vol. ii. p. 347.

Dr. Stringfellow, of Vienna, Alabama, notices a fever of considerable severity passing into the *typhoid state* and refusing to yield to all the usual means. He controlled it at last by doses of from thirty to fifty grains of sulphate of quinine, given every hour or two. The patient was only fourteen years old, and yet the remedy did not raise the pulse above the natural standard. (See *Bell's Bulletin of Medical Science*, vol. iv. p. 168.)

Of the *prophylactic powers* of sulphate of quinine in respect of *African fevers*, which vary from a mild to a most malignant form of *remittent*, Dr. Alexander Bryson, of the Royal Navy, has furnished most convincing proofs. He had several pipes of wine prepared by adding the salt of quinine in the proportion of four grains to the ounce. He did this as a matter of economy, to save both articles: for wine, thus dosed, was held to be fit for nothing else, and the quinine could not be stolen in the original packages. Among other facts in point we have the following very clear statement:—"On the 25th of November seventy-seven men from the ship went up the river Lagos to attack the town. Before starting, every officer and man was ordered to take a glass of the quinine wine, and enough was placed in the boats to repeat the dose at night. All took the medicine save one young man, who plumed himself with having escaped *taking a dose of physic*. This young gentleman, on the 10th of December, had a violent attack of remittent fever, and was the only one to January 7th who had been seized.

Some of our Southwestern physicians regard *Asiatic cholera* as a sort of *intermittent*, and these use the sulph. quinine as a prophylactic in one as naturally as in the other. Dr. Logan's authority is given on this point in *Fenner's Med. Reports*, vol. ii. p. 467. Dr. Logan resides in California.

The prophylactic powers of sulphate of quinine are strongly set forth by Dr. W. Balfour Baikie, formerly President of the Royal Med. Society of Edinburgh, in respect of African fevers. He cites very important facts in proof, and believes that all those fevers have a common origin.—*Edinb. Med. Journ.*, March, 1857.

Dr. Rawling urges the importance of the sulphate of quinine in *influenza*. He says by the early use of this medicine the cough will not acquire the same degree of violence as it will

otherwise do. The severe headache, sweating, pains of the loins and limbs, and the disturbed circulation, are all relieved by the exhibition of the medicine in grain doses every three hours. (See *London Medical Gazette*, 1833.)

The sulphate of quinine has been employed successfully in the treatment of *acute rheumatism*. I am aware that the practice as well as the theory involved in this disease has been exceedingly various, nor do I know that we fully comprehend its pathology at this day. We are at a loss, too, in reference to the action of the sulphate in this disease. Yet this is not to be regarded a valid objection to its administration. The *Philadelphia Medical Examiner* for November, 1848, has an interesting case of acute rheumatism in a very delicate lady, supervening very soon after delivery. The report attributes the cure and recovery to the salt of quinine. In *Braithwaite's Retrospect*, part xvii. p. 28, we have testimony in confirmation. Briquet and other French physicians have realized large success with this treatment; and Professor Dunglison, of Philadelphia, has reported favorably in the *Philadelphia Medical Examiner* for 1846. He began with eighteen to twenty grains in twenty-four hours, and gradually increased the quantity, and affirms that he never witnessed any bad effect from it. Very many years ago the cinchonas were frequently employed in rheumatic disease, and the late Dr. Davis, professor of midwifery in University College, London, advocated strongly the use of Peruvian bark in *acute rheumatism*. He supposed that many cases of this disease had considerable resemblance to AGUE, and he gave the medicine early in the attack, declaring that he was almost universally successful. He always preceded its use with free bleeding and other evacuants, but seldom found it necessary to repeat the bleeding; and found that under the use of the bark, the pains, swellings, and other inflammatory symptoms promptly abated. The dose was from a scruple to half a drachm three or four times a day. (See *London Lancet*, Feb. 1841.

To some ears it may sound strange that *pneumonia* can be cured by *sulphate of quinine*, and yet we have the testimony of Drs. Corrigan, Gordon, and other respectable men, in proof of its successful administration in five-grain doses every three hours or oftener, according to circumstances. We add the inferences made by Corrigan at the close of his paper.

1st. That the *name* of a disease is not an index to its treatment, (Dr. Rush held this to be a cardinal point,) but that, on the contrary, under the one name the pathological conditions of the organ affected may and do change so much as to call for even opposite modes of treatment.

2d. That pneumonia presents an illustration of this principle, as it may be of a sthenic or asthenic form.

3d. That the asthenic may be consequent on the sthenic form, or the primary form may be asthenic from the outset.

4th. That quinine in large doses is a remedy of great power over the asthenic form of pneumonia, whether it be primary or secondary.—*Braithwaite*, xxxiv. p. 34.

The *winter fever*, or *typhoid pneumonia*, so common in some of our Southern regions, has been successfully managed by Dr. Coolidge, of the U. S. A., with the sulphate of quinine in doses of ten and twenty grains. Although there was extensive inflammation in both lungs, this remedy subdued the attendant fever in less than twenty-four hours, and checked the progress of the disease.—*U. S. Army Reports*, 1857.

These and like facts lie at the basis of the opinion cherished in the South, that there is a close relationship between pneumonia and malarious fevers.

As an offset to the dread of the contagious attribute ascribed to *puerperal fever* we are pleased to notice the prophylactic powers of the sulphate of quinine as announced by Dr. Leudet, who had abundant opportunities of testing its value in the Hospital of *Rouen*, when that disease prevailed as an epidemic. From September, 1843, to January, 1844, eighty-three women were delivered. In nine who took the sulphate of quinine there was no puerperal fever; of the remaining seventy-four who did not take it twenty-one were seized. In 1845, of twenty-six lying-in women, fifteen took the medicine and only one was attacked, while of the eleven who did not take it eight were seized. In 1846, of thirty-six lying-in women, seventeen took the salt of quinine and only one of them had the fever, while of the nineteen who did not take it eleven were attacked. Five grains were given four hours after delivery, and the same every six hours for three days, when the dose was reduced. In some cases the medicine was given prior to delivery. (See *Ranking*, pt. viii. p. 258.)

Traumatic tetanus has been controlled by the sulphate of quinine. M. Coste, Surgeon-in-chief of Hôtel Dieu, at Marseilles, has given a case, in *L' Union Medicale*, of a boy aged sixteen who had tetanus from a wound of the toes. After bleeding, baths, &c. had been tried to no purpose, the salt of quinine succeeded. Forty-five grains were given in one day, and the cure was complete at the end of a fortnight.

Dr. R. B. Todd has given us cases in detail to show the value of sulphate of quinine in a very distressing *erysipelatous affection of the throat*, in adults of various ages and conditions. The disease was attended with high irritation, a sense of choking, &c.,

and a membranous formation was visible far back in the throat. The mouth could not be opened wide enough to apply nitrate of silver, and the chief reliance was on injections of sulphate of quinine. Ten grains diffused in two or three ounces of strong beef tea were administered every four hours as an enema. On the day after this treatment the mouth could be more easily opened and liquid could be swallowed. Wine, nutritious food, and the salt of quinine were now given by the mouth, and recovery ensued.—*Med. Times and Gaz.*, June, 1852.

While some fault-finders have charged the salts of quinine with the high crime of inducing *urticaria*, James Startin, Esq., assures the medical world that few cases of this troublesome affection refuse to yield to the quinine preparations. This is not strange, for it is an old story that a game-cock, knocked over, apparently dead, by lightning, was made to crow as fiercely as ever by the action of an electrical machine. In the *Medical Times and Gazette* for May 13, 1854, we find the following formula, as used by Mr. Startin:—

℞.—Quin. disulph. grs. xij.
Ammon. sesquicarb. ʒi.
Magnes. carb. ℥ss.
Aqua pur. ℥viij.

Mix. Dose, half an ounce three times a day.

The quinine strength of the mixture is quite small, less even than a grain for a dose. The mixture is not a good one, pharmaceutically speaking, and the writer should have directed the phial to be well shaken just before each dose was poured out.

To relieve the itching, which, by the way, is the most troublesome part of the case often, a lotion is ordered consisting of dilute nitric acid. Mr. S. says this is quite as effectual as the hydrocyanic acid, and it is less costly.

In autumnal *diarrhœa* with the intermittent type, and in the disease called by some *cholerine*, as also in the *diarrhœa* of the South, sulphate of quinine has been very beneficial. The practice most common is to give an opiate draught, followed in two hours by a full dose of castor oil, and, after it has operated, a dose of the quinine salt with small portions of iron. I have been, for a good while, in the habit of administering a solution of ten grains of sulphate of quinine in one ounce of water, adding enough elixir of vitriol to make the mixture decidedly sour; in cases of troublesome diarrhœa an adult may take a teaspoonful every hour. Some cases of *epidemic cholera* have been managed with large doses of the sulph. quinine, on the ground of its malarious and intermittent character.

In the *Louisville Marine Hospital*, in 1852–3, I had many cases of *dropsical effusion* to treat, depending on neglected or

badly managed intermittents, which, in a large majority of cases, had been of the quotidian type. The dropsy was generally most obvious in the lower extremities, and sometimes was in form of general anasarca. There was obviously great debility of the absorbents, and often very general debility. So completely successful was the sulphate of quinine in such cases that it came to be a fixed rule for the resident students of the house to administer the strong acidulated solution at once, without waiting for the regular prescribing-day. This was kept on hand in quantity, as one of the standard remedies, and contained five grains to every ounce, enough elixir of vitriol being added to give a marked acid taste. In a few days there was decided improvement.

The following formula is given in the fourth number of the *North Amer. Medico-Chirurg. Review*, p. 500, as well suited to remove the visceral engorgements consequent on the fevers of India. It is taken from the recent work of Mr. Martin, surgeon to the Bengal Army, on the *Influence of Tropical Climates on European Constitutions*, &c. It will be found to be a very energetic use of the sulphate of quinine:—

Saturated solution of sulphate of magnesia, ℥viiss;
Diluted sulphuric acid, ℥ss;
Sulphate of iron,
——— of quinine, āā ℥i.

The dose is stated as a tablespoonful every morning, or enough to give two evacuations daily. Each tablespoonful will contain thirty grains of sulph. ferri, and as much of the quinine salt.

The *antiseptic* power of the sulphate of quinine has been advantageously applied to arrest *gangrene*. For this end it has been given internally, and laid on the part affected in the form of poultice and cerate.

Sulphate of quinine mixed with snuff has been employed as an *errhine* for the relief of *facial neuralgia*. But as neuralgia is almost uniformly a periodical disease it is quite probable that the relief depended on the antiperiodic powers of the sulphate rather than on its action as an errhine.

The *adulterations* of the sulphate of quinine claim a passing notice. These are chiefly wheat flour, white sugar, and stearine. The admixture of flour is readily detected by the pasty, viscid quality acquired by the action of water on the mass. This fraud was practiced in the early history of the medicine in Philadelphia, when it sold for sixteen dollars per ounce. The detection of sugar is not quite as easily effected. Water should be added to the salt, so as to dissolve the whole if practicable. Carbonate of potash is then added, to decompose the sulphate and throw down its quinine. The whole is then to be filtered, the liquor evaporated, and the mass digested in alcohol. If sugar be

present, it is in the filtered liquor, and will be seen on evaporation. The alcohol takes up all the quinine which can be separated by evaporation. The presence of stearine is ascertained by the greasy sensation imparted to the fingers.

The sulphate of quinine has also been adulterated in this country with mannite and sulphate of barytes, both of which are detected with difficulty.

The *poisonous* action of the sulphate of quinine calls for a few remarks. When introduced to the notice of the profession in Pennsylvania, in 1823, it was denounced as a poison, and not a few so-called doctors joined in the denunciation. They refused to exhibit it in practice until compelled by their constant failure to cure the prevailing fevers by other means. At the date named above I gave it to children a week old and to men of threescore and ten with entire safety and marked success. But as eight grains were fully equal in power to a whole ounce of the bark, it is not wonderful that some untoward circumstances followed its administration occasionally. The *quininism* already spoken of was frequently realized by delicate females of hysterical or nervous temperament, and was often made a ground of objection to its exhibition. It consisted in confused noises in the head, ringing of the ears, obscured vision, a feeling of great enlargement of the head, &c. &c. I had to contend with this difficulty, but did not find it an insurmountable one. It may generally be prevented, when the medicine is taken by the mouth, by the administration of twenty or thirty drops of aromatic spirit of ammonia every two hours for half a day before the sulphate is taken, or by placing sinapisms on the ankles or wrists an hour or two before the sulphate is exhibited. If the salt be employed endermically, there is far less risk of the occurrence of quininism; and if large doses be employed internally, the difficulty is less apt to be realized than if small portions be taken.

But statements have been published, chiefly in the West, to show a more decidedly *poisonous* operation. It is stated that individuals have been rendered permanently deaf or blind, and that in one instance death followed the exhibition of the medicine. I have searched the records with some care, and feel justified in the assertion that ten cases of blindness or deafness, such as have been referred to, cannot be found in all the journals the world over. Some of these are probably exaggerated or misrepresented; but even admitting them to be precisely as stated, and that twenty well-authenticated cases can be found, would that be a valid reason for rejecting the medicine? If so, we should be compelled at once to lay aside opium and calomel and every efficient remedy. And if any candid man will reflect on the fact that millions on millions have taken the sulphate of

quinine, not once merely, but repeatedly, and in large quantities often, it will be matter of wonder that ignorance and rashness, so common to the vulgar, have not caused this very popular remedy to be the occasion of as many evils as have attended the promiscuous and unwise use of calomel and opium. Geddes and Parkes, who have published some interesting facts in regard to the diseases of India, declare that they gave nine pounds and four ounces of the sulphate to twelve hundred patients sick of intermitting and remitting fevers. In a very few cases ringing of the ears followed. In two or three persons a slight amount of deafness ensued, but no other unpleasant effect. They exhibited the medicine in large doses.

Dr. Blair says he has prescribed the sulphate of quinine to patients of both sexes and all ages, and frequently so as to induce cinchonism, during the last thirteen years, and has given in that period several thousand ounces of the medicine, without noticing any serious evil to result, excepting three or four cases of imputed abortion.—*Account of the Yellow Fever of British Guiana*, p. 138.

We infer from all that is known that this medicine has such weighty advantages as to cast into the shade every sort of objection ever raised against it. No wonder, when contrasted with mercury, which once was the Samson of the Materia Medica in the far South, that the sulphate of quinine should have so far taken its place as to be exhibited far more extensively, and successfully too, in the great valley of the Mississippi, than was ever calomel in the palmiest period of its history. We know prominent physicians who were formerly devoted to the mercurial practice who have almost entirely substituted the sulphate of quinine in its place.

As mistakes have been made, and may be again committed, in confounding sulphate of morphia with sulphate of quinine, it is important to distinguish accurately. The labels may have been rubbed from the bottles, and it would not do to rely on taste or smell. Both salts are bitter, but one is decidedly poisonous. If we add a drop or two of strong nitric acid to small portions from each bottle, placed on a watch-crystal, the quinine salt will be made yellow, while the salt of morphia will be changed to a bright red. The experiment is performed with ease, and is sufficiently accurate for practical purposes, and every physician should keep the *test* in his mind.

The *hydroferrocyanate*, the *hydrochlorate*, the *citrate*, the *tannate*, the *phosphate*, the *arseniate*, the *valerianate*, and other salts of quinine have all found favor in the profession. The first and last named are reported as preferable to all others, because

they do not induce quininism. If this be so, it is an important recommendation.

The *hydroferrocyanate*, called also *ferrocyanate* and *Prussiate*, is made by boiling pure *sulphate of* quinine and Prussian blue (ferrocyanate of the peroxide of iron) in pure water and evaporating to dryness. The ordinary adult dose is a grain, given half an hour before the expected paroxysm.

The *hydrochlorate* or muriate is made by saturating pure quinine with muriatic acid and evaporating. The dose is from half a grain to one grain every two hours during the intermission. It is the most soluble salt of quinine, and hence preferred by some physicians.

The *citrate of quinine* is made by adding to the acidulated citrate of soda a solution of one part of sulphate of quinine in forty parts of pure boiling water. The mixture is filtered while hot, and on cooling regular crystals appear. Four grains are equal to twelve of the sulphate; it is more agreeable to the stomach, and rarely gives rise to quininism. I have never employed this salt, but believe it to be a valuable medicine.

The *tannate of quinine* has been extolled by a Swedish physician, Dr. Ronander, for agues tending to dropsy or combined with more or less of effusion. He combines it with black pepper, or piperine and wormwood. I have no doubt that in persons of feeble habit inclined to hemorrhage or dropsy the following preparation would be valuable:—

℞.—Tannate of quinine,
Powder of black pepper,
Extract of wormwood, each ʒss.

Mix intimately and divide into thirty pills, giving two or three every three hours before the time of the expected paroxysm.

L' Union Médicale for April 12, 1853, has an article by M. Delioux, showing the good effects of the *tannate of quinine* in the management of night-sweats peculiar to phthisis. He gave from eight to fifteen grains, divided into three or four doses, the whole to be taken in a day, and the last about three hours before bedtime. The powder may be taken in lemon syrup.

The *phosphate of quinine* has been much praised by Dr. Harless, of Germany, for a reason that is popular with the Germans, viz., the fact of the acid combined with the quinine being an *animal* acid, and therefore more readily assimilated with the human economy. The dose is from one to four grains three times a day, and agrees well with irritable stomachs. It is held to be a better febrifuge and tonic than the sulphate.

The *arseniate of quinine* was prepared in order to have the combined antiperiodic powers of arsenic and quinine. I have been in the habit of mixing arsenious acid and the sulphate of

quinine, and making the mass into pills, for obstinate cases of ague and fever. The mixture has frequently succeeded after both ingredients separately had failed. A fourth or an eighth of a grain of the arsenious acid may be given with the dose of the sulphate three times a day, the last medicine being employed also in the intervals alone. Those who prefer to have the arseniate of quinine ready for use can obtain it of the best apothecaries.

The *valerianate of quinine* is supposed to be suited to the cases of persons of a decidedly nervous temperament, and is believed to have the important advantage of exciting no sort of cerebral disturbance.

The following preparations of quinine may be administered very usefully in glycerine, as it dissolves them entirely:—one grain and a half of the sulphate to one drachm of the glycerine; a clear fluid of a beautiful straw color and intensely bitter taste is the result. One grain of the iodide will dissolve in one drachm, giving a beautiful amber-colored mixture, very bitter and clear. Five grains of the citrate of quinine and iron will dissolve in a drachm of the glycerine; the fluid, which is opake, has a greenish-yellow color and a strong metallic or styptic taste. —*American Druggists' Gazette*, July, 1857.

Some interesting experiments have been reported to show the real therapeutic action of the preparations of quinine. These have sometimes been of such a nature as to make the impression that the medicine was a direct *sedative;* sometimes they would lead us to regard it as a *stimulant.* My own opinion, as may be gathered from what has been already said, is that it may prove *stimulant* or *sedative*, according to the condition of the organ on which it acts directly or the state of the general system. This view will be found to be correct by observant practitioners, or I am greatly mistaken.

The effect of sulphate of quinine *on the pulse* has been very particularly noticed by several acute observers. The pulse has fallen under its use from 140 to 84 in seventy-six hours, and from 104 to 72 in twenty-four hours, thus justifying the appellation of *sedative* to the remedy. The cases of Dr. Fearne, reported in *Fenner's Medical Reports*, vol. ii., show that under twenty-grain doses every half hour the pulse fell from 120 to 80. In other conditions the medicine has acted as a stimulant and irritant.

It is also *antiseptic*, and most assuredly it is the very best *antiperiodic* ever known or likely to be known to the profession. Its power as a *tonic* is also unquestionable, though some think it inferior, as such, to the Peruvian bark. We can readily augment its tonic and antiperiodic powers by combination with

sulphate of iron or sulphate of copper, as I have frequently done.

Very many substitutes have been offered to the public, though none are equal to the sulphate of quinine. The *Parthenium Integrifolium*, or Prairie Dock of the West, is among the more recent.—*New York Medical Gazette*, Jan. 1853.

CINCHONISM.—This term is used synonymously with *quininism*, and refers to the *ringing of the ears, some deafness, an imaginary sense of swelling of the head*, and other cerebral symptoms that sometimes follow the exhibition of the salts of quinine. My experience warrants the assertion that these symptoms come on after the use of small doses more frequently than after very large ones have been given. Some persons never realize them at all, and they are transient, when they do occur, almost uniformly.

But cinchonism is not peculiar to quinine medicines. Salicine, Angustura bark, and bebeerine have induced it. As a general rule it does not last longer than twenty-four hours. As noticed elsewhere, the best preventive is the aromatic spirit of ammonia, ten to twenty drops every two hours, and sinapisms to various portions of the extremities.

CINNAMON. *Cinnamomi Cortex.* Bark of the *Laurus Cinnamomi.*—This is one of the articles that calls for no description here, as everybody knows what it is sufficiently well; nor do I intend to say much about its medicinal uses. The strongly aromatic and spicy article is of course the best for all purposes.

The powder of cinnamon is a good adjunct to less agreeable medicines, and is often employed in that relation. The decoction or tea is often useful to relieve pains of the stomach and bowels caused by flatulence. It is hence called an *antispasmodic* and *carminative* as well as a *stimulant*. An ounce of coarsely-bruised bark may be added to a quart of boiling water, and simmered in a covered vessel for ten minutes. A much stronger decoction is often serviceable as a fomentation to the abdomen, especially in the cases of young children. The *spice plaster* was a very favorite application in cholera infantum in the hands of the late Dr. Parrish. It is made by incorporating with melted suet the fine powder of cinnamon and all other spices that are at hand. The whole is well mixed and spread on leather or linen, and renewed twice in twenty-four hours. It gives some support to the bowels, and is gently stimulant to the surface, sometimes proving *rubefacient*. The oil of cinnamon mixed with sweet oil, gently heated and rubbed into the spine at bedtime, will frequently calm a fretful child laboring under colic pains and put it to sleep. Ten drops of the aromatic oil may be added to a teaspoonful of sweet oil for this end, and we may

increase the rubefacient power by adding ten drops of liquid ammonia.

CLIMATE.—Various writers have considered climate as a powerful therapeutic agent, sometimes prompt, but more frequently gradual in its operation. We cannot do better than to quote at length the judicious remarks of Mr. Copland, in his *Library of Practical Medicine*, on this point:—

"*Of change from a cold or temperate to a warm climate.*—Keeping in view the following characteristics of a cold and temperate climate, viz., its low temperature, the alternation of seasons, the pureness of the atmosphere, the more nutritious, invigorating, and stimulating nature of the food, and the effects of warm clothing; and connecting these with the vascular plethora, the active functions of the brain, lungs, liver, and kidneys of its inhabitants, the disturbances which will result when they are subjected to a continued high range of temperature and to an atmosphere loaded with moisture, and frequently with vegeto-animal effluvia, may be anticipated. It is now fully ascertained that the effects of a high range of temperature and of moist miasmal air on the European constitution are a diminution of the changes effected by respiration on the blood, an increase of the secreting and excreting functions of the liver and skin, and a decrease of the urinary excretion. When, therefore, the plethoric European migrates to an intertropical country, the functions of the lungs and the pulmonary exhalation become diminished; the requisite changes are not effected on the blood, notwithstanding the excitement of the nervous and vascular systems by the increased temperature; and the already active and developed liver is irritated, and has its functions augmented, by the increase of those elements in the blood that the lungs and skin cannot remove from it. Hence proceed febrile attacks, particularly when excited by their appropriate causes; inordinate activity, with a relative frequency of the diseases of the liver; the secretion of acrid bile; and the disorders especially affecting the alimentary canal and excreting organs. The general adoption of too rich and nourishing food and beverages by those who remove from cold to hot climates tends greatly to increase these evils, as already explained; and the influence of high temperature and of a vertical sun upon the European head is productive of disease both of it and of the liver. To these effects the mental cultivation and activity of Europeans somewhat predispose them, whilst their heads are not so well guarded from external influence by the constitution of its integuments and hair, and the thickness of the cranial bones, as those of the negro and Mongol varieties of our species.

"The obvious indications resulting from these facts are that

natives of cold countries migrating to warmer climates should, particularly if the change has been made abruptly, live abstemiously, and promote the functions of those organs which perform the most essential part in excreting effete or injurious elements from the circulation. The head should be kept cool, and protected from the rays of the sun; the surface of the trunk and lower extremities ought to be preserved in a freely perspirable state, so as to take off the load of circulation, and derive from the excited liver. In order to promote the secreting and depurating functions generally, active exercise, short of fatigue, should be taken, without exposure to the causes of disease, particularly those which are endemic. As the maladies which most frequently supervene on change from a cold to a warm climate proceed neither from the increased temperature alone nor from greater moisture of the air, but from these conjoined with malaria, and not unfrequently also with wide ranges of temperature during the twenty-four hours, especially in high and inland localities, with hot days and cold, raw, and dewy nights, and with a too full and exciting diet and regimen, causing fevers, dysentery, and diseases of the biliary organs, care ought to be taken to avoid those causes, as well as whatever may tend to assist their operation on the frame, and to protect the system against the sudden daily changes by warm clothing at night, &c.

"The consideration of the effects produced by *migration during a state of disease*, from a cold to a warm and moist climate, is of the utmost importance. Keeping in mind its influence upon the healthy frame, chiefly in exciting the functions of the skin and liver and diminishing those of the lungs, we are led to prescribe it in the treatment of various diseases. In *hæmoptysis* this change is obviously beneficial, especially as a warm and moist atmosphere, by this mode of operation, lessens the activity of the pulmonic circulation and the disposition to sanguineous exudation from the surfaces of the bronchi. *Bronchitis* and *tubercular phthisis* are also often benefited, and the progress of the latter much delayed, by this state of atmosphere, especially when adopted early. *Chronic rheumatism* is sometimes cured by this change, seemingly owing to its influence in promoting the biliary and cutaneous functions. *Dropsies*, particularly *anasarca* and *hydrothorax*, have been, in a few instances, removed by a change to a warm climate; but while a moist state of the air is most serviceable in pulmonary and hemorrhagic diseases, dry warmth seems more beneficial in dropsies, dyspeptic affections, and hypochrondrasis, evidently from its effects in augmenting the insensible perspiration and the pulmonary exhalation and imparting tone to the capillary circulation. Besides these, *gout*, in its early stages, *dysmenorrhœa*, and *scrofula* in nearly

all its forms, are benefited by a change to a warm, or even a mild and dry atmosphere.

"*Of migration from a warm to a cold or temperate climate.*—This subject should be viewed in relation, first, to the change as it affects the dark races of man; and secondly, as it respects those belonging to the Caucasian variety who have either been born or acclimated in warm countries. If change from a cold to a warm climate is productive of disease and great mortality in the white constitution, the migration of the dark races to a cold or temperate country is not less fatal to them; and while the change produces in the former case fevers, diseases of the biliary organs and of the alimentary canal, it occasions in the latter tubercular phthisis and other tubercular affections, with diseases of the bronchi, &c. When the dark races, particularly the negro and those of the Mongol variety, who are natives of intertropical and low countries, migrate to places subjected to a low range of temperature during a great part of the year, the depressing influence of cold upon the nervous system and vital actions of the lungs and skin gives rise not only to tubercular formations, but also to increased secretion from the internal mucous surfaces, and they are in the great majority of cases cut off in a few months or years by diseases of the lungs, kidneys, and bowels. Those, however, who change the climate progressively, or who are born in countries of an intermediate temperature, and who are provided with warm clothing and animal or nutritious diet, suffer much less than those who migrate in a more direct manner, even although possessed of these latter advantages. The native African who removes immediately to Europe seldom lives over two winters in it; while the negro who has been brought to the West Indies, and subsequently to the Southern States of North America, previously to his arrival in more northern countries, and enjoys necessary food and clothing, will often not suffer materially from the change.

"Those who have been born of European parents, or been seasoned in warm climates, not infrequently suffer after removal to temperate or cold countries. Even although the change may have become necessary from chronic affections of the liver or bowels, yet may it for a while aggravate or render more acute hepatic disorder, or superadd to it disease of the lungs; and many who have experienced only functional disorders of the stomach or liver, or who acquired merely a tendency to them during their residence within the tropics, have been attacked by active diseases soon after their return to Europe. Others, also, who have suffered more seriously, have had their complaints aggravated after a short residence in England, although they were benefited during their voyage home. This result of change

to a colder climate proceeds not, however, altogether from the temperature or the state of the seasons, but in a great measure from the imprudence of the patient. Frequently, however, a colder atmosphere is prejudicial for a time, by constricting the vessels on the external surface and determining an increased flow of blood to the large internal viscera, and thereby occasioning congestion and obstruction of those organs which have been weakened by previous disease or the influence of climate. Another frequent consequence of change from a warm to a cold country is a diminution of all the secretions, particularly those of the skin and liver; originating vascular plethora and visceral engorgement. In this state of the vascular system, if the cutaneous or pulmonary surface be subjected to cold, particularly cold combined with moisture, after the circulation has been determined to these parts by hot rooms and crowded assemblies, or if reaction rapidly follow the impression of cold, the great mass of blood is thrown upon the internal viscera, which, if not relieved by a free secretion, becomes the seat either of congestion or of inflammation. Hence it is that hepatitis or dysentery so frequently follows changes from a high to a low temperature. The remarkable liability to diseases of the respiratory organs observed in those who have returned to Europe after a long residence in warm countries is evidently owing, in many instances, to preexisting disorder of the liver, which has extended thence to the lungs, owing either to the increased action of this latter organ upon removal to a colder climate, or to imprudent exposures to cold, or to breathing a very warm and close air immediately upon coming out of a cold and dry atmosphere.

"In order to counteract these effects of change, warm clothing, particularly of the lower extremities, with the use of flannel next the skin, should be adopted; and exposures to cold and moisture and the night-air be avoided. The diet ought to be light, and of moderate quantity; the strong wines imported into this country abstained from; and, above all, the functions of the bowels and abdominal viscera carefully watched and promoted whenever they seem to flag. It may be of importance to know the most suitable period of the year to arrive in this country, after the frame has become assimilated by a long residence to a warm climate. If an invalid return in winter, the sudden transition from a warm to a cold country may be detrimental; if early in the spring, he is liable to feel the effects of a variable season for some time. The least objectionable period extends from May to September; and if the cold of the winter months be found too severe in the more easterly counties, or in the metropolis, the climate of Devonshire or of Bath may be tried with as great advantage as that of most of the southern parts of continental Europe. Old

residents in a warm climate will experience much advantage from residing sometime in the more southerly parts of Europe before passing to England or other countries of the north, more particularly if they use a course of the warm mineral waters of Vichi, Carlsbad, or Ems, in their way.

"The children born of white parents resident in the more unhealthy countries within the tropics very generally die at an early age if they be not removed to a colder climate. They commonly sink from the *choleric form of fever*, described in a separate article as incidental to infants, or from diarrhœa, dysentery, or diseases of the abdominal secreting viscera, often assuming a remittent form. When, therefore, either of these appears in this class of patients, removal to a temperate climate should be advised when it can be effected, taking care to guard them by warm clothing, &c. from vicissitudes of temperature for a considerable time after the change, and attending to the first indication of pulmonary or tubercular disease, or disorder of the liver and bowels.

"We are next to speak of the therapeutic action of climate, as seen in certain localities, and we shall notice, first, the *climate of certain places in England*. The chief difficulty in this country is to find a mild and sheltered climate for invalids, from pulmonary disease, and it is almost exclusively to the south and southwest parts of the island, in the immediate vicinity of the sea, that we must direct our inquiries. The general use of coal fires in all the large towns in Great Britain, owing to the quantity of sulphur this mineral contains and of sulphuric acid fumes and fuliginous matter generated, renders the air more irritating to the lungs, and increases the risk of a winter residence in these places to all those who suffer from or are even liable to diseases of the respiratory organs. This, together with other considerations, especially the results of observation, renders it imperative on the medical attendant to recommend removal to a more salubrious locality. The mild situations I shall notice are in the south, the southwest, and the west of the island.

"The *south coast* is much milder and more moist than the east and inland parts of the island during the months of November, December, January, February, and March; but from April till October, the temperature of the latter is greater. On this part of the coast, *Undercliff*, in the Isle of Wight, *Hastings*, and *Brighton* have been recommended as winter residences for invalids. *Undercliff* is the most sheltered and mild of these places in winter, and its air softer and more humid in summer, than either. *Hastings* is sheltered during the winter and spring months from the north and northeast winds, and, of the various places on this part of the coast, ranks next to Undercliff as a

residence for invalids with pulmonary affections. *Brighton is* more exposed than the foregoing to the north and northeast winds, and its air is drier and hence more bracing. It is, therefore, more suitable than they to the nervous, the simply debilitated and relaxed, to the dyspeptic, to those affected with chronic bronchitis and asthma attended by greatly-increased secretion. Dr. Clark very properly suggests that invalids who select the south coast as their winter residence should pass the autumn at Brighton and the winter at Hastings, the climate of the former being mild to the end of December.

"The *southwest coast* of the island is very mild in several situations during the winter, and has, therefore, been very generally recommended in diseases of the respiratory organs. Sir J. Clark estimates the temperature of its more sheltered localities as being 5° higher than that of London during the winter months; and the temperature of the south coast as only 2° higher. But I conceive that there are at least 6° and 3°, respectively, of difference between these and London and its vicinity. Besides, it is not only the range of temperature that should be considered, but its greater equality and less rapid vicissitudes, and the increased humidity and more soothing influence of the air. The places on the coast of Devonshire most in repute as residences for the consumptive are *Torquay*, *Dawlish*, *Sidmouth*, *Exmouth*, and *Salcombe*. Of these, *Torquay* is the best, and, according to the reports of Sir J. Clark, Dr. Foote, and of my friend Dr. W. Hutchinson, who has resided in it, superior to all other places in our island in pulmonary cases.

"*Penzance* is the principal place in Cornwall recommended for invalids. Its peninsular situation and southwest position give it a remarkably soft, humid, and mild atmosphere; and the equality of its temperature, not only throughout the year, but also during the day and night, renders its climate in many respects superior to that of most places in the south of Europe, and brings it next to Madeira. The quantity of rain that falls annually at Penzance is nearly double that which falls in London; the number of rainy days is much greater, and the temperature of the air at night at least 7° higher during the winter months. This mildness, equality, and humidity of climate is, however, somewhat impaired by its exposed situation and its liability to high winds.

Both the Land's End and the coast of Devonshire, owing to the predominating character of softness, humidity, and equality of climate, exert, along with a soothing, an evidently relaxing effect. Hence this coast is best suited to the irritable and inflammatory states of disorders of the respiratory organs, and such as are characterized by irritation, with little expectoration

and dryness of skin. In cases attended with a copious expectoration, great relaxation of the mucous surfaces and soft solids, and in nervous debilitated persons, this climate will prove injurious. Even in those cases where it is evidently indicated, and actually proves of service, removal will be necessary to a somewhat drier air during the summer; and this should not be deferred longer than June, or undertaken before April or May; the patient generally deriving much benefit by returning the succeeding winter. The observations now made upon the climate of the southwest coast apply to that of *Jersey* and *Guernsey*, to which islands invalids sometimes repair, and occasionally with advantage. Southwest winds generally prevail in them during autumn and winter, and cold northeast winds often continue long in the spring. The summer climate of these isles is excellent. Of the two that of Jersey is preferable.

"The *West of England*.—The mean temperature of this part of the island is a little lower than the southern coast, but in March and April it rises somewhat above it. Bath and Bristol are about 3° warmer than London during the months of November and December; but this difference is reduced more than one-half during January, February, and March. In this part of the country the vale of Bristol is the most sheltered and mildest. The climate during the winter is rendered more mild by the vicinity of the ocean, while the groups of surrounding mountains attract the clouds and diminish the fall of rain below the current to which its western position would otherwise subject it. Bristol Hot-wells and the lower parts of Clifton are the most sheltered spots, and the best suited to consumptive patients, while other invalids will find most advantage in the more elevated situations which the latter presents. In general, the climate of this place is, perhaps, the mildest and driest in the west of England, and therefore one of the best winter residences for invalids. It is drier and more bracing than that of the southeast coast, and therefore not so well suited to consumptive cases and to those affected by irritative action in the respiratory passages and bronchi. For these the more soft and humid air of Torquay and Penzance is preferable; but, with the return of summer, the consumptive invalid will relinquish the latter for the former with benefit. Clifton and Bath are certainly preferable places of residence to the southwest coast, in cases of protracted dyspepsia, gout, and scrofula, particularly the last, occurring in young persons, and relaxed habits. In these affections the waters of *Bristol Hot-wells* will, with regular exercise on horseback or on foot, prove extremely beneficial.

"The more inland districts of this part of England furnish various places which are salutary to invalids during the summer.

Malvern and the surrounding country, with the Malvern waters, are very serviceable in scrofulous and dyspeptic cases; and for the consumptive and other invalids various places in Wales, as Abergavenny, Aberystwith, Tenby, Barmouth, &c., will be visited during the season with advantage. Where a course of goat's whey may be considered of advantage, a summer residence in Wales will be preferred. There are various other places which, besides their mineral waters, furnish excellent summer residences for the invalid. Buxton, Matlock, Leamington, Cheltenham, Tunbridge Wells, &c., independently of the use of their respective mineral waters, prove excellent places of residence for those who are debilitated or exhausted, whose mucous surfaces are relaxed, or whose digestive, secreting, and assimilating functions are imperfectly performed, and any of the abdominal viscera congested or obstructed. In these latter circumstances of disease especially, the appropriate use of the waters of those places, assisted by regular horseback or walking exercise, by suitable medical treatment, and by mental relaxation and amusement, will often prove of great service. In prescribing the mineral waters of any of those places, due reference should be had to the nature of the climate; and, on the other hand, when directing change of climate, some attention should be paid to the waters which the place may afford, as the appropriate use of the one while the patient is experiencing the influence of the other will materially promote the end in view.

"In a very great proportion of cases where the state of the patient admits of change of locality much advantage will accrue from passing the autumn on the south coast of the island, as at Brighton, Hastings, or Undercliff, after having passed the summer at the foregoing watering places. In general, when the digestive and generative organs are disordered, frequent change of air, and traveling by easy and short journeys, with gentle exercise, particularly on horseback, agreeable amusement, and regular habits, will prove of marked advantage, and greatly aid medical treatment.

"*Of the climate in certain parts in France.*—The *West* and *Southwest of France* furnish several places the climate of which possesses the softness and humidity which are requisite in pulmonary diseases. The mean annual temperature of the southwest of France is stated by Sir J. Clark to be 4° higher than that of the southwest of England; and the climates of both generally agree or disagree with the same diseases. That of the south coast of Brittany is mild during the winter and temperate in summer, the mean temperature of this province being about 56½°. Its climate is soft and relaxing; and it is hence suited to dry bronchial irritations, to hæmoptysis, and tubercular cases.

Laennec found it very favorable to consumptive patients, and states that the proportion of such in this part of France is very small. In scaly eruptions on the skin, dysmenorrhœa, and in irritable habits of body, this climate will be often of service.

"*Pau*, situated at the base of the Pyrenees, from the account of it given by Dr. Clark and Dr. Playfair, appears to be the best place in the southwest of France for invalids; and yet in no respects is it superior to the southwest of England in consumptive cases. Its air is still and mild in winter and spring; the chief advantage it offers being the great mildness of its spring. Dr. Clark gives the following comparison:—'Its *mean annual* temperature is 4½° higher than that of London, and about 3° higher than that of Penzance; it is about 5° lower than that of Marseilles, Nice, and Rome; and 10° lower than that of Madeira. In *winter* it is 2° warmer than London, 3° colder than Penzance, 6° colder than Nice and Rome, and 18° colder than Madeira. But in the *spring* Pau is 6° warmer than London and 5° warmer than Penzance, only 2½° colder than Marseilles and Rome, and 7° colder than Madeira. The range of temperature between the warmest and coldest months at Pau is 32°; this at London, and likewise at Rome, is 26°; at Penzance it is only 18°, and at Madeira 14°. The daily range of temperature at Pau is 7½°; at Penzance it is 6½°; at Nice 8½°; and at Rome 11°. Pau is drier and warmer than the south part of England in the spring, and northerly winds are less injurious. One of its chief advantages is its vicinity to the watering places among the higher Pyrenees, which are often beneficial places of summer residence to those who have passed the winter and spring at Pau.'

"The *Southeast of France*.—The climate of the tract of country extending along the shores of the Mediterranean, from Narbonne and Montpelier to the Var, is warmer and drier, but more exciting than that of the southwest. It is subject to sudden vicissitudes of temperature and to cold winds, especially the northwest, or *Mistral*. It is decidedly prejudical to consumptive patients, especially when the disease has made some progress, and to irritative affections of the stomach, trachea, or larynx; and is serviceable chiefly in diseases of debility and relaxation unattended by inflammatory or hemorrhagic action.

"Sir J. Clark ranks the principal places on the coast of Provence in the following order as residences for invalids: Hyeres, Toulon, Marseilles, Montpelier, Aix, Nismes, Avignon. *Hyeres* possesses the mildest climate on this part of the coast, being sheltered from the north winds by a range of hills, and its inhabitants being comparatively exempt from pulmonary affections. At *Marseilles* the climate is dry, variable, and subject

to cold, irritating winds. It is, therefore, injurious to consumptive patients; and is one of the places in France where pulmonary diseases are most prevalent. Invalids requiring a dry air, and capable of bearing cold winds, may be benefited by residing here for some time. *Montpelier* has obtained a reputation for salubrity to which it has no claims. According to MM. Fournier and Murat, more than a third of the deaths that occur in the hospital of this city are from pulmonary consumption. The prevalence, in this part of the country, of northerly winds during winter and spring, both accounts for the frequency of pulmonary diseases and points out its unfitness as a residence for patients thus affected. *Aix* is still more exposed than Montpelier to the Mistral and north winds, and pulmonary complaints are very prevalent among its inhabitants.

"*Nice*, although situate on the same line of coast as Provence, enjoys a much milder climate than any part of that province. It is protected, by a lofty range of mountains, from the north winds; and the daily range of temperature is there less than at almost any part of the south of Europe. During winter the weather is settled and the atmosphere clear, the thermometer seldom sinking to the freezing point excepting at night. At this season, however, as well as in the spring, cold, dry winds are not unfrequent; and the climate is, upon the whole, dry and exciting. Hence it is not favorable to pulmonary consumption, the very disease for which it was formerly very improperly recommended. It is likewise unfavorable to irritable or inflammatory states of the larynx, trachea, and bronchi, attended with scanty expectoration or hæmoptysis. But chronic bronchitis, bronchorrhœa, and humoral asthma are generally very much benefited by the climate of Nice. It is also serviceable in all cases of debility, torpor, and relaxation of the mucous surfaces; in chronic rheumatism, gout, external scrofula, dyspepsia, and hypochondriasis.

"*Of the climate of Italy and the Mediterranean.—Genoa* is not favorably noticed by Dr. Clark as a residence for invalids; but Dr. Johnson, on the authority of Dr. Mojon, speaks of it in more favorable terms. It is best suited to those affected by chronic bronchitis and dyspeptic and gouty complaints, and to persons of relaxed and phlegmatic habits of body. *Pisa*, *Rome*, and *Naples* are the other places in Italy most frequented by invalids. The climate of Pisa nearly resembles that of Rome, the latter being somewhat warmer and drier in winter. Dr. Clark considers the climate of Rome as one of the best in Italy for consumption unattended by hæmoptysis. For those, however, who cannot take exercise in the open air, and must confine themselves to sheltered situations, the Lung Arno, in Pisa, is the

best place of residence to be found in Italy. The climate of Naples is considered by this writer, as well as by M. Lasnyer, more exciting than that of the two foregoing places; and it is more subject to high winds. The diseases which a residence in either of these three cities will benefit are those above enumerated. Persons who remain in Italy during the summer will find Lucca, Sienna, and the vicinity of Naples, the coolest situations.

"There are various other places on the shores and islands of the Mediterranean the climates of which are suitable to invalids; but we possess little or no accurate information respecting them. *Malaga*, in the south of Spain, *Cagliari*, in Sardinia, and some parts on the coast of Sicily, afford a mild winter climate, but the difficulty of reaching them and of obtaining in them many necessary comforts and conveniences almost precludes invalids from the northern part of Europe from visiting them. *Malta* is not open to these objections; but, according to Dr. Hennen, the quantity of dust raised from its arid soil and suspended in the air during dry weather renders it an unsuitable climate for consumptive patients. A considerable number, also, of the inhabitants die of pulmonary diseases. In his work on the medical topography of the islands of the Mediterranean, Dr. Hennen states a fact which is perfectly in accordance with my observation in warm climates, although doubted by Dr. Clark, viz.: that those of the *Ionian Islands which are decidedly most malarious and remarkable for remittents have had fewest pulmonary affections among the British troops.* In respect of the health of the troops stationed in these islands, this writer states that from an average of seven years, phthisis has borne a proportion to other complaints of one to one hundred and ninety-eight and a quarter only. At *Malta*, on an average of eight years, consumption has occurred in the proportion to other maladies of one to ninety-three and a half. Including all pulmonic complaints whatever, the proportion to others, as regards the Ionian Isles, has been one to twenty and three-quarters; and, as respects Malta, one to fourteen. Taking into calculation the whole Mediterranean islands, the proportion of pulmonic to other diseases has been one to seventeen and a quarter in the British army.

"*Climate of the Northern Atlantic.*—Under this head the climates of *Lisbon*, *Cadiz*, *Madeira*, the *Canaries*, the *Azores*, *Bermudas*, and the *Bahamas*, may be arranged; all of which have been recommended to persons requiring a soft and equable climate during the winter and spring.

"*Madeira* is, of all these places, indisputably the best as respects both the climate and the comforts and conveniences within the reach of the invalid. The frequency and excellency also of the means of conveyance to and from the island are no

small recommendations. From the minute account furnished of the climate of this island by Drs. Gourlay, Heineken, and Renton, after a long residence in it, and from the effects I have observed in several persons who have resorted to it as a winter's residence, it may be justly concluded that it is superior to any part of the south of Europe for consumptive cases. Its central ridge of mountain gives it in summer a cool land wind; and the north trade winds at this season renders it temperate and salubrious. During winter and spring, Funchal and parts near the sea-shore are the best places of residence; and during summer the more elevated situations in the interior are cool and agreeable. The mean annual temperature of Madeira is about 6° higher than the southeast of France and Italy; and the heat throughout the year is much more equably distributed. The winter of the former is 12° warmer than that of the latter, and the summer 5° colder. At Madeira, the extreme annual range is only 14°, whilst it is double this amount at Pisa, Rome, and Naples. In respect also of the progression and steadiness of its temperature, it excels those places. Rain falls at Madeira on seventy-three days of the year, and at Rome on one hundred and seventeen days, and chiefly during the autumn in the former. The air is also more soft than at Rome.

"The *Canaries* possess the next best climate to Madeira. The mean annual temperature, however, of Santa Cruz, the capital of the former, is 71°; while that of Funchal, the capital of the latter, is only 65°. The summer temperature of Santa Cruz is 7° warmer than that of Funchal, and the winter temperature 5° warmer. Hence the mean annual range of temperature is greater in the Canaries than in Madeira, which possesses, in other respects, advantages sufficient to recommend it in preference to the former in pulmonary diseases.

"The *Western Islands*, or Azores, enjoy a climate nearly approaching that of Madeira. They are, however, more subject to high, raw winds, particularly those from the north and northwest, which are often very cold and harsh; and the temperature of winter is lower and that of summer higher than in Madeira. The air is also more humid. From a very short visit I made to Madeira and the Azores—to the former in the spring and to the latter in winter—I should conclude the Azores to be much inferior to Madeira as a residence for invalids, chiefly because of the absence of the many necessary comforts and conveniences of their stormy winters, and the infrequency and ineligibility of the opportunities of transport between them and this country. The climate of the *Bermudas* and *Bahamas* presents no advantages sufficient to obtain for them a preference to those already noticed.

They are liable to storms and to harsh northerly winds in winter, from the American coast, while their summers are very hot.

"*Climate of the West Indies.*—The mean annual temperature of the West Indies at the level of the sea is 79°, 80°, and 81°; and during the winter months in some places about 3° and in others only 2° lower. The extreme annual range is 20°, and the mean daily range about 6°. This continued high temperature exhausts the energies of invalids; and the clearness of the skies and great power of the sun prevent suitable exercise in the open air. A visit to the West Indies of a few months' duration, made either to some of the most healthy islands or passed chiefly aboard ship, will, however, prove of service in several chronic affections, particularly those referred to above, excepting consumption in its most advanced stages. Persons much disposed to this disease, either hereditarily or by the conformation of the chest, &c., or who are threatened by its early stages, will find a removal to the West Indies one of the prophylactic measures most to be depended upon. When residing some time in an extremely malarious place within the tropics, I observed that the most healthy persons in it were those who were constitutionally disposed to pulmonary disease. But I believe that the observation often made is perfectly correct, that removal to an intertropical country when phthisis is far advanced will only accelerate its progress. It may also be stated that severe and protracted catarrhs are very common upon entering between the tropics. In gout, chronic rheumatism, scrofula, and calculous affections, a residence in the West Indies is often productive of advantage.

"*Of residence on the sea-shore and voyaging.*—There are certain topics connected with change of climate often discussed during the course of practice, viz., whether are inland situations, or places on the sea-shore, whose climates are physically alike, most serviceable in pulmonary diseases? and whether or not sea-voyages possess any advantage over a land residence in these complaints? In respect to the first question, it may be stated that places on the sea-shore are generally more humid than those inland, and oftener, on this account, preferable in the dry and the hemorrhagic pulmonary affections; while a situation somewhat inland, or not removed above a few miles from the coast, seems somewhat more serviceable in those cases of consumption which are otherwise characterized. But the question has not been satisfactorily determined, and, indeed, is not easy of solution.

"With reference to the second question, it may be stated more confidently that sea-voyaging, in a suitable climate, is preferable to land residence in the early stages of phthisis, and particularly when it is attended by hemoptysis. This advantage is evidently

to be attributed to the influence of the ship's motion on the sanguineous and nervous systems. This opinion was argued for by Dr. Gregory, in his excellent thesis *De Morbis Cœli Mutatione Mendendis*, and has been generally admitted. Cruising in a warm, or even temperate latitude, particularly in the Atlantic, is preferable to voyaging because of its longer duration. While the sun is north of the equator, the climate between the 30th and 50th degree of latitude; and while the sun is south of the equator, that from the 20th to the 35th or 40th degree of north latitude will be found the most salutary. During winter, voyages between Madeira and the West Indies, and in summer between Madeira and this country, in the vessels constantly trading between England and the West Indies, and which generally touch at Madeira, might be undertaken with advantage. These vessels furnish tolerable accommodations, which may be easily improved or adapted to the state of the invalid.

"When the winter has been passed in any of the warmer situations noticed above, attention ought to be paid to the time of returning to this country. This should not be earlier than the first, or later than the last week in June. If the invalid have passed the winter in the south of France or in Italy, these places may be left early in May, and he may travel cautiously through Switzerland, avoiding exposure to the evening and morning air. During the journey warm clothing should be resorted to as soon as the temperature falls so low as to feel sensibly cold; and a free circulation in the skin and extremities ought to be carefully preserved."

It has been well said that we have almost every shade and variety of climate in our own country to gratify the most fastidious in their selection of places where they may hope to regain lost vigor and to prolong existence. Some, in that surely fatal disease, phthisis pulmonalis, have hoped to find the summit of their anticipations in the sunny South, while others have sought the desideratum in the far North. My own opinion is, that nine-tenths of all who travel far from home and friends on such errands would realize more true comfort, physical, moral, and mental, at their own domiciles, unless they make the experiment very early in the attack. Late in the seizure is too late for permanently good results.

Clysters. *Enemata. Injections.*—A very good paper on the uses of clysters may be seen in No. xiii. of *Braithwaite's Retrospect*, beginning at page 97. The value of this mode of medication we fear is not sufficiently appreciated by the profession, and hence the infrequency of mention made of them in medical reports.

A clyster or injection is intended, for the most part, to evacu-

ate and clean out the lower portion of the alimentary canal. Sometimes an injection is given simply to clean away fecal and mucus collections from the gut, and to make the mucous surface more susceptible of the action of more energetic injections. Thus, warm water is often made to precede a medicated clyster, which acts more efficiently than if given without this simple preparation.

Owing to similarity of structure it was found long ago that remedial agents operated on the system through the medium of injections in the same manner as when administered by the mouth, and that nutriment could be exhibited in the same way. When the stomach is exceedingly irritable, and would reject medicine or food, we can get all the advantages of either by means of a clyster. As a general rule, the dose by injection should be three times larger than that by the mouth. Thus, sixty drops of laudanum by clyster are equal to twenty drops taken in the ordinary way.

That the surface of the intestines is absorbent may be proved by the disappearance of enemata thrown into them. Liebig states that a solution of common salt, in the proportion of one part to eighty of water, disappeared so completely from the rectum that an evacuation an hour afterward was found to contain no more than the usual proportion of salt.—*Animal Chemistry*, p. 77.

In cases of *habitual costiveness*, dependent on torpor of the alimentary canal, it is often best to reject all internal medicines, and to rely on injections of cold or warm water, repeated morning and night, or oftener. A pint is the proper quantity for an adult. If there be a plethoric condition, cold water is generally most suitable; if the patient be feeble, warm water will answer better. This expedient invariably cleans out the bowel, and generally excites more natural action higher up. It is a safe method, and too seldom resorted to.

Various gaseous matters have been employed by way of injection, and among them tobacco smoke is perhaps the most energetic. There is less risk in employing the smoke than the infusion or decoction of tobacco. The quantity to be administered can be better regulated, and the dangers attendant on the decoction are obviated to a considerable extent. Great care, however, is required in its exhibition, because of its powerfully depressing or *sedative* quality. The relaxation induced by injections of the smoke or decoction is often highly important in obstructions of the canal and for the reduction of obstinate dislocations.

The books speak of the *simple*, the *laxative*, the *purgative*, the *emollient*, the *anodyne*, the *tonic*, the *astringent* clyster, to

which we may add the *antiperiodic*. One of the *simplest clysters* that can be used is strong and warm soapsuds, thrown up in the quantity of a half-pint and repeated. Or we may add two tablespoonfuls of soft-soap to a pint of soft water, milk warm, or to a pint of buttermilk, or broth, or barley-water, or thin gruel. Either will soften and remove compact fecal matter and clean off the mucous coat.

A gently *laxative* clyster is made of equal parts of common salt, molasses, and sweet oil, (a tablespoonful,) diffused in a half-pint of warm water. It will be a little more active if we add an ounce of Epsom salts, or the same quantity of castor oil, or both, to a pint of buttermilk or thin starch or gruel.

The *purgative* clyster is still more efficient. An ounce of Epsom salts and a half-pint of the infusion of senna will make an injection of considerable activity. Or we may add two drachms of powdered aloes and a half-ounce of soft soap, well rubbed together, to a pint of water, boiling the whole for the space of ten minutes. A still more energetic clyster is made by combining two ounces of castor oil and two teaspoonfuls of the spirit of turpentine with a half-pint of gruel or thin starch. Either of the above will be found very serviceable in cases of obstinate constipation, and, if need be, they can be safely repeated several times in the course of a few hours.

The *emollient clyster* is called for in dysentery and in other diseases attended with much irritability of the lower bowels. It may be variously compounded. One of the simplest consists of flaxseed tea, from a half-pint to a pint. Flaxseed oil alone, or added to gruel, will also answer very well. From two to four ounces of fresh butter, or the same quantity of sweet oil, in a half-pint of thin starch or slippery elm infusion, will make a good emollient clyster. An ounce of mutton suet well grated and boiled in a pint of milk will give an excellent injection, and one that has been very useful in dysenteric affections.

The *anodyne clyster* is made of opium or laudanum, or any of the salts of morphia, or of the various narcotic vegetable extracts, dissolved in water or thin starch. The laudanum injection is often employed to restrain irritability of the rectum, and then, of course, the quantity should be small, even for an adult. Two or three ounces of gum-water or thin starch, with sixty drops of laudanum, will generally suffice.

The *tonic clyster* is generally composed chiefly of Peruvian bark. It was very often administered prior to the use of the sulphate of quinine, because the stomach frequently rejected the bark. For an adult, an injection of a half-pint should contain six drachms of the bark, which may be mixed with thin gruel, and administered at once, or in two parts. The daily use of this

injection will sometimes set up costiveness, to prevent which a half teaspoonful of Epsom salts should be added. If, on the contrary, purging should follow the injection, that should be restrained by the addition of an eighth or a quarter of a grain of the acetate of morphia, or from ten to twenty-five drops of laudanum.

The *astringent clyster* may be made of any of the well-known astringents, as tannin, or galls, or oak bark, or rhatany, or sugar of lead, or alum, or strong vinegar.

In the treatment of low fall fevers, which are often called *typhoid*, though essentially *remittents*, the physician is sometimes harassed with frequent bloody evacuations that greatly enfeeble and alarm the patient. Superadded to these there is often a wasting and offensive diarrhœa. In such cases I have employed with obvious benefit the following *antiperiodic* and astringent injection:—Sulphate of quinine, from twenty to sixty grains, dissolved in from two to four ounces of the sharpest vinegar, and thrown up every two or three hours. Under this treatment I have witnessed not only the cessation of the hemorrhage and looseness, but also the cleaning of the tongue, the arrest of tremors and subsultus tendinum, the elevation of the pulse, and the subsidence of all febrile symptoms.

In reference to the quantity of an injection to be used at one time it is not necessary to say much, as that must depend very much on circumstances. Ordinarily, from two to four ounces will suffice for children from one to eight years of age, and from a half-pint to a pint for adults.

We subjoin a few useful formulæ for the preparation of injections:—

Clyster of Aloes and Assafœtida.

℞.—Aloes, ʒss;
Assafœtid. ʒiss;
Camphor. grs. xij;
Ol. olivar. ℥iss;
Decoct. aven. ℥xij.
Mix. [For flatulent colic, ascarides, &c.]

Antispasmodic Clysters.

1. ℞.—Tinct. opii,
Pulv. valerian, āā ʒi;
Muc. g. Arab. ℥ij.
Mix.

2. ℞.—Tinct. opii, ʒi;
Pulv. ipecac. ʒss;
Decoct. hord. ʒvi;
Camphor. grs. iij.
Mix.

3. ℞.—Assafœtid. ʒij;
Spt. ammon. aromat. ℥iss;
Morph. sulph. gr. i;
Decoct. amyli, ʒviij.
Mix.

4. ℞.—Assafœtid. ʒi;
Camphor. grs. x.
Rub with decoct. amyli, ʒviij, and add spt. terebinth. ʒss. Mix.

Compound Clyster of Colocynth.

℞.—Colocynth pulp. ʒi;
Aquæ, ℥xij.
Boil a few minutes, and strain; then add
Magnes. sulph. ℥ss;
Syr. rhamni cath. ℥ss.
Mix.

Emollient Clyster.

℞.—Flor. chamœmil,
Sem. lini, āā ℥ss;
Aquæ ferv. ℥vi.
Macerate and strain, then add
Pulv. opii, gr. i.
Mix.

Sedative Clyster.

℞.—Sem. lini contus. ℥i;
Aquæ ferv. ℥viij.
Macerate for one hour, strain, and add
Sodæ, bibor. ℈j;
Pulv. opii, grs. iij.
Mix.

Turpentine Clysters.

1. ℞.—Camphor. ℈i;
Spt. terebinth. ℥i;
Ol. olivar. ℥ij;
Decoct. avenæ, ℥viij.
Mix.

2. ℞.—Spt. terebinth. ℥i;
Vitell. ovi, i;
Rub well together, and add
Decoct. avenæ, ℥x;
Ol. ricini, ℥i.
Mix.

3. ℞.—Spt. terebinth. ℥i;
Ol. olivar. ℥iss;
Camphor. grs. xv;
Decoct. avenæ, ℥viij.
Mix.

Anthelmintic Clyster.

℞.—Rad. valerian,
Absinthii,
Tanaceti,
Sem. santon. āā ℥iij;
Aq. bullient. ℥xij.
Digest for two hours, and strain. Then add
Sodæ mur. ℥ss.
Mix.

Antiperiodic and Astringent Clyster.

℞.—Quin. di-sulph. ℥ss;
Aceti fort. ℥iv;
Argent. nit. grs. ij;
Morph. sulph. gr. i.
Mix.

Tonic Clyster.

℞.—Pulv. cinchon. opt. ℥ss;
" gentian,
" Calumbo, āā ℥ij;
Aquæ bullient. Oj.
Digest for two hours, and strain.

Mild Cathartic Clyster.

℞.—Mur. sodæ,
Molasses,
Ol. olivar. āā ℥j;
Decoct. hordei, ℥viij.
Mix.

COCOS NUCIFERA. *Cocoanut Palm.*—The well-known oil of the cocoanut, so indispensable to the existence and comfort of the Fejee islanders, as they think, has been employed as a *substitute* for *cod-liver oil* for several reasons:—

1. Because it is cheaper and more palatable and never nauseates.

2. Because successful after cod-liver oil had failed.

Dr. Thompson thinks he has arrested the march of phthisis by the use of this substitute.—*Braithwaite*, p. xxix. p. 92.

COCCULUS INDICUS.—This is the fruit of the *menispernum cocculus*, a creeping plant growing in Ceylon and other parts of the East Indies. The berry is like a large, rough, black pea; and is commonly called *cocculus indicus* and *fish berry*, or *fish poison*, under which names it is sold in all our drug stores. I have often, when a lad, made it into pills with crumbs of bread, and caused small fish to be "drunk with it," as we used to say. The berries are ground or coarsely pulverized for this purpose. The fish dart at it with eagerness, and in a few minutes the surface of the water is covered with the fish, some dashing about,

others apparently insensible. I never knew any injury to result from eating fish caught in this way.

One of the most objectionable uses of the berry is as a substitute for hops in the formation of beer; and knowing its poisonous quality, the adulteration is prohibited in England by severe statutes. It is said that the brewers resort to it expressly to increase the intoxicating power of beer, ale, and porter; and no doubt this is so. When Mr. Delevan publicly charged the brewers in Albany with making use of the dirty water from the gutters in the manufacture of beer, they made a terrible uproar and threatened a prosecution. But knowing that this was not the worst allegation that could be substantiated, they very prudently suffered a non-suit, and paid the costs. They employ cocculus indicus after the manner of their teachers across the water, because there is here no statute to prohibit the nefarious act. Now that it may be seen that this berry is truly a poison, we have to say that M. Boullay, of Paris, has separated its alkaloid principle, called by him and now known in the books as *picrotoxine*, or the *bitter poison*, as the word literally means. This constitutes one-fifth part of the kernel, and ten grains of it killed a dog in twenty-five minutes in a second paroxysm of tetanus.

Mr. Accum, speaking of this adulteration of malt liquors, justly observes, "The effects may be gradual, and a strong constitution and hard labor may counteract somewhat, and for a time, the destructive consequences, but the baneful effects will at length appear. It is, moreover, a well-established fact that habitual drinkers of malt liquors are more liable to apoplexy and palsy than other persons."

Even so long ago as the time of Queen Anne the deleterious nature of cocculus indicus was known, and an act was then passed to prohibit brewers from employing it. Since then, not only the berry, but an extract, called by the names *black extract* and *hard multum*, has been prepared as a regular branch of business, and vended to the brewers.

The only case of poisoning I have ever witnessed by means of the cocculus indicus is recorded in the first volume of the *Western Medical Gazette*, and quoted in *Beck's Medical Jurisprudence*. A nurse who had a strong propensity to get drunk when she had a chance, and from whom all kinds of drink were concealed, found after some trouble a large bottle containing a fluid prepared for killing vermin. It was whisky or rum, with a large quantity of cocculus indicus in powder, and of course a tincture of the berries was present. The smell was too well understood to let the opportunity pass. She drank freely of it again and again, and when I saw her was evidently poisoned. She had

been drunk too often in the usual way to admit of a doubt that her present condition depended on something more than alcohol. She was comatose, pulseless, foaming at the mouth, convulsed, and her jaws locked. As an emetic could not be passed into the mouth, tobacco leaves soaked in hot water were laid on the epigastrium, which soon induced vomiting and purging, and the patient was out of danger.

Of nine persons sickened by soup that contained some of the powdered berries added in mistake for pepper, one died in twelve days; vomiting, pain in the stomach and bowels, attacked all of them. We have no account of the morbid appearances. But the poison is fitly placed among the *narcotico-acrids*.

The Arabian physicians formerly employed this article in practice, internally as well as externally. The only use of it now is for diseases of the skin, although it is probable that a due investigation would show that the internal exhibition might be salutary.

Drs. Hamilton and Christison speak well of an *ointment* for the management of *ringworm* and *tinea capitis*. It is made by triturating a drachm of the powdered kernels with an ounce of lard and rubbing it into the surface night and morning. Care should be taken to clean the parts well with warm soapsuds. The irritation of the skin is speedily allayed, and in three or four weeks the disease has yielded. A similar ointment has been successfully employed in the management of the common itch, aided by suitable correctives of the digestive organs.

COCHLEARIA ARMORACIA. *Horseradish.*—To show how little the drawings of plants in books of Materia Medica are worth to young students, or to any persons whatever, I cite the fact that the full-grown horseradish is now in my garden as perfect as it can be, and between it and the drawing now before me in a popular work (held by many to be among the best standard books) issued by an extensive publishing house in this city, there is no sort of resemblance that I can detect. Well and truly colored drawings may be useful, but naked figures such as that referred to are a waste of ink and paper.

The horseradish is too well known to call for a picture of any sort. Everybody is familiar with it, and its table use is almost universal. The activity of the article and all its good qualities are most obvious when the root or leaf is fresh and juicy. Drying almost entirely destroys the value of the plant. The green leaf as taken from the garden and soaked in hot vinegar or water will act as a rubefacient, and sometimes even vesicate. The well-bruised root will do the same. The energy is dependent on a volatile oil, which soon vanishes after the root or leaf is laid aside to dry.

Internally horseradish is stimulant and diuretic. The *compound spirit of horseradish* contains the activity of the plant, and is a good adjunct to diuretic infusions, especially in the aged or very feeble. It is made by macerating, for twenty-four hours, sliced horseradish root and orange peel, of each twenty ounces; bruised nutmegs, five drachms; proof spirit, a gallon; water, two pints. Distil, from the whole, one gallon, which is the compound spirit. It is not only a good internal medicine, but is found to be an excellent rubefacient.

Cod-Liver Oil.—*Oleum Jecoris Aselli.*—This article, which has been in use in various parts of Europe for many years, is now extensively employed in this country. In fact, such has been its popularity that it is employed by not a few persons in almost every form of disease, but more especially in affections of the chest, rheumatism, &c. &c. It is so well known to all classes of individuals that it is not necessary to give a minute description. It has been procured from the livers of other fish besides the cod, and some have supposed the *skate*-liver oil to be more decidedly remedial than any other kind, because it contains more iodide of potassium. This statement is made in the *Edinburgh Medical and Surgical Journal* for October, 1842, and is fully borne out by an article in *Medical Commentaries*, vol. iii., which informs us that the *skate*-liver oil was employed in the Highlands of Scotland nearly a hundred years ago for the cure of *rickets*. The oil was rubbed into the skin daily, and a flannel shirt previously dipped in the oil was constantly worn.

In *Fraser's Magazine* for November, 1850, there is an interesting article entitled "Leaves from the Note-book of a Naturalist," in which a passage is cited from Pliny to show the antiquity of the use of animal oil in scrofula. Speaking of turtles, he says, "If their flesh be eaten, together with the broth in which they are sodden, it is held very good to discuss the king's evil and to dissipate or resolve the hardness of the swelled spleen."

Dog-liver oil has been successfully employed in mistake for cod oil, and a very ludicrous anecdote has been given to the newspapers on this blunder. So sturgeon oil has got into the market by some who thought they could make a penny by palming it off for the genuine article.

Glycerine has been named as a substitute for cod-liver oil by Dr. Crawcour, of New Orleans. He says it is quite as efficacious, far less disagreeable, does not disorder digestion, and may be combined with any other remedy. Besides its antistrumous power, it very much aids in assimilating the salts of iron, especially the iodide. Quinine dissolves in it, unaided by sulphuric acid, and is divested of part of its bitter taste. From one to

three drachms per day are given in a little water. To be successful it should be pure.—*Gazette Médicale*, 1855.

I have known some very remarkable cases of obvious improvement on the use of this oil by persons laboring under *pulmonary phthisis*. It has also been very serviceable in *chronic bronchitis*, *rheumatic neuralgia*, *scrofula*, *gout*, &c. &c.

The best oil, in my judgment, is the *light brown*, to be had of tanners and curriers. This, it will be seen, has in its composition rather more of iodine, bromine, and chlorine, than the light yellow or the dark brown.

Mr. John C. Baker, a respectable druggist of Philadelphia, has published in the *Medical Examiner* the following interesting analysis of cod-liver oil. It will be seen that the light brown variety, which is now preferred, contains the most iodine, bromine, and chlorine, as already intimated.

Comparative Analysis of the three different kinds of Cod-Liver Oil.

	Brown.	Light Brown.	Light.
Oleic acid (with Godwin)	69.78500	71.75700	74.03300
Margaric acid	16.44500	15.42100	11.75700
Glycerine	9.71100	9.07300	10.17700
Butter acid	0.15875		0.07436
Acetic acid	0.12506		0.04571
Fellic or cholic acid, with traces of margerin, alein, and bilifulvin	0.29900	0.06200	0.04300
Bilifulvin, billifellic acid, and two other peculiar substances	0.87600	0.44500	0.26800
A peculiar substance soluble in alcohol of 30°	0.03800	0.01300	0.00600
A peculiar substance insoluble in water, alcohol, and ether	0.00500	0.00200	0.00100
Iodine	0.02950	0.04060	0.03740
Chlorine and traces of bromine	0.08400	0.15880	0.14880
Phosphoric acid	0.05365	0.07890	0.09133
Sulphuric acid	0.01010	0.08595	0.07100
Phosphorus	0.00754	0.01136	0.02125
Lime	0.08170	0.16780	0.15150
Magnesia	0.00380	0.01230	0.00886
Soda	0.01790	0.06810	0.05540
Iron	Traces.		
Loss	2.56900	2.60319	3.00943
	100.00000	100.00000	100.00000

Donovan, in the *London Lancet* for February, 1846, tells us that the livers of the codfish are best for yielding oil in January; that 1000 will then weigh 900 lbs., whereas the same number and of the same size will only weigh 575 in March. The former will yield about thirty-seven gallons of oil, which, if pressed immediately, is pale, and darker colored in proportion as the pressure is deferred.

To some persons the taste of cod-liver oil is exceedingly disgusting, and hence the expedients resorted to for the purpose of avoiding this objection. It has been stated that the chewing of orange peel before and after swallowing the dose will suffice. But the best mode by far is to mix the oil with a tablespoonful or more of good ale, or to swallow the ale immediately after the oil. It is possible that some persons take the oil for the sake of the ale, which they consume in larger portions than I have named.

The addition of ten per cent. of *common house salt* to the usual dose of oil, we are assured, will make it much more palatable, and fit it the better to be promptly digested.

Dr. B. Rush Mitchell, U. S. N., says that the best vehicle for the oil, for patients with harassing *coughs*, is the syrup of wild cherry bark. He has employed it with decided advantage in consumptive patients.

The dose for an adult should be a tablespoonful three times a day, which may be gradually increased to a half-pint.

The most satisfactory account yet published on the use of cod-liver oil in pulmonary consumption has been furnished by Professor Williams, of University College, London. The article is as follows:—

"There is no department of medical knowledge which seems to me to stand so much in need of improvement as that which relates to the operation of medicines. Even with regard to those most commonly used, it is surprising what a diversity of opinion prevails among different practitioners; and, as a necessary consequence, there is an almost equal variation in the modes and combinations in which each medicine is administered. Yet it is pretty obvious that, as truth is essentially simple and constant, there must be much of error in such diversity of opinion and practice, and the sooner the truth is elicited by a careful and rational examination of facts bearing upon each subject the more safe and satisfactory will our practice become.

"The remedial influence of the cod-liver oil particularly deserves this kind of investigation; not only because its mode of operation is a subject of much difference of opinion, but because the effects ascribed to it by many practitioners are of a very palpable and positive kind; and because such effects have not hitherto been obtained from any other remedial agent. The object of the present communication is to record the chief results of my own experience in the use of this remedy in tuberculous and analogous diseases of the lungs. These results will be arranged briefly under the following heads:—

"1. General results of the use of cod-liver oil in phthisis pulmonalis.

"2. On its mode of operation.

"3. On its preparation and administration.

"1. *General Results of the Use of Cod-Liver Oil in Pulmonary Consumption.*—I have prescribed the oil in above four hundred cases of tuberculous disease of the lungs in different stages, which have been under my care in private practice during the last two years and a half. Of these I have two hundred and thirty-four cases recorded in my note-books, with the results of the treatment at various intervals; these constitute the chief materials of the present communication.

"Out of this number, the oil disagreed, and was discontinued, in only nine instances. In nineteen, although taken, it appeared to do no good; while in the large proportion of two hundred and six out of two hundred and thirty-four its use was followed by marked and unequivocal improvement; this improvement varying in degree in different cases, from a temporary retardation of the progress of the disease, and a mitigation of distressing symptoms, up to a more or less complete restoration to apparent health.

"The most numerous examples of decided and lasting improvement, amounting to nearly one hundred, have occurred in patients in what is usually termed the second stage of the disease, in which the tuberculous deposits began to undergo the process of softening, the common physical signs being defective movement and breath-sound, with muco-crepitation and marked dullness below or above a clavicle, or above a scapula, and tubular breath and voice-sounds toward the root or inner part of the apex of the same lung. Such patients generally have had cough for some months, latterly with muco-purulent or opake yellowish or greenish expectoration, and have begun to lose flesh, color, and breath in such a degree as to excite alarm and induce them to seek further advice. With many, night-sweats had occasionally occurred, and hemoptysis may have been present at a former period.

"The effect of the cod-liver oil in most of these cases was very remarkable. Even in a few days the cough was mitigated, the expectoration diminished in quantity and opacity; the night-sweats ceased; the pulse became slower and of better volume; and the appetite, flesh, and strength were gradually improved. The first change manifest in the physical signs was generally a diminution and gradual cessation of the crepitus; the breath-sound becoming drier and clearer; but the dullness and tubular character of the breath and voice-sounds were much more persistent, and rarely exhibited a marked decrease until after several weeks' use of this remedy in conjunction with regular counter-irritation. The tubular sounds in fact frequently become louder

at the first removal of the crepitus, which in phthisis as well as in pneumonia tends to mask the signs of consolidation. In several instances, however, in which I have had the opportunity of examining the patients under treatment at several successive intervals of a month or six weeks, the gradual removal of the consolidations has been unequivocally proved by the restoration of clearer vesicular breath and stroke-sounds to the affected spots. In several cases in which the disease has existed long, the restoration has never been perfect; even where the health has been completely re-established, and all common symptoms of disease have entirely disappeared, there have remained perceptible inequalities in the breath and stroke-sounds; generally with prolonged expiratory sound, which has more or less of a tubular note toward the root of the lung of the same side. These signs, if unaccompanied by decided dullness on percussion, I have learned by the experience of many years not to consider as exceptional against recovery, for they appear to be dependent on the puckering of the texture, often with pleural adhesions and old deposits in the bronchial glands, so frequently found after death at the summits and near the roots of the lungs of persons who have not for many years exhibited symptoms of any pectoral disease.

"As might be anticipated, a large number of the phthisical patients for whom I have been consulted have been in the first stage of the disease, in which the tubercles or deposits are in the solid state. In these cases, also, I have largely used the cod-liver oil, and, so far as I have ascertained them, with not less satisfactory results; but a large proportion of these patients I have been unable to add to the numbers mentioned above from my having seen them only once, or not frequently enough to enable me to determine with accuracy the results of the treatment. Such patients do not commonly consider themselves sufficiently ill to be under constant medical treatment; and although the good effect of the oil is commonly manifest in the abatement of cough and feverish excitement, and in the improvement of flesh and strength, yet the benefit is less speedy and obvious than in the more advanced stages of the malady. The physical signs of improvement are precisely the same as those which take place tardily in the second stage after the removal of the humid rhonchi; and, in truth, the treatment by the oil, combined with counter-irritation, where successful, seems to bring back the lungs from the second stage, that of incipient softening, to the first stage, that of simple deposit, which is tardier in its changes of increase or diminution, and may remain long stationary without any obvious alteration. The same remark is applicable to the chronic products of inflammation of

the lung, which, as is known to the profession, I consider to approximate in nature to the higher class of tuberculous deposits.

"The most striking instance of the beneficial operation of cod-liver oil in phthisis is to be found in cases in the third stage, even those far advanced, where consumption has not only excavated the lungs, but is rapidly wasting the whole body with copious purulent expectoration, hectic, night-sweats, colliquative diarrhœa, and other elements of that destructive process by which in a few weeks the finest and fairest of the human family may be sunk to the grave.

"The whole number of cases in the third stage of phthisis (that is, with one or more cavities, as indicated by physical signs) which have been manifestly improved under treatment with the cod-liver oil amounted to sixty-two up to the end of August. In thirty-four of these I know that the improvement has continued up to a recent period, when I saw the patients, or had reports. Eleven cases which exhibited decided improvement for a time have since again declined or terminated in death. Of the remaining seventeen I have had no recent report, and I do not know whether the amelioration has been permanent or not.

"The results above stated give to cod-liver oil, even as a tardative or palliative in phthisis, a rank far above any agent hitherto recommended, whether medicinal or regiminal. I have made extensive trials of several other medicines of reputed utility in this disease, and on a future occasion may lay before the profession the results of my experience, which prove some of these agents to be by no means inoperative or useless; and I still consider them to be often salutary aids in the treatment of this formidable malady; but their utility and harmlessness fall so far short of those of the cod-liver oil, that I regard them now chiefly as subsidiary means, and the more likely to be useful in proportion as they facilitate the exhibition or continuance of this superior agent.

"If the experience of the profession at large should accord with my own, and with that of those who have preceded me in recommending the cod-liver oil, our prognosis with regard to phthisis must undergo some modification. To what extent this modification may reach cannot be determined until such cases as those which I have recorded have been tested by years of time; but even now, when we repeatedly find forms and degrees of disease that former experience had taught us to be utterly hopeless and speedily fatal, retarded, arrested, nay sometimes even removed and almost obliterated by various processes of restored health, we must pause ere we in future pass the terrible sentence of 'no hope' on the consumptive invalid.

"2. *Mode of operation of Cod-Liver Oil.*—It seems scarcely necessary to discuss the question whether the oil owes its efficacy to the iodine which it contains. The amount of this element is so minute as hardly to admit of quantitative measurement; and to ascribe virtue to such infinitesimal fractions, when ordinary doses have no corresponding activity, is to adopt the fanciful and mischievous speculation of the homœopathist, which cannot be too strongly deprecated by the scientific and conscientious practitioner. Several of the patients whose cases are cited above, and many more of whom I have records, had taken iodine in various combinations before taking the oil, but without any effects approaching to those which ensued on the change of treatment. I am by no means incredulous of the salutary operation of iodine in some forms of tuberculous and scrofulous disease; indeed, until I used the pure oil, I considered it to be the most useful remedy; but in the last two years the oil has so far surpassed it and every other medicine in beneficial operation that I am convinced that it acts by a virtue peculiar to itself.

"The cod-liver oil is a highly nutrient material; and it is commonly admitted by all practitioners who have used it that it possesses in a pre-eminent degree the property of fattening those who take it for any length of time. But its nourishing influence extends beyond the mere deposition of fat in the adipose tissue. The muscular strength and activity are sensibly and sometimes rapidly increased under its use; while the improved color of the cheeks and lips implies a filling of the vessels with more and better blood. Researches are wanted to elucidate this subject more clearly; but the analysis of the blood in one case of phthisis, which had been under treatment by the oil, showed a most remarkable increase of the animal principles of the blood, especially the albumen, which amounted to thirteen per cent., being nearly double its usual amount, while the fat was not materially augmented; and the fibrin, which is generally high in phthisis, was reduced below the normal proportion. If these results should be confirmed by further observation, there will be no difficulty in understanding that the cod-liver oil should prove a nutrient to all the textures; although it may yet be a question whether it does so by direct conversion into albumen or fibrin, or by preventing the waste of the albuminous principle by protecting it from the action of the oxygen absorbed in respiration.*

* Much testimony could be adduced to prove the powers of the oil in augmenting the weight of the consumptive patients. This result I have witnessed most decidedly. It is also averred that its continued use has often prevented the development of phthisis in persons supposed to have an hereditary taint. In the *Louisville Marine Hospital* I witnessed its power to control the fetor of the breath of consumptive patients to a most remarkable extent.

"But there is much reason to believe that the oil itself proves serviceable in supplying the fat molecules which appear to be essential to healthy nutrition, as forming the nucleoli of the primary cells or rudiments of tissues. The important part which fat thus performs in the process of nutrition was first pointed out by Ascherson of Berlin; and that fat forms the central molecules of the elementary granules and cytoblasts of textures is generally admitted, although few agree with Ascherson in his opinion that the fat forms the cells by its power of coagulating albumen around it. It seems to have been the opinion of Dr. Ascherson and of Dr. Hughes Bennett, who cites it, that in scrofulous diseases there is a want of this fat, and that the albumen derived from the food in digestion is liable to be precipitated in an unorganizable condition (as tubercle, etc.) for the lack of it. But it is now well ascertained that scrofulous and tuberculous deposits, so far from being deficient in fatty particles, contain them in greater quantity than exists in the blood, or in its plasma in a healthy state. The explanation which I have given of the chief salutary action of the cod-liver oil is not that it supplies fat where it is wanting, but that it supplies fat of a better kind, more fluid, more divisible, less prone to change, and more capable of being absorbed into and of pervading the structures of the body, thus affording a fine "molecular base" in the chyle, and therein a material for a better plasma; and being conveyed into the blood, distributed through capillaries and around deposits, (in such quantity as to soften and dissolve the crystalline and irregularly concreted fat scattered through them,) it renders them more amenable to the processes of reparation and absorption. Hence its beneficial operation is more marked in those stages of tuberculous disease in which the deposits abound in fat—that is, at the period of maturation of softening; although from the extent of mischief already done, both to the part and to the system, the benefit may not be so lasting as in the early stages of the disease.

"One of the most remarkable effects of the cod-liver oil, in some cases of the second and third stages of phthisis, and in other forms of scrofulous disease with extensive suppuration, is the speedy removal of the sweats and other symptoms of hectic fever. This can hardly be ascribed to its direct nutrient powers, but I think that it is due to its influence in diminishing the unhealthy suppuration which is excited around the softening and excavated tubercles. If my views of the chemical nature of suppuration—that it consists of a further oxidation of the exudation corpuscle—be correct, then it is quite intelligible that the presence of so highly combustible a material as oil must check this process of oxidation and thus prevent the degeneration of

the corpuscles into the aplastic state of pus globules. In fact, if it should prove to be correct, according to the analysis above quoted from Simon, that cod-liver oil removes the excess of fibrin in the blood of phthisical patients, this also equally accords with my notion, founded on the inferences of Mulder and others, that the formation of fibrin is due to a process of oxidation of the albumen, (forming a deutoxide of protein, according to Mulder,) and that by preventing this the oil removes that tendency to cacoplastic inflammatory deposits, which largely contribute to increase the consolidation of the lungs and other organs in phthisical subjects.

"In making these surmises I would not be supposed to adopt the idea of Liebig, that pulmonary consumption is the result of an excess of oxygen in the blood at large, consuming its materials and those of the textures. Many of the symptoms, as well as the organic lesions of the disease, show that there is a great deficiency in the process of respiration by which oxygen is supplied to the blood, and some of the most rapidly fatal cases, exhibiting speedy emaciation, are, throughout their course, in a condition bordering on asphyxia. Here is obviously a great want of oxygen in the blood; nay, I believe the excess of fat in the liver and in the tuberculous deposits, in these instances, to be caused by this very scanty supply of oxygen to the system. But, although it is deficient in the system, enough oxygen comes into contact with the exudations from cavities in the lungs, and from the diseased bronchi in their vicinity, to effect the formation of much unhealthy pus; and it is the formation and reabsorption of this that seems to excite the hectic of phthisis, as well as to keep up much harassing local irritation. Now, I believe it to be by diminishing these exudations, and checking their further oxidation into pus, that cod-liver oil acts so promptly in reducing the hectic sweats and purulent expectoration of phthisis, which accelerate and aggravate its destructive progress.

"The limits of this paper will allow me to notice but briefly one more point in regard to the action of cod-liver oil. Unlike other oils or fats, it rarely disorders the stomach or bowels or disturbs the functions of the liver. If taken in any quantity, vegetable oils commonly purge, animal oils turn rancid in the stomach, causing heartburn, bilious attacks, and even jaundice. On the contrary, cod-liver oil generally improves all the chylopoietic functions, and distinctly promotes the action of the liver; so that the appetite and power of digestion are restored and patients are enabled to take an amount and variety of food beyond what they are accustomed to even in health. I cannot help thinking that this peptic influence of the oil is due to its

containing some biliary principle, which both favors its divisibility in the process of digestion and promotes the natural secretions of the liver. The flow of bile, as indicated by the color of the fæces, is generally free and uniform during its exhibition; and I must not omit to notice another fact, which I believe to be connected with increased activity of the liver. I have in numerous instances remarked that the bulk of the liver (as determined by percussion) becomes augmented during its use; yet without tenderness or any other sign of disorder. In fact, this seems to be a kind of useful hypertrophy, induced by the oil augmenting the bulk and quantity of the hepatic cells and supplying at once a material the more fitted for this secretion, because it has already within it some elements of biliary matter which served a similar purpose in the liver of the fish, and this at a lower temperature and less favorable to the activity of the process. The observation of this influence of cod-liver oil has led me to use it in several cases of functional and structural disease of the liver, marked by defective or depraved secretion, and in some instances with most satisfactory results, especially in one of habitual formation of gall-stones, which had resisted all kinds of treatment and was rapidly destroying the health: the use of the oil has entirely stopped the attacks, and has restored the patient to good health.

"It appears probable, therefore, that although other oils might be equally influential in promoting nutrition, and in preventing and removing the cacoplastic and aplastic exudations of scrofulous subjects, the oil from the cod's liver, and perhaps those from the livers of other fish, have the advantage in point of digestibility, and in promoting the action of the digestive and biliary organs.

"3. *Preparation and Administration of Cod-Liver Oil.*—It may seem somewhat strange that this remedy, which has been long employed and valued on the continent, and in some limited localities in this country, and of late years has been strongly urged on the attention of practitioners both at home and abroad, should have been so slow in being received into general use. If the experience of other practitioners accord with my own on this point, I would give, as the reason of this tardy introduction, the disgusting smell and taste of the oil as it has been commonly prepared, and an impression generally prevalent that the efficacy of the remedy is connected with these offensive properties. This notion was favored by Dr. Hughes Bennett, in his monograph published in 1841. At that time I made several trials of the oils, selecting the clearer specimens of the brown oil as recommended; but I found that so few patients could take it at all, and a fewer still were able to persevere with it, that the

inference seemed to be that however German and Dutch stomachs might bear it, English ones could not, at least among the upper classes. It was not until I had witnessed some striking examples of benefit ensuing from the use of the pure oil, prepared according to Mr. Donovan's method, that I began again to make trial of it, and to reflect further on its mode of operation when freed from all impurities. The value of the oil will be much increased by the statement that in all instances I have prescribed it as *free from taste and smell as could be procured;* and so little difficulty has been experienced in its administration that the proportion of cases in which it has decidedly disagreed has not amounted to four per cent.

"The inoffensiveness of the oil implies the use of no process by which it can be deprived of its proper qualities. All that is required is to obtain it *pure and fresh*, as it existed in the hepatic cells of the healthy fish when alive, without contamination by any process of putrefaction, roasting, boiling, or the like. On the contrary, the disgusting smell and taste and dark color of the impure oil proceed from the putrefaction and heat to which the livers are subjected for the purpose of obtaining from them the utmost quantity of oil; hence it becomes highly rancid, and holds in solution or suspension various putrid and coloring matters derived from the corrupting cells and tissues of the liver.

"It is not my intention to describe the details of the process by which the oil may be obtained in the greatest purity; but I may mention the following particulars, to which it is necessary to attend in order to obtain a good product. The livers should be used as soon as possible after the death of the fish, every hour deteriorating the quality of the oil. The pale, plump livers should be preferred; those which are flabby and dark in color should be rejected as unhealthy. The livers, after being quickly pounded into a pulp, should be mixed with water of the temperature of about 120°, then filtered; and, after standing long enough, the oil is to be decanted from the filtered liquor, cooled to the temperature of 50°, and again filtered. The whole process is to be accomplished with as little delay as possible, and in closed vessels, to prevent the air from giving to the oil the slightest degree of rancidity. For the same reason, the vessels in which the oil is preserved should be full, well corked, and kept in a cool place. I recommend the second filtration after cooling, to remove the more solid part of the oil, the stearin and margarin, which not only further clears the oil by its separation, but, by leaving a preponderance of elain, gives to it more of that perfectly liquid and penetrative quality which promotes its absorption and diffusion through the fluids and tissues of the body.

My usual mode of administering cod-liver oil is in doses of a teaspoonful, gradually increased (if the stomach bear it) to a tablespoonful, floating on some pleasant-flavored liquid, such as diluted orange wine, or the infus. aurantii comp., with a little tinct. and syr. aurantii. The vehicle should be suited to the taste and stomach of the patient; and much of our success in exhibiting the medicine will depend on our being able to keep the palate and stomach at peace with the oil. In numerous instances I have found that the addition of a little diluted nitric acid to the vehicle will make it more grateful to the palate as well as serviceable to the stomach; and we may often combine with it other medicines which are not disagreeable, and thus fulfil the indications of palliating symptoms by their means. The fittest time for taking the oil is from one to two hours after the three first meals of the day. At this time the chyme is beginning to pass from the stomach into the duodenum; and it would appear that the oil passes quickly with it, for given at this time it causes none of those unpleasant eructations which are apt to occur when it is taken either before or with food. There is nothing in the oil for the stomach to digest; and the less it is brought into contact with it, and the sooner it passes out of it, the better. When it mixes with bile and pancreatic juice in the duodenum its division and absorption begin and proceed as in the case of all fatty matters. Herein, too, we see a reason why the oil does not agree so well either with the palate or stomach, when mixed in an emulsion, or combined with liquor potassæ, as recommended by some practitioners.

"In conclusion, I repeat, that further observations and longer time are requisite to determine with accuracy the extent to which this agent can control or remove tuberculous disease of the lung; but I would state it as the result of extensive experience, confirmed by a rational consideration of its mode of action, that the *pure fresh oil from the liver of the cod is more beneficial in the treatment of pulmonary consumption than any agent, medicinal, dietetic, or regiminal, that has yet been employed.*"—*London Journal of Medicine.*

The above statements are fully corroborated by the more recent experience at the *Brompton Hospital*, England; which shows that the cod-liver oil has more power over pulmonary consumption than any agent hitherto employed. (See *Braithwaite*, part xx.)

The salutary action of the oil, applied *externally*, has excited considerable interest in the profession. It was tried, in the first instance, as an experiment, on some favorite dogs affected with painful skin-disease. Then its powers were tested on sheep and

other domestic animals. In Sweden it was first tried on the human subject as a local appliance, and afterward became a part of English practice. In chronic eruptions of various kinds, which under the legion titles of writers are not a little obscured, in the troublesome itching attendant on disease in old persons, the use of cod-liver oil by gentle friction, or even bathing, has appeared to be efficient. And even in cases of phthisis, in the early stage, where the internal use could not be tolerated, the persistent application of the oil over the entire chest has given obvious relief. Employing it thus, we have a better opportunity for administering such internal medicines as may be deemed advisable.

Not only has the external inunction with cod-liver oil been serviceable in abating the symptoms of chest-disease, scrofula, &c., but it has been shown by Dr. Simpson that it affords a good degree of protection against tuberculous disorders, and may keep them at bay. An alleged discovery by Winckler, that it contains a peculiar fatty base (*prophyline*) instead of glycerine, of the other oil, may perhaps give a clue to its undoubted superiority. —*Headland's Action of Medicines*, p. 350.

The *archives of the Academy of Medicine of Madrid* contain a paper by M. Manas, on the use of cod-liver oil in *tertiary syphilis* in persons of strumous habits. A very remarkable case is cited setting forth the happy agency of this medicine. It is stated that Dr. Copland has employed the article for the same object, having previously exhibited the iodide of potassium in similar cases. (See *London Lancet*, June, 1850.)

The success of cod-liver oil in the treatment of *chronic rheumatism* has been great beyond the fondest anticipations. The *Gazette Médicale de Paris* for 1847 contains the testimony of more than ten distinguished physicians, who have proved its value by repeated exhibition of the article. They regard it as possessed of more decided anti-rheumatic power than all other remedies heretofore employed. The cases reported embrace many individuals who, after years of suffering and the repeated trial of all sorts of remedies, were permanently cured by the fish oil alone. They speak, especially, of very obstinate cases of *sciatic rheumatism* managed most happily by the same medicine. I may add that several exceedingly obstinate cases of rheumatism that came under my own observation were speedily cured by the use of this oil. It is certainly entitled to the special notice of the profession.

In *swellings of the lymphatic glands*, most probably of a scrofulous origin, in *confirmed scrofula*, in the management of *scrofulous ulcers*, and in correcting the *scrofulous diathesis*, Drs.

Brefeld and Galama feel confident that no agent is so potent and successful as the cod-liver oil.

The reports differ a little in regard to the efficacy of this remedy in *chronic exanthemata*, associated with a scrofulous diathesis. Some affirm that the remedy has succeeded only when used externally, while others advocate its internal exhibition exclusively. Dr. Guerard professes to have cured very obstinate cases of *scald head* merely by anointing the diseased parts with the oil, so as to keep them constantly under its action. Dr. Hauf reports a case of *humid herpes*, attended with intolerable pruritus, which after having resisted all kinds of treatment yielded to the oil, applied daily with gentle friction.

The anti-scrofulous action of the oil led, we presume, to its exhibition in *rachitis*, (*rickets of infancy*,) which is essentially a disease of scrofulous origin. The German and Dutch physicians have been extravagant in their commendations; but we regard the testimony of Bretonneau and Trousseau as more reliable. The latter gentleman, speaking for both, says, "We have often obtained cures the rapidity of which surpassed our expectation. Sometimes, after four or five days of treatment, the sharp pains felt by the children in all their limbs vanished; and the bones, which could be bent, acquired, at the end of five days, a considerable solidity."

The very minute quantity of iodine in the oil has been made an objection to the position taken by some that it acts in virtue of its iodine, assisted by its bromine. The mere modification by combination will often accomplish wonderful results, even though there be employed a very small portion of active agents. This is exemplified in medical practice continually.

The *therapeutic* quality of cod-liver oil is not, perhaps, well settled. I suppose it may be regarded in the light of an *alterative*, and as such gradually improving the quality and condition of the blood, and thus ultimately exerting a salutary influence on tissues and organs in a morbid state. That it acts also particularly on the glandular and absorbent system is highly probable. I have never known it to purge, even in large doses, nor to induce any unpleasant result.

As it may sometimes be desirable to exhibit a combination of cod-liver and sulph. quinine, the following mode of preparing the compound will be found useful.

Two drachms of disulph. quinine are to be dissolved in half a pint of water, acidulated with two drachms of dilute sulphuric acid; then precipitate by adding liq. ammonia, ʒiss. Throw the whole on a filter, and wash the precipitate with four or five ounces more of water. Dry the precipitate well; place it in an evapor-

ating pan and set it over a steam-bath. The heat will cause the quinine salt to melt and separate from the residual water. This should be poured off and the solid matter collected by filtration, then powdered and set aside for use.

To prepare the oil, take sixteen grains of the above product and dissolve, with gentle heat, in eight ounces cod-liver oil. The latter will become slightly colored. This is best obviated by dissolving the quinine product in a mixture of one drachm each of sulphuric ether and alcohol, mixing the solution with the oil and evaporating by means of a steam-bath. If the oil requires filtration, it should be passed through lint loosely placed on the neck of a funnel. Every ounce of oil will contain two grains of the salt of quinine.

A good deal has been written about the best *tests* of pure and genuine *cod-liver oil.* All this may do well enough for the pharmaceutist, but will not be of much worth to the country doctor, whose whole time is demanded by the practical duties of his calling. The simplest of all the tests, I suppose, is sulphuric acid of the most concentrated kind. If one or two drops be added to half a teaspoonful of oil spread out on a white porcelain plate, it will strike a beautiful violet color, which passes to a purple the moment the mixture is agitated, and finally to a rich sienna brown. But the surest test is to purchase the article of the druggist who stands highest for probity and acquaintance with the business, and never to be gulled by a *cheap* thing.

COFFEE. *Coffea Arabica. Quhwa* of the Arabs.—Though a native of Arabia and Abyssinia, it has been cultivated in various countries with success. It is too well known to require special notice as to its natural history or general qualities. A remarkable fact has been developed, showing its similarity to *tea* in the circumstance of *caffeine*, the proximate principle of coffee being identical in composition with *theine*, the proximate principle of tea. Coffee has been and is now regarded as a *stimulant* and *antisoporific*, the latter term referring to its agency in counteracting the effects of opium and other narcotic poisons. This use of coffee was common in this country forty years ago, and several theses were printed by the University of Pennsylvania on this point. Very strong decoctions of coffee, without any addition, were employed for this end. All opium-eaters are great coffee-drinkers, and, for this reason, Beaujour, in his work on Greece, records the history of an opium-eater who drank more than sixty cups of coffee in a day and smoked as many pipes. All this was designed to counteract the pernicious action of the opium.

By diminishing congestion of the brain, tea and coffee have not only the effect of clearing the mind, but in large quantities they induce wakefulness, as the common people well know. This

is peculiarly the case with coffee. It is not clear that tea, as commonly drank, is ever unwholesome. Green tea is a more powerful sedative than black, and resembles coffee. Coffee has a more potent influence over the mind and nervous system than tea, and is more apt to disagree with many persons. It is by virtue of its power to lessen congestion of the brain, induced by opium, that strong coffee is of use in cases of poisoning by that agent, and not chiefly, as some imagine, by reason of chemical agency.—*Headland's Action of Medicines*, p. 281.

Much attention has been paid to the potent agency of coffee, tea, and cocoa, but especially of coffee, in lessening the elimination of urea. The late observations of Dr. Julius Lehman show that coffee has two powerful actions in health: it increases the nervous energy and protracts the metamorphosis of tissue.—*Med. Times and Gazette*, June, 1855.

Liebig has shown that caffeine and theine furnish the taurine of bile to a large extent. Hence tea and coffee are held to be "*bilious*," emphatically, by many.

The *Edinburgh Medical and Surgical Journal* for January, 1842, has a case of poisoning by one and a quarter grains of sulphate of morphia, equal to seven and a half grains of opium, cured by gill doses of strong decoction of coffee frequently administered.

Very strong coffee, unmixed with sugar or cream, was the favorite remedy of Sir John Pringle for his own *asthma* and that of others. It is specially suited to the disease in old persons with enfeebled constitutions. Here it acts partly as a *stimulant*, *antispasmodic*, and *expectorant*, and is given in tablespoonful doses every half hour. One of the best uses of coffee that I know of is as an *antiemetic;* not merely in cases of overdosing with tartar emetic, when its effects are owing to its tannin, but also in irritable stomachs from other causes. A tablespoonful of the strongest decoction, unmixed, should be given every ten or fifteen minutes. Often this has succeeded when other means were unavailing.

At a meeting of the Suffolk District Medical Society in February, 1852, Dr. Adams stated that *intermittents* had been cured, after all other means failed, by the use of *strong coffee* and *lemon juice*. Dr. Bigelow said that the same means were successful in the mountains of Peru. Dr. Cabot declared that he had cured himself of the same disease in Yucatan in the same way.—*Boston Med. and Surg. Journal*, March 10, 1852.

Coffee has been very successfully employed in *cholera infantum*. Dr. Pickford has furnished an interesting article in this relation in the *Medical Gazette of London* for November 24, 1848. For an infant at the breast a scruple of roasted

coffee was infused in two ounces of water, adding an ounce of syrup. A spoonful of the mixture was given every hour, with the effect of arresting the vomiting and purging in a few days. Combined with opium, coffee has been a favorite medicine with the Germans in *bilious diarrhœa*. I know nothing of the value of coffee, in the treatment of infantile cholera, from experience, but am disposed to think well of it, alternated with minute portions of calomel.

Dr. Julius Guyot has published an interesting article in *L'Union Médicale* of April, 1849, setting forth the remedial powers of coffee in the treatment of *hooping-cough* most conclusively. It was tried in more than sixty cases, and many of them of the worst kind. An ex-notary had been obliged to have double doors made for his study to keep out the noise of his coughing children. Both were cured in four days by the coffee, in teaspoonful doses, frequently taken. Dr. Guyot regards the disease as confined to the pharynx and stomach, and thinks the coffee acts by allaying irritability there. (See *Braithwaite*, part xx.)

The fumes of fresh-roasted coffee are said to be decidedly *disinfectant*, but I suppose we have more efficient agents for the same end. (See *Braithwaite's Retrospect*, part xvii. p. 304.)

The last use of coffee to be named is as a vehicle for the administration of Epsom salts. If we add a half-ounce to a teacupful of strong coffee the unpleasant taste of the salt will be completely neutralized. The same expedient nearly obliterates the bitterness of the sulphate of quinine.

Colchicum. *Colchicum Autumnale. Meadow Saffron.*— This plant is a hardy perennial, growing in meadows, and having a purple flower in September. The root is bulbous, and decays after flowering; and the new and recent roots are in perfection from June to September. Pelletier and Caventou were the first to extract from the juice of the roots a peculiar salifiable base called *veratria* or *veratrine*. Locality and climate exert much influence on the plant. Maranta and Haller say it is sweet, or tasteless and inert in autumn, and may then be eaten. Krapf says it is eaten in autumn in Istria; yet so acrid is the juice that Storck affirms that by rubbing some on his tongue it was swollen and became rigid and numb for several hours. Though the bulbs have been eaten with impunity, yet the whole plant is sometimes poisonous. A man took the flowers for ague and fever, and suffered severe pains in the bowels for several days. Two boys were killed by eating the flowers while playing in a field where the colchicum grew. The seeds have proved poisonous in several instances when swallowed by mistake.

Deleterious as this plant sometimes is, it is rendered perfectly mild by pickling, and then is eaten as a condiment by the natives of the Cape of Good Hope as well as by the colonists. (See *Thunberg's Travels*, vol. ii.) The *British Medical Flora*, vol. i., asserts that long boiling renders colchicum much more mild, by dissipating the offensive matter adhering to the pulp. The same is true of some other vegetable substances.

The season of the year also has an obvious effect on the activity of the article. The acetic solution of colchicum made of the roots taken in February is very energetic, while that made from roots taken from the same garden in August and September is void of power. (See *Dublin Medical Transactions*, vol. ii. p. 268.)

The wine of the bulbs, in an overdose, is decidedly poisonous. A man took an ounce and a half of the vinous tincture by mistake, and died in forty-eight hours. He suffered severe vomiting, acute gastric pains, colic, purging, and delirium. Schobel, a German physician, affirms that colchicum is poisonous to all animals, and that it acts fatally whether injected into the windpipe or put into a wound. The uniform symptoms of poisoning by colchicum are distressing sickness, vomiting, purging, pain and heat of the stomach and bowels, tenesmus, strangury, and hiccough. Dissection shows extensive inflammation of the mucous membrane of the bowels and stomach.

The following cases, furnished by Surgeon M'Phail, of the U. S. Army, and published in *Dunglison's Medical Intelligencer*, vol. ii., sets forth not only the ease with which a fatal mistake may be committed, and likewise the energetic character of colchicum as a medicine, but also clearly displays its terrible power as a poison. It is matter of regret that the pressure of official duties prevented a *post mortem* examination:—

"I found," says the doctor, "on my arrival at Fort Denaud, (in Florida,) J. A. P., a private in the marine corps, laboring under symptoms not unlike those of Asiatic cholera. He had constant sero-mucous ejections and purgings resembling rice-water, and thrown off with considerable force; cramps of the abdominal muscles and of the flexors of the arms and legs; cold surface, tongue, and breath; mottled skin and bluish nails; shrunken features, expressive of great agony; sunken and watery eyes, with contracted pupils. Expressing my surprise at the state of the patient, I was shown a porter bottle labeled *vinum colchici*, and was told that he, being an hospital attendant, and thus having access to the stores, had, with some of his comrades, exhausted the whole stock of liquors, and feeling the 'horrors' coming on, searched for more stimulus. Judging by the smell only he took what he thought was a bottle of Madeira.

With characteristic generosity he gave a glass to some of his comrades, telling them to make the most of it as he believed it to be the *last*, and then swigged off the remainder, which was over a pint. Little did he think, when he jested about the last glass, that it would really prove so to himself and two others, and seriously affect a third. Three have fallen victims, if not directly to the vice of intemperance,—which is the besetting sin of the army, and the origin of most crimes that call for punishment,—at least to one of its consequences, the loss of moral feeling leading to theft.

"When first seen, J. A. P. was beyond hope, as the poison had been taken on the day previous, (February 1, 1838,) and he was now laboring under its uncontrollable effects, viz., violent inflammation of the stomach and bowels, and probably of the cerebro-spinal serous envelops. Death took place in forty-eight hours after the poison was swallowed.

"Corporal P. and private T., both of the marine corps, came on the sick report February 6, with symptoms indicating dysentery, viz., sanguineo-mucus stools, great tormina and tenesmus, with cramps of the extremities. I did not know until several days had elapsed that they had been companions in the affair of J. A. P. Cupping, vesication, fomentation, warm bathing, dieting, mucilaginous drinks, &c. &c. all proved of no avail. They were sent to the general hospital at Tampa Bay for change of air and better accommodations, but with the tongue and fauces indicating an incurable condition of the mucous apparatus of digestion. Both died in a few weeks."

In medical practice, both public and private, similar symptoms have followed the exhibition of too large a dose of the wine of colchicum. Dr. Levins says that he has known two drachms to prove fatal in a public hospital. He saw one hundred drops induce six or eight watery motions, with considerable griping and great commotion in the colon. In the conclusion of his remarks he puts this interrogatory with much earnestness, viz.:—"When the abnormal or poisonous effects of colchicum *happen*, have we any certain means of arresting them? The reply is, We have no such means. Opium and cordials may sometimes check the enormous vomitings and purgings, but we should be very sorry to incur the risk of these correctives." (See *Medico-Chirurgical Review*, April, 1837.)

The seeds of colchicum have killed children who ate them, ignorant of their properties; and cattle have been also injured by them, but only in the *spring*, when the seed is fully matured. A writer in the seventh volume of the *Edinburgh Annual Register* says that a farmer lost seven yearlings out of eighteen, by putting them in a field where the plant was abundant. On

opening them after death, the food was found clogged together in a crude and undigested mass, incapable of passing through the proper duct.

The following notice of accidental poisoning is from a Philadelphia newspaper of 1839:—"A family by the name of Kean, consisting of a mother and five children, and residing in that county, was poisoned by drinking a tea made of meadow saffron, which had been gathered by the children, supposing it to be spikenard. Immediately after drinking the tea every member of the family was affected with a giddiness in the head and pain in the stomach, followed with convulsions. Drs. Cossitt and Brainard, of Greenville, were sent for, but arrived too late to render any relief to Mrs. K., who died in a few hours after she was taken sick. Of the others, three were considered out of danger, and the recovery of two very doubtful."

We remarked that we knew of no case of the administration of colchicum with murderous intent; but there have been several attempts at suicide, and some of them successful, by this means. A female, as we learn from *Burnet's Medical Botany*, vol. ii., took an infusion of colchicum to cause abortion. The symptoms were such as we have named. The result was achieved by the following day, but she died in a few hours after. In this case dissection revealed no marks of morbid action excepting in the stomach and intestines, where marks of high inflammation were obvious. In a fatal case reported by Dr. Thompson, blood flowed from every mucous surface of the body.

In the *Archives Générales* for 1837, we notice the cases of two sisters who fell victims to the poison of colchicum. The first took a large wineglassful of the tincture of the bulbs of colchicum, and died in twenty-two hours after the poison had been swallowed. The other sister in a few months after, and with a full knowledge of what had happened, took between four and five ounces of the tincture, and was dead at the end of twenty-eight hours. In neither case were the evacuations considerable. Cramps very painfully affected the feet of both patients, and there was great pain in the epigastric region, dyspnœa, and general coldness, with constant retching; pulse small and very feeble; pupils not affected, and mental powers undisturbed. The remedies tried were milk; iced drink, as lemonade; emollient clysters; blisters to the extremities; sinapisms over the stomach, preceded by leeches.

The root and seeds are very seldom employed in practice in any other shape than that of a tincture, of which there are two varieties. These are prepared with wine and vinegar, or acetic acid, because they are the best solvents of the plant. The *vinous solution*, no matter how well got up, is liable to sponta-

neous decomposition, which causes a copious sediment; while the *acetic solution* is free from this defect, and can be kept a great length of time unchanged. To make it, one ounce and a half of the dried root must be macerated in twelve ounces of the strongest vinegar or in acetic acid, for a week or ten days. The filtered liquor should be kept in well-stopped bottles. The dose for an adult is from thirty to sixty drops, according to the end desired. Either the root or seeds may be employed to prepare this tincture.*

In addition to these fluid mixtures there is an *acetic extract* that is sometimes employed and contains all the powers of the plant. To prepare it, rub the *corms* or bulbs of the colchicum to a pulp to the quantity of a pound, and gradually add of acetic or pyroligenous acid three ounces. Express the liquid and evaporate it in an earthenware vessel not glazed with lead, to the proper consistence. The dose is from one to three grains three or four times a day.

Colchicum has long been celebrated in the treatment of *gout* and *rheumatism;* and many have imagined that the effect was due to some mysterious specific action. The *Eau Médicinale D'Husson*, so famous for gout in former years, did much to popularize this notion. Under the same impression it has been employed often to relieve *spasmodic affections* of the *chest* which were cardiac or rheumatic, or both.

I do not believe that this medicine ever cures by any sort of specific influence, though its *mischievous* effects are doubtless attributable to an agency that is specific enough. Unless the medicine excites nausea and vomiting or purging, or both, or be combined with other articles that can and do exert an alterative power, I doubt whether it is ever remedial in the proper sense of the term. In doses of sixty drops, and above that quantity, purging and vomiting are generally induced, and sometimes with severity.

Colchicum has many different actions, says Headland in his work on the *Action of Medicines*, page 279. It has an obvious agency in changing the blood in *gout*, and has been hence called an *antiarthritic*. It is decidedly *eliminative*, acting on the liver and bowels so as to rid the system of morbid matter. It is, also, a *general sedative*. When it kills, it is not by a true *narcotic* power, but, like other *sedatives*, it operates by inducing syncope. Its features of *cumulation* and *toleration*, which should

* All the tinctures of colchicum should be kept in a dark place, wrapped in paper or in opake bottles, so as to exclude the light. The bulbs, the tinctures, and the wine all become inert by long keeping, and especially by exposure to the light.—*Dr. Armstrong's Practice.*

ever be remembered, are manifest in other articles that go under the name of *nerve-medicines;* such as aconite and digitalis.

Just here it is proper to call attention to the great discrepancy in the profession touching the dose of colchicum. This point is fully noticed in a paper in the *Edinburgh Medical and Surgical Journal* for July, 1841, in which it is shown that the doses as employed by very distinguished physicians varied from twenty drops to a half-ounce of the acetic tincture. This fact is amply confirmatory of the remark already made, that the plant is vigorous in one part of the year and inert a few months later; and consequently that the tincture prepared from such variant materials must be of very different strength.

The author of the above paper gives the following details, which we are sure will be interesting to our readers :—

"The editor of the *Medico-Chirurgical Review* some few years since expressed his disbelief that a drachm of the tincture of colchicum seeds, given every three hours, would prove fatal. The late Dr. Duncan, in his *Dispensatory*, has stated that half an ounce of the tincture of the seeds is the proper dose. In Dr. Spillan's late collection of medical prescriptions, a draught containing, among other things, half an ounce of the tincture of the seeds, is ordered to be taken every sixth hour. Dr. Elliotson directed half a drachm of the wine of colchium seeds to be taken thrice a day for three weeks. Dr. Barlow, of Bath, advises from one to two drachms of the tincture of the seeds to be given at night, and, if need be, on the next morning.

"Dr. Lewins remarked that he knew a case in which two drachms proved fatal to a patient in a public hospital; and he states the particulars of a case in which one drachm daily set up so violent a diarrhœa as to cause twenty stools in the course of a day. And he observes that if the patient had continued to take the medicine for twenty-four hours longer he would have perished."

As large doses purge and vomit severely we can easily understand wherein the *sedative* and *narcotic* powers reside, or rather on what they depend. The last flow naturally from the former, and if not promptly met will soon destroy life. It is on the same principle that the medicine so frequently allays febrile excitement and pain. Sometimes it seems to act as by a charm, and so promptly that it would appear that the effect depended on nervous communication exclusively. I once gave it to a young man laboring under spasms of the chest, and suffering severely, in forty-drop doses, with almost instantly good result; and there was no obvious sickness of stomach and no purging. In this case the action was probably sympathetic from the stomach

to the chest, and all this from nervous communication by the par vagum.

A French physician attempted to explain the action of colchicum in the treatment of *gout* and *rheumatism*, by its tendency to increase the quantity of uric acid in the urinary discharges, or rather to eliminate the excess of this acid from the system in this way. This physician regarded uric acid as the cause of gout and rheumatism, and his views were published before the papers of Dr. Todd, and others who have recently contended for the same doctrine. He gave from twenty to thirty drops in half a wineglass of water, and increased the dose until gastric irritation was established, that being the necessary precursor and associate of the elimination of the uric acid.

As the liver is often at fault both in gout and rheumatism, it may be serviceable occasionally to combine the colchicum with blue mass and ipecacuanha. I have adopted this course in cases of pericarditis, with shifting rheumatic pains, in lads of twelve years, and with good results. Thus:—

℞.—Acetic extract of colchicum,
Blue pill mass, āā ʒi;
Powder of ipecacuanha, ʒss
Mix, and divide into thirty pills, one to be taken three times a day.

Since the treatment above named I had a case of severe *pericarditis*, in a boy aged thirteen, at the clinique of the *Philadelphia College of Medicine*. It was complicated with some hypertrophy, and the whole resulted from a severe rheumatic fever. The patient came under treatment in May, 1849, had severe and distressing palpitations frequently, with evident friction sound, and his look was that of a dropsical person, although there was no effusion. His pulse was unusually frequent and yet tense, and the respiration embarrassed. He had severe pain in the region of the heart occasionally. He was put on the formula above named, and which was rigidly adhered to for several weeks, and then altered thus:—

℞.—Acet. extract colch. ℈ij;
Hyd. mass. cœrul. ʒss;
Ant. tartarisat. grs. ij.
M. ft. pil. xx. Take one night and morning.

He was kept all the while quite sore on the cardiac region by the use of the pustulating liniment, prepared as follows:—

℞.—Ol. croton. tigl. ʒss;
Antim. tartar. ℈i;
Ol. olivar. ℥ss.
Mix, and rub smartly on the cardiac region.

A farinaceous diet was ordered, and constant quietude; to keep the feet dry, and to be clothed in conformity to changes of weather.

Under this management he improved rapidly, and by January, 1850, there was no unusual sound in the heart, the pulse was natural, respiration as in health, and an actual gain in flesh. The medicine did not excite ptyalism, nor any tenderness of the gums, and the bowels continued perfectly regular.

From the above statements it may be inferred that the real action of the colchicum was merely *alterative*, and hence some have assigned it a place among alteratives. That it induces important changes is doubtless true, yet it is well to know something of the nature of these changes, and to watch them with care. On this principle of action I presume the medicine acts in curing *leuchorrhœa*, a disease successfully treated by Dr. Ritton, who employed the powdered root made into pills with soap. Each pill contained three grains of colchicum, and three pills constituted the dose, which was gradually increased to five or six. The mean length of time requisite for successful issue was about ten days. During this treatment all stimulating drink and diet were prohibited.

Dr. Ficinus, of Dresden, confirms the opinion of Eiseman, of the value of the wine of colchicum in *gonorrhœa*. He gives from twenty-five to thirty drops thrice a day, combined with laudanum, enforcing at the same time a low diet, the warm bath, &c. These means have been remarkably successful in gonorrhœa and other inflammatory discharges from the urethra of males and the vagina of females. The details of ten cases are given in illustration. (See *Braithwaite.*)

In the same number of the journal just quoted the reader may find some very interesting statements on the treatment of enlarged prostate glands in old persons. After leeching the perineum, emptying the rectum by enemata, and the occasional use of opiate suppositories, the following pills were employed with decided benefit:—

℞.—Ext. colchic. acet. gr. i;
Pill. hydr. mass. gr. i;
Pulv. Doveri, grs. v;
Ext. colocynth. comp. grs. iij.

Mix. To make a pill, or two if one be too large.

To be taken twice or thrice in twenty-four hours, and continue for several weeks. The medicine acts as an alterative and a promoter of absorption. If a catheter must be used, it is suggested that an elastic instrument be selected.

The proximate principle *veratria*, or *veratrine*, or *colchicine*, is entitled to some consideration. The various species of veratrum,

as well as colchicum, contain this principle in the form of gallate of veratria, and the connection being easily broken between the acid and base, pure veratria is readily obtained. From whatever source procured, it is scarcely soluble in cold water, and even boiling water dissolves only a thousandth part, the solution being obviously acrid. It is very soluble in sulphuric ether, and more so in alcohol. It is insoluble in solutions of alkalies, but dissolves freely in the vegetable acids, forming salts which do not crystallize. The taste of veratria is very acrid, but not bitter; it excites free salivation, even in minute quantities, and hence it has been called a *sialagogue*. It is quite inodorous, and in attempting to test this point great care should be taken, as the smallest portion drawn into the nostrils will set up violent sneezing.

Of all the salts of veratria the acetate is the most active. A grain and a half injected into the tunica vaginalis or the jugular vein causes death in a few seconds, preceded by violent tetanic spasms. A quarter-grain given to an adult will produce very copious alvine discharges, and a dose rather larger will excite vomiting. Of course it is *emetic* and *cathartic*. Magendie gave two grains in the course of twenty-four hours to an old man laboring under apoplexy, but the medicine did not act on the bowels, because they were probably paralyzed. Applied directly to the mucous membranes anywhere, it is highly *stimulant*.

Dr. Turnbull has written much on this article, and in fact made it a hobby for a long time, regarding it in the light of a panacea. As it is a very energetic medicine, there can be no doubt that it did sometimes induce the results of which he speaks. The external use seems to have been successful in many instances, and it is decidedly the safest mode of exhibition. Four grains rubbed with an ounce of lard and applied by friction to the abdomen of a *dropsical* patient, cured him in fourteen days. The frictions were made night and morning. *Tic douleureux* and *rheumatism* were cured in the same way, from twelve to fifteen grains of the veratria being mixed with an ounce of lard and a portion of the size of a nutmeg rubbed into the affected part morning and night. The *Provincial Medical and Surgical Journal* for August, 1841, speaks well of it in *spasmodic affections of the larnyx* and its appendages, which were probably neuralgic. In these cases the ointment consisted of a scruple of veratria to an ounce of simple cerate, of which a small portion was rubbed on each side of the cervical vertebræ twice a day. The cure was complete in two months. Dr. Buchanan, of England, advocates the external use of veratria in *dysmenorrhœa*. A half-drachm of veratria is well triturated with an ounce of

lard and a lump as large as a hazelnut rubbed on the sacrum three or four times a day.

Turnbull says the addition of four grains of veratria to an ounce of the strongest tincture of red pepper makes a most energetic *counter-irritant* and *rubefacient*. The pepper tincture named consists of four ounces of the pepper and twelve ounces of alcohol digested for seven days and then filtered.

For internal use, the following directions are given by the same author:—Four grains added to an ounce of alcohol make a tincture the adult dose of which is from twenty to twenty-five drops in a cup of any simple drink. One grain of the acetate or sulphate of veratria dissolved in two ounces of distilled water makes a good substitute for the *eau médicinale d'Husson*, and is employed as such in gout and rheumatism. Magendie offers the following formula:—

℞.—Veratria, a half-grain;
Powder of gum Arabic, five grains;
Simple syrup, q. s.

To make six pills; the dose is one pill night and morning.

I have no doubt that the medicinal powers of this medicine have been overrated, yet its inherent energy justifies the opinion that it may be useful in judicious hands.

COLLODION. (From the Greek word *colla*, glue.)—This is a new article, made by dissolving gun-cotton in sulphuric ether. It has been claimed as an American discovery, but a foreigner affirms that he employed it several years prior to any notice of it in the United States. The solution looks not unlike mucilage of gum Arabic, but has a strong ethereal odor. Applied to the surface of the body, sound or otherwise, it has the appearance somewhat of mucilage, but dries more rapidly. It has the advantage over all other adhesive applications that it is not affected by water, cold or hot, acids, alkalies, nor anything with which it may come in contact. It remains on the spot until healing takes place, and separates as a new skin is formed. The application of it causes a slight sensation of heat, as ether alone would do, but this quickly subsides.

To show the utility of this article, we name some of the circumstances under which it has been successfully tried. In *fissure of the nipples* it has been found to protect the tender parts effectually, being applied, morning and evening, so as to coat the parts entirely. Even *laceration of the perineum* has been managed by the application of this solution, keeping the parts accurately united and resisting the action of the discharges in the vicinity. *Cutaneous diseases* have also been treated with decided advantage with the same article. A simple *scratch* of

the hand, which often is troublesome in irritable habits, is most happily managed by coating it over with collodion, as I have proved in my own person. The wounded part is completely protected, ceases to be painful, and soon heals over. *Incised wounds* have been treated in the same way.

It seems to be well suited to all the varieties of *pruritus* that are so exceedingly difficult to manage. It speedily arrests the bleeding from leech-bites, and is a good application to prevent pitting from smallpox.

A mixture of twenty parts of collodion and six of castor oil applied over the entire scrotum quickly lessens the pain and swelling of *orchitis*, and gives a rapid and entire recovery. Professor Costes relates several cases in point.

From the most recent notices of this new article we make the following extracts:—

Mr. Wilson says in a troublesome case of *chapped hands* and *fingers*, resulting from chronic disease, the collodium acted not merely as a protective covering, but promoted the healing of the cracks more quickly than any usual remedies. In *chapped nipples* it seemed to work a charm upon the painful skin. It is nowise injurious to the infant, because not in the least altered by the act of sucking. It cures small superficial ulcerations of the corona glandis and prepuce, resulting from accidental excoriations, very speedily.

Many articles have appeared in the journals showing the good effects of collodion in treating *burns and scalds*. It has answered well in burns caused by explosion of gunpowder and by the firing of alcohol, the neck, breast, face, and hands all being implicated. Collodion was applied, one hour and a half after the occurrence of the accident, by means of a hair pencil. The redness, pain, and swelling were soon lessened, and no inconvenience was felt save the tension induced by the closely adherent pellicle. Inflammation entirely vanished, and recovery was rapid. The remedy acts by protecting the very sensitive cutis, and by furnishing a constant and equable support to the parts.

M. Meynier (*Bulletin de Therap.*, vol. xliv. p. 185) has succeeded with collodion in cases of *inverted toe-nail*. He presses the flesh away from the nail and pours the collodion into the cavity. This very soon solidifies, induces rapid healing, and almost always cures. Four out of five cases so treated by M. H. Larrey were cured. This is a simple remedy for so painful an affair, and merits further trials.

Chilblains and *chaps* are promptly relieved by the following mixture, applied by means of a fine hair pencil freely to the parts:—Collodion, thirty parts; Venice turpentine, twelve; castor oil, six.—*Bull. de Therap.*, Nov. 1856.

M. Legroux says (in *L' Union Médicale*, October, 1857) that the following preparation has been very efficacious in that painful affection, *sore nipples*, already alluded to. He renders collodion elastic by the addition to thirty parts of collodion of half a part of castor oil and one and a half parts of turpentine. The mixture is to be applied around, but not on the nipple, by means of a fine hair pencil. Over the surface is to be placed a piece of goldbeater's skin, with pin-holes in it opposite the nipple, so as to allow the passage of the milk. Before suckling, the goldbeater's skin is moistened with a little sugared water, which gives it sufficient pliancy. If it should crack, replace it.

In the *London Lancet* for December 9, 1848, we find very favorable notices of the use of collodion for arresting the hemorrhage from leech-bites. Dr. Tucker dips lint in the collodion, lays it on the spots, and applies collodion over the whole with a camel's-hair pencil. Some advise pressure also for a short time, but it is hardly needful.

M. Hairon has lately found collodion a very useful adjunct in the management of *ophthalmic affections*, and especially when he desired to keep some active article in contact with the eye and to exclude the light. The collodion keeps the lid closed, and the ends are attained perfectly. (See *L' Union Médicale*, No. 29.)

In a paper read to the Academy of Sciences of Paris, M. Latour endeavored to show that any inflammation of the skin may be arrested by covering the inflamed integuments with any adhesive compound capable of excluding the air. Formerly he employed a solution of gum, but has now substituted collodion. Two cases of *erysipelas* treated with the latter agent were well in a few days. This notice is taken from the *London Lancet*, June, 1850.

A mixture of thirty parts of collodion and two parts of castor oil has been very beneficially employed in *erysipelas*. The varnish made by this union is applied to the skin once a day for three days. It puts an end to the burning pain and the itching, and restores the natural color of the surface. The idea of such a mixture originated with M. Robert Latour.—*Journal de Médicine*, Nov. 1852.

In consequence of the success attending the practice of painting parts affected with erysipelas with collodion, the same remedy has been applied to cases of *inflamed epididymus*, especially resulting from the vice of onanism. Pencilling the scrotum with collodion has met these cases admirably, a single application sometimes sufficing, and the cure being obvious at the end of three or four days.—*Medical Times and Gazette*, May 14, 1853.

Mammary abscess has been successfully treated by early painting the surface with this article; and it has also been employed to prevent *scarring in smallpox.*

In addition to the employment of collodion as a dressing for *bed sores*, it has lately been made an auxiliary to cantharides. M. Hirsch, of St. Petersburg, employs the following preparation as a vesicatory when one is needed where it cannot be disturbed by the movements of the patient. He calls it *cantharidal collodion*, and makes it thus:—A pound of coarsely-powdered cantharides, a pound of sulphuric ether, and three ounces of acetic ether are placed in a vessel for digestion. A saturated solution of cantharides, with the green animal fatty matter blended with it, is thus obtained; and in two ounces of this twenty-five grains of gun-cotton are dissolved and kept in close bottles. When a blister is required it will be sufficient to smear with this fluid the surface to be vesicated. (See *Braithwaite*, part xx.)

Caustic collodion has been employed by Dr. Macke, of Soran, for some years, to destroy *nævi materni.* It consists of a solution of four parts deuto-chloride of mercury in thirty of collodion. The application is easily made with a fine hairbrush. It dries so quickly that it cannot spread. If it induce too much inflammation, cold applications will be needful. The eschar is solid, and its thickness depends on the number of applications. It separates in from three to six days, leaving a trifling cicatrix. The pain is moderate and soon passes away.—*Dublin Hospital Gazette*, July, 1856.

A *ferruginous* collodion has lately been prepared by M. Aran, of Paris, because of the pellicle it makes being thinner than that of the common collodion, and also more flexible. Its adhesion, too, continues longer. It is made of equal parts of ordinary collodion and Bestuchef's tincture of iron, (the ethereal tincture of per-chloride, or our muriated tincture.)—*Braithwaite*, part xxvii. p. 32.

Colocynth. *Colocynthis Cucumis. Bitter Apple. Bitter Cucumber.*—This is a trailing plant growing in Turkey and Nubia. The ripe fruit is about the size of a medium orange, and looks not very unlike it. The dried pulp is white, light, spongy, very soluble in water, forming a mucilaginous and very bitter solution, which by evaporation yields the *extract of colocynth.* The dried colocynth is inodorous, the white and spongy portion being very bitter and nauseous. From this spongy part alcohol separates a resinous matter called by Vauquelin, its discoverer, *colocyntine.*

Colocynth has ever been regarded a *drastic cathartic*, and hence the comparative unfrequency of its exhibition. It is often

very violent in its action, causing inflammation of the bowels, bloody stools, and other bad effects. Hence it has been often resorted to for the purpose of inducing *abortion;* not that it has any direct emmenagogue power, but because of its severe irritation of the rectum, which is transmitted to the adjacent uterus. On the same principle, it has been found a remedy for *gonorrhœa*, and as such has been employed chiefly by sailors, dissolved in whisky, which makes it more palatable than the watery solution.

Such is the violence of the operation of this article, when taken by females to induce abortion, that it kills in a few hours, or sets up terrible colic pains, which recur frequently during life. A teaspoonful and a half of the powder of colocynth killed a woman in twenty-four hours by setting up incessant vomiting and purging.

If the powder of colocynth be applied to a raw surface, as an ulcer, on any part of the body, it gives the same results in the lower bowels that follow its internal use.

The ordinary dose of the pulp is from four to ten grains. In the smaller dose it seldom gripes or acts unpleasantly after a third or fourth trial.

The oil of colocynth has lately been spoken of as an external remedy for neuralgia. (See *Braithwaite's Retrospect.*) The *extract* is a good preparation alone, or joined to other articles. The dose is from one to three grains.

The *compound extract of colocynth* is a good cathartic. It is made thus:—Take of colocynth pulp, ʒvi; aloes, ʒxij; scammony, ʒiv; cardamom-seed in powder, ʒi; soap, ʒiij; proof spirit, one gallon. Macerate the colocynth in the spirit four days with a gentle heat, strain the solution and add it to the aloes, scammony, and soap; evaporate, adding the cardamom near to the close of the process. The dose is from five to thirty grains. The celebrated Fothergill's pill contained this compound extract largely.

Besides the use of very poor scammony, the extract is badly imitated by adding chalk and starch. The former is detected by muriatic acid, which causes an effervescence, muriate of lime being formed. If the filtered decoction, slightly acidified, becomes blue or purple on adding the tincture of iodine, we infer the presence of starch.

Compound Poisoning.—By the term compound poisoning we mean the effects induced in the system by the action of a mixture of two or more poisonous agents. When any two of these are so employed they may greatly modify each other, and the symptoms, effects, &c. may be very different from those usually produced by either alone. In fact, where poisoning is effected

by design, it is not always possible to know how many articles may have been combined, and all investigation must of course be uncertain as to its result, and be greatly obscured. We have seen that tobacco passed into the stomach of a man who had swallowed a quantity of arsenic will in some way or other prevent the poisonous effects of the latter. And we know that tobacco thus passed into the same stomach in health would be productive of very unpleasant consequences of a peculiar kind. Yet it has the property of neutralizing the arsenic, or at least of rendering it harmless. Suppose a man were to take a great dose of tobacco and arsenic at the same time, who can tell what the effect would be? And how can we know in many cases what mixtures are resorted to expressly to kill in the most effectual manner?

It is obvious, therefore, from these brief remarks, that a collection of cases of compound poisoning can amount to nothing more than so many isolated facts brought in contact, yet unexplained, and perhaps inexplicable. As they are at all events interesting, it is proper to keep them faithfully recorded. We remember the case of a man who for several days took poison in everything he ate, and was at last destroyed by violent purgation, caused by a compound poisonous injection. It would not be an easy task to assign to each poisonous ingredient employed in such a case its precise share in the mischievous and fatal issue.

We learn from the *Medico-Chirurgical Review*, vol. vii., that *arsenic* and *corrosive sublimate* have been joined for the purpose of committing suicide, as though either had not sufficient energy. The quantity of each was fifty grains, and the dose caused a burning heat in the bowels very speedily. An emetic effected the evacuation of part of the poisonous mixture, but the man still suffered from severe pain and thirst. The emetic was repeated, followed with mucilaginous drinks. This treatment brought on a diarrhœa of eight days' continuance. There was also considerable vomiting and convulsive twitchings. As inflammation was present, means were adopted to subdue it. The man gradually got well.

Had the same quantity of corrosive sublimate or arsenic as above named been taken singly, it would, for aught we know, have killed the man. What modification resulted from the union we do not pretend to know, and will not conjecture.

Arsenic and nux vomica, both deadly poisons, have been combined and swallowed in large portions and yet the deluded experimenter has recovered. We learn from the *British Annals of Medicine*, vol. ii., that a female took two drachms of arsenic and a half-drachm of nux vomica at once. What man in his

senses would not shudder at the thought of taking one-half of either? An emetic of sulphate of zinc quickly vomited her, and the stomach-pump was also put in requisition to clean out the stomach. Lime-water and mucilaginous drinks were given freely; and leeches to the pit of the stomach allayed the gastric inflammation, after which she got well rapidly, and was discharged cured on the sixteenth day.

Arsenic has failed to kill when taken by a man under the usual effects of *ardent spirits*. It is supposed that the narcotism induced by the alcohol put the stomach in such a state as to prevent the common operation of arsenic. But when arsenic is taken after a night's debauch and the alcohol has not been repeated, the man, although apparently drunk, will hardly escape the poisoning influence of the arsenic. There will occur a state of indirect debility of the stomach which will give greater energy to the mineral poison.

Arsenic with a moderate share of *laudanum* will not necessarily be a fatal mixture. In fact, recoveries have taken place after such doses have been swallowed. If there be just laudanum enough to narcotize, and free vomiting or the stomach-pump be employed, the chance of recovery is pretty good. A case is given in one of the volumes of the *Edinburgh Medical and Surgical Journal*, of a woman who swallowed two drachms of arsenic and three ounces of laudanum at the same time. In four hours after she had no burning in the throat, stomach or bowels, no abdominal tenderness, and little stupor. She took an emetic, which left her in a state of fatigue and inclined to sleep. The eyes were bloodshot and heavy, pupils contracted, pulse 100. Emetics, bleeding from the arms, leeches, blistering, and cold affusion were ordered, and she was kept in motion as much as was practicable. The drowsiness increased, and she became comatose, with pupils dilated, and breathing laboriously. She died in nine hours after taking the poison. In this case it is quite apparent that the power of the laudanum triumphed over the energy of the arsenic; and although arsenic was found in the stomach, the other morbid appearances were such as often follow poisoning by laudanum.

In the *New York Journal of Medicine* for October, 1840, Gordon Buck, M.D., has given an interesting case of compound poisoning in a very slight degree, caused by the accidental swallowing of thirty grains of opium and sixteen of acetate of lead. The dose was taken at about eight o'clock on the night of January 26. At midnight, the patient felt unwell and vomited. He did not rest well for the remainder of the night; but no sign of narcotism ensued, and on the next day he was about as well as usual.

In the same article the doctor reports the case of a man who took a drachm of opium with a scruple of sugar of lead. In a half hour after an emetic was given, and no serious result followed.

A case is given by Christison, on the authority of Mackintosh, showing the action of *corrosive sublimate* and *laudanum* combined. A young soldier swallowed two drachms of the former and half an ounce of the latter. The narcotism caused by the laudanum suspended for a little while the usual action of the mercurial poison; but presently it developed itself in violent salivation, and bowel disease of an inflammatory character, and he sunk on the ninth day. The stomach and intestines were found enormously inflamed and ulcerated, with here and there gangrenous spots. I have no doubt that two or three ounces of laudanum would have prevented the mercurial action completely, and that the man would have died in an apoplectic state.

The *London Medical Gazette* for April, 1841, has this case: A child five years old had swallowed a considerable quantity of "*gun-barrel browning.*" This is composed of corrosive sublimate, sulphate of copper, and tincture of sesqui-chloride of iron.

The child made ineffectual efforts to vomit, had severe epigastric pains, and the pulse was feeble and quick. Perfectly rational, although listless and heavy. Copious draughts of milk, with white of eggs, were freely given. These brought on vomiting, and relief soon followed. A gentle emetic of ipecacuanha, to remove the consequent torpor of the stomach, acted kindly, and perspiration, followed by quiet sleep, left him convalescent.

In this case, says the reporter, very truly, the albumen acted as an antidote to the salts of copper and mercury.

The case of the individual, who after swallowing seventeen grains of *tartar emetic* attempted to suffocate himself by means of the *fumes of burning charcoal*, is highly interesting. It illustrates forcibly the doctrine of counter-irritation, and suggests a very important hint in respect of its practical application. The carbonic acid and carbonic oxide gas evolved by the burning coal annoyed him sorely by their narcotic property; but this more than countervailed the stimulus of the tartar emetic, for the latter scarcely excited nausea.

Strange as it may seem, the various narcotics often counteract each other. A modification of this principle is noticed by the physician, in the readiness with which he can substitute them for each other in the management of disease. *Opium and belladonna* have been employed in form of injection in considerable portions without inducing the common effects of either. This may depend,

however, on the nature of the morbid action at the time, or on some peculiarity which is not to be detected.

Where *laudanum and brandy* follow each other speedily, and in due proportions, the individual may survive. If, however, the proportion of laudanum be very great, its power will predominate, and death from narcotism will ensue.

In short, as already intimated, we can decide nothing accurately, except the fact that death has resulted from poison, where deleterious substances have been combined and thus taken for suicidal purposes or given to perpetrate murder. We cannot possibly determine the relative quantity of each, nor can we always ascertain how many poisonous articles have been conjoined. Of course the symptoms will fail to guide us with anything like certainty, for we may look for a blending of these to a greater or less extent in all cases of mixed poisoning.

Conium Maculatum. *Hemlock.*—The leaves and seeds are the parts of this vegetable most usually employed in medical practice. The leaves are of a dark-green color, the upper surface being much darker than the under, and when rubbed between the fingers they emit a strong and peculiar odor. The ripe seeds are smooth and of a brown color. The plant flowers in June and July; and just before the time of flowering the leaves are in perfection, and should be gathered and slowly dried in a loft having a free current of air. It injures this and most plants to dry the leaves rapidly in a hot sun, or by artificial heat, as some active volatile matters are thus driven off. When dried with care and kept in tight vessels the medicinal properties are retained a long while.

The *extract*, which is more frequently employed than any other preparation, can be made either of the seeds or leaves, the latter being generally preferred. The most convenient mode of getting a good extract is by bruising the fresh leaves, collecting the juice and evaporating it to a proper consistence in the sun. The extract thus made will not keep as long as the alcoholic extracts made of the seeds, but it can be kept from one season to another, when a fresh quantity can be made. It is a more effieient medicine than the alcoholic preparation.

Hemlock has always been favorably regarded as a *narcotic*, and therefore a proper substitute for opium, or a good article to combine with it. It is also well adapted to the use of opium-eaters who desire to be cured of a bad habit. The narcotic property is much modified by cultivation. In Greece, Italy, and Spain, it is at the maximum; less energetic in England; and null in Russia. So harmless is the fresh hemlock in the latter place

that the peasants eat it as greens after boiling in several changes of water.

The juice expressed from fresh hemlock leaves has been employed as a remedy for *itch*. An Italian, Dr. Pelligrini, affirms that if the parts be coated with the juice daily for five or six days the disease will disappear. A solution of good extract will answer nearly as well. The juice and the extract have also been applied with happy effects to painful *hemorrhoidal tumors*, to *irritable ulcers*, *cancerous sores*, &c. A bread and milk poultice over which the fine powder of the dried leaf or extract is sprinkled will often serve the same purpose.

The internal use of the leaves has not been so common as that of the extract, though both are sometimes combined, as their properties are alike. An obvious advantage of this and some other narcotics over opium consists in the fact that they do not constipate the bowels, even in augmented doses.

The combination of blue mass with the extract of hemlock unites a desirable soothing influence with a favorable alterative agency. I have employed this combination with the twofold intention named, in *erysipelas* that returned very frequently, affecting almost exclusively the face. By persisting in the use of pills containing a half-grain of the blue mass and one grain of the extract for a few weeks, I have succeeded in so changing the diathesis as to lengthen the intervals of attack from three weeks to six months, and at last to effect complete recovery.

It is sometimes desirable to make a substitute for Dover's powder by adding the extract of hemlock in place of opium to the ipecacuanha and sulphate of potash. When this powder constipates, the substitute will be desirable. Five grains of the extract may be added in place of one grain of opium.

The proximate principle *coneia*, or *coneine*, has all the virtues of the plant, but is not much employed.

Many physicians employ the extract of hemlock and calomel as a last resort in *chronic affections* which they do not understand, in the hope of accomplishing some good, they know not how or why. In truth, it will rarely appear that hemlock alone is capable of doing much service, and hence it is almost always exhibited in combination.

In very large quantities hemlock will certainly *poison*. The stomach-pump should at once be resorted to, or a prompt emetic, so as to evacuate the stomach completely. When this end is attained, some of the vegetable acids in a diluted state should be given to restore the lost tone of the stomach. Vinegar and water or weak lemon juice will answer very well.

CONTRA-STIMULANT.—This term has been applied to the action

of large doses of tartar emetic in the treatment of *pneumonia* according to the Italian practice. (See *Antimonium.*)

Copaiba.—Sometimes, but erroneously, called *balsam copaiba.* There are several modes of spelling this word, but they are unimportant. It is the liquid resin of the *Copaifera officinalis*, obtained by wounding the bark of the tree and so allowing exudation to ensue. It is brought to this country in small casks or barrels, or yet smaller vessels, some of which being made of copper have been supposed to give the copaiba a green tinge, which is a mistake. The article comes for the most part from the Brazils.

The consistency of copaiba varies with season, being sometimes quite thick and viscid, and then very thin and easily poured from vessel to vessel. It varies in point of color, being sometimes quite pale, or slightly yellow or greenish. It has a peculiar odor, which to most persons is exceedingly disagreeable, and constitutes a strong objection to its use as a medicine. The smell, unfortunately, is not evanescent, but often permanent. The taste is quite pungent, and a slight degree of nausea attends its administration not unfrequently. It is not soluble in water, yet imparts its flavor to that fluid so much as to remain for a considerable time. It is soluble in ether and in alcohol, and is lighter than water.

The pure or unmixed copaiba can be taken on loaf-sugar, or in emulsion made of yolk of egg or gum Arabic. Aromatics, as cinnamon-water, lessen its nauseous quality and make it tolerable. Thus:—

℞.—Copaiba, half a drachm;
Powder of gum Arabic,
And sugar, each a drachm;
Cinnamon-water, an ounce.

Mix.

The whole of this may be taken by an adult at once, or from twenty to forty drops may be added to white sugar as a substitute. If these doses be continued or increased there will be purging and increase of urine, and if it fail to do either it may act merely as an *expectorant.* The *cathartic* and *diuretic* effects are more constant.

Copaiba has been extolled as a remedy for *irritable conditions of the bladder*, for *gonorrhœa*, for *gleets*, for *fluor albus*, for *chronic coughs*, *piles*, &c. &c. Some physicians have employed it in the shape of injection, especially for the cure of *gleets*, and have thus obviated or greatly lessened the unpleasant odor of the article. From two drachms to a half-ounce should be thrown up the rectum at once, and repeated as occasion may require. Delpech prescribed copaiba in a novel form in his treatment of *gonor-*

rhœa, declaring that the prescription was remarkably successful. Thus:—

℞.—Mint water,
Orange-flower water,
Lemon syrup,
Copaiba, each, ℥i;
Sulphuric acid, ℥ij;
Mucilage of gum Arabic, q. s.

To make a good mixture. The dose was a tablespoonful night and morning.

If the medicine purged the patient, from ten to fifteen drops of laudanum were added to each dose.

Dr. Dover gave tablespoonful doses of copaiba to aid the passage of a stone to the bladder. (See his *Physician's Legacy*, p. 56.)

Dr. Reverdy employed copaiba in the management of *pulmonary catarrh*. He thought the efficacy of the medicine did not depend on its cathartic power, but rather on its expectorant action. From forty to sixty drops were given for a dose, and repeated every three hours. Dr. La Roche published some facts to the same point in the *North American Medical and Surgical Journal*, formerly issued in this city.

The attending physician of the *Philadelphia Orphan Asylum* reported favorably of copaiba as a remedy for *chilblains*. After washing the parts well at bedtime with warm soapsuds, the copaiba was freely applied, and the operation repeated for a week. (See *American Journal of Medical Sciences* for 1838, p. 504.)

The late Dr. Hewson, of Philadelphia, noticed a peculiar eruption, somewhat like measles or smallpox, induced by the continued use of copaiba. (See *North American Medical and Surg. Journ.*) And other physicians in this country have noticed the same thing. Raleigh gives an account of the same accident, in the *India Journal of Medicine* for 1834. Dr. Dickson speaks of it in his work on the *Unity of Disease*, and Professor Sigmond notices it in the *London Lancet*. The eruption is sometimes very limited, but occasionally covers the body, and disappears without desquamation at the end of four or five days. I have never witnessed this result, because I have not been in the habit of prescribing the copaiba.

The *solidified copaiba*, or *inspissated copaiba* made by Carpenter, is preferred by some practitioners to the liquid article. An imitation can be made by triturating calcined magnesia with copaiba till it will take up no more. The *copaiba capsules* are much more in favor with many persons who have occasion to use the medicine. An alakaline mixture, combining potash with copaiba, has also been employed. But I doubt, as a general rule, whether the pure article, *per se*, is not the best form of administration.

One of the oldest compounds for the cure of venereal disease, and known by the title of *Jesuit's drops*, is thus made:—

℞.—Copaiba, ℥vi;
Gum guaiac. ℥iss;
Laur. sassaf. ʒiij;
Carb. potass. ʒiij;
Alcohol, lbiv.

Digest in a sand-bath for three or four days, and filter.

Many years ago guaiacum was held to be a powerful anti-venereal medicine, and joined to copaiba it made a mixture that once ranked as a panacea.

The large quantity of copaiba in this mixture proves conclusively that its powers were highly estimated, and there are many practitioners now who think it an exceedingly valuable medicine in the treatment of gonorrhœa.

Copalchi Bark.—This is the name of a bark said to be much employed by the Mexican and Peruvian physicians in the treatment of *intermittents*, and as a warm, aromatic, bitter tonic, well suited to many cases of dyspepsia. From all that I can discover in the history presented, this article differs very little from cascarilla in its medicinal properties. It is probably furnished by the *Croton-pseudo-China*, of *Schiede*, but does not appear to be of sufficient importance to call for more extended notice.

Coriandrum Sativum. *Coriander.*—The seeds have long been in use in the East as a condiment, being an ingredient in the famous *Currie powder*. Confectioners and distillers employ the seeds in large quantities. The seed has a peculiar odor, a warm aromatic taste, which is due to a yellowish volatile oil. The seeds and oil are stimulant and carminative, and are chiefly employed as an adjunct to various preparations, as the confection of senna, infusion of senna with tamarinds, compound tincture of senna, &c. &c.

From half a scruple to a drachm of the seeds may be taken for a dose, and from three to five drops of the oil.

Coptis Trifoliata. *Golden Thread.*—An indigenous, ranunculaceous plant, the powdered root of which has long been known to the peasantry as a simple bitter tonic and astringent. The botanical and steam-doctors fancied that it possessed other properties. The dose is from ten to thirty grains in a little simple syrup. The root abounds with filaments of a bright yellow, and hence its common name. The Shakers deal in it largely.

Cornus—*circinata, florida, sericea. Dogwood.*—The dogwood tree is to be seen in almost every part of the United States, and all the varieties agree in medicinal properties, having been employed from time immemorial as substitutes for the bark, for the cure of *ague and fever*. Dogwood is, therefore, to be regarded

as *tonic* and *antiperiodic*. The bark and the flowers are the parts of the tree most in use, and are given in powder, decoction, and extract. Tannin, extractive, gallic acid, and resin are contained in it, and hence it is obvious that *astringent* powers reside in it.

The dose of the bark or flowers in powder is from twenty to fifty grains, frequently repeated. The infusion or decoction may be made as strong as it can be, and drank *ad libitum*. An ounce added to a pint of boiling water is the ordinary proportion, and the addition of a half-ounce of Virginia snake-root renders the mixture more agreeable and effective. *Cornine* is the proximate principle.

Corrosive Sublimate. (See *Hydrargyrum*.)

Cotton. *Gossypium Herbaceum*.—I am aware that this is not often regarded as an article of Materia Medica, yet it merits a place here. So far as I can learn, its earliest medicinal use was as a mechanical means to arrest hemorrhage. Subsequently it was applied to *burnt* or *scalded* surfaces with great advantage. The finest carded cotton should be selected for *burns* and *scalds*. It affords prompt relief, and if applied early prevents vesication. It is also an excellent application to severe *bruises* or *contusions*, especially in persons of irritable habits, whose flesh heals slowly. For this end I know of no means more salutary and agreeable.

But a more recent use is in the treatment of *erysipelas*, which, indeed, approximates closely to the nature of burns and scalds. It is probable the success of cotton in the latter led to its use in the former.

M. Regnault, a writer in a French journal, affirms that cotton calms the pain and burning and itching of erysipelas as by a charm. He says it soon evolves a gentle, pleasant moisture, which continues, and with the effect, too, of relieving all the local uneasiness. The swelling gradually vanishes, as well as the redness. The skin becomes flaccid and wrinkled, showing none of the furfuraceous scales that mark the disease as usually treated. The general excitement ceases, fever subsides, and the organic functions resume their salutary state, frequently without other treatment. Regnault employs the cotton in every location. He thinks it establishes a kind of mild vapor-bath on the part, keeping up uniform temperature and moisture. In this way it often cures by re-solution, avoiding vesication altogether. He applies the finest and cleanest cotton, so as to exclude air and light but not so as to be oppressive. The cotton should extend two inches beyond the inflamed spot, and have a very light compress to confine it. If the face be attacked, a linen mask is employed to keep the cotton in place, and it is needful to remove the whole

once in twenty-four hours to watch the effect. Should the cotton adhere to the skin, it must be detached with a soft poultice. The remedy is of easy application, but cannot supersede the use of proper means to correct the general system, such as emetics, emeto-cathartics, low diet, &c. Many years ago, Dr. Merrill, of Natchez, recommended carded cotton as the best application to *blistered surfaces*. He found that when it was not desired to keep the blistered spot open and running, but rather to heal it promptly, the cotton was the best sort of dressing. He laid it on a half-inch thick, extending an inch over the edges of the blistered part. In two days, ordinarily, a new cuticle was formed, and the spot healed over. The dressing gives no pain, and is quite easily managed. The account furnished by Dr. Merrill may be seen in the *North American Medical and Surgical Journal*, published more than twenty-five years ago; and yet the same practice has been announced as original by a Dr. Maclaglan, in a foreign journal, within the last ten years.

It remains to notice an internal use of the cotton plant that is peculiar to the far South, where it grows abundantly. Drs. McGown, Bouchelle, and others, employ the bark of the root as a *parturient* medicine in the form of decoction. Four ounces are boiled, in a quart of water, to a pint, the dose of which is one or two ounces every ten or fifteen minutes. It is affirmed to be safer than ergot, and equally efficient.

COTYLEDON UMBILICUS.—So far as I can learn from the statement of Mr. Satter, in the *London Medical Gazette*, March, 1849, this plant belongs to the *house-leek family*, and is kindred to *sedum* and *sempervivum*. The *sedum acre* is spoken of as having been employed by the Germans in the same disease for which Mr. S. recommends the cotyledon umbilicus, viz., *epilepsy*. The statements of Mr. S. are fully confirmed by those of Mr. Bullar, surgeon at Southampton.

Two teaspoonfuls of the expressed juice were given three times a day, and continued for several months, with the effect of putting an end to the epileptic seizures. In some instances, the recoveries were complete; in others, very manifest improvement followed. One of the cases had been variously treated for twelve years, and finally yielded to this article alone.

We have no personal knowledge of this remedy, and presume that the common house-leek may possess all the advantages of the cotyledon. It is highly commended in part nineteen of *Braithwaite's Retrospect*, to which the reader is referred.

COUNTER-IRRITANT.—This refers to the setting up of a new action in the neighborhood of a diseased spot with the view of transferring it from its original seat, as in the use of blisters for the relief of *pleurisy*.

COUNTER-POISON. This term seems to carry with it the proper explanation. It occurs whenever two acknowledged poisons meet in the stomach and do comparatively little harm, evincing no morbid phenomena such as either, acting alone, would develop. Christison gives cases in point in his excellent work on poisons. A man may not be seriously injured by swallowing a large quantity of corrosive sublimate and, shortly after, an overdose of laudanum, though each, by itself, would be sufficient to kill. It would seem that the two poisons form a sort of *tertium quid*, or neutralize each other so as to be almost harmless. (See *Compound Poisoning.*

COWHAGE. (See *Dolichos Pruriens.*)

CRABS' CLAWS. (See *Calx.*)

CREOSOTE. *Creasote. Kreosote.*—The name indicates the prominent quality of the article. It is of Greek derivation, meaning *preservative*, and hence its *antiseptic* power. Riechenback, a German chemist, discovered it not many years ago, when experimenting with tar. He found this article to contain, in addition to creosote, paraffine, picamar, capnomor, pittacal, &c. &c. All these are compounded of carbon, oxygen, and hydrogen.

Creosote is an oily-looking fluid, and when quite pure is colorless and transparent. Now and then it has a yellow or brown tinge, which does not lessen its value materially. The peculiar smell of the article seems like a concentration of the odor of wood-smoke, or the vapors of pyroligneous acid. All these act alike in the preservation of animal substances for domestic and scientific purposes, imparting the same color and odor. Creosote has a burning taste, followed by a sense of sweetness. Dropped on paper it leaves stains, which soon vanish. There is a peculiarity in creosote in respect of its power to unite with water, with which it combines only in certain proportions, as 1 to 100 or as 10 to 100. Alcohol, ether, carburet of sulphur, and acetic acid combine with it in all proportions. It is wholly void of acid and alkaline qualities, yet combines with acids and alkalies.

One of the most important properties of creosote is its power to coagulate albumen, as on this depends its antiseptic character. Muscular fibre, apart from albumen, is incapable of the putrefactive process, and the albumen being coagulated and hardened resists putrefaction. Smoke and pyroligneous acid act on the same principle.

Solution of creosote has been employed for the preservation of anatomical preparations. One part of creosote to 400 of water answered the purpose. Birds poisoned with creosote have been found to resist putrefaction, and animals can be perfectly mummified with it, so as to keep for an indefinite length of time. Mere immersion in the creosote solution, or injection of it into

the vessels, will suffice. Cormac affirms that he kept the lungs of a dog in good order more than three months after killing the animal with creosote. From all the known facts, it has been inferred that the Egyptians employed something containing creosote in their process of embalming.

The action of an overdose of creosote on man is very severe, and there is no antidote for it. It sets up violent gastric pains, extending to the pharynx, with acute pain of the tongue and lips. After the pain subsides a little there remains a very disagreeable taste in the mouth. This latter is quite perceptible after employing the creosote for toothache. Injected into the veins, it arrests the heart's action instantly. Large doses cause speedy death, with extensive organic lesion, and particularly gastro-enteric inflammation. In smaller doses, it has induced torpor of sensation and motion, especially of the lower extremities, the heart, and diaphragm. Mixture with oil and mucilage very much reduces its power, but vinegar increases its poisonous action. Applied to the sound skin, it acts as a powerful *irritant*, inducing inflammation and ulceration. Laid on an inflamed part, it proves a *counter-irritant*, and abates the inflammatory action. Its *styptic* qualities have been proved by its power over hemorrhages. It is stated in the *Edinburgh Medical and Surgical Journal* for October, 1841, that a sponge soaked in creosote speedily arrested the bleeding consequent upon the operation for lithotomy.

Cormac and Elliotson have written very fully on the medical uses of creosote, but its real therapeutic characters are not fully ascertained. It may be *stimulant*, *sedative*, *narcotic*, *irritant*, *counter-irritant*, *poisonous*, and *antiseptic*, according to circumstances, as all these properties have been developed frequently. Like every new article of great power, it was made a hobby, a veritable panacea; yet it certainly deserves our attention.

One of the earliest uses of creosote was for the cure of *toothache*. The common practice was to put a drop of the article on a very small quantity of cotton, which was then to be placed in the cavity of the tooth. The remedy acted by paralyzing the nerve and by correcting the fetor of the tooth; and in many instances was promptly beneficial. In this use of it, however, care is required, so as to avoid too large a dose, and to guard the face from its local irritation.

In a great variety of *cutaneous affections*, as, for instance, *erysipelas*, *tinea capitis*, almost every grade of *chronic* and *recent tetter*, *burns*, *and scalds*, *ill-conditioned ulcers* of the *surface* and *throat*, *nævi materni*, *chilblains*, &c., it has been frequently successful. It has also been employed to arrest *profuse salivation*. As these are properly instances of the *external* use of the

creosote, we shall attend to them briefly before we speak of the *internal* administration.

Dr. Fahnestock, of Pennsylvania, has reported favorably, in the *American Journal of Medical Sciences* for July, 1848, of the use of creosote in *erysipelas*. He applied the pure, unmixed article, with a hair pencil, over the inflamed parts and a little way on the sound skin. The whole of the inflamed surface very soon became nearly white, showing a decided action. The bowels were kept free at the same time by doses of calomel and jalap. The same treatment precisely has been successful in France in the most obstinate *tinea capitis*, and I think it merits attention. The merely local treatment, however, would avail nothing, unless the general system received due regard.

Dr. Elliotson treated a case of *tetter* of seven years' standing with this medicine. He gave two drops three times a day, gradually increasiug to twenty drops, beyond which he could not go, because of giddiness and tremors of the whole frame that supervened. The patient recovered. A still more remarkable case is given by Professor Wolf, of Berlin, who had a patient laboring under *scaly tetter* for twenty-five years cured by the internal and external use of the creosote combined.

Burns and *scalds* have been very frequently treated with creosote with the happiest results. Berthollet, Riechenback, Coupil, and others, bear testimony to its value in these relations. A striking advantage claimed for it is that it always gives rise to regular cicatrices, avoiding contractions and disfigurations. The first effect is to form a crust over the burnt or scalded part; this soon separates, and generally, too, without suppuration. The *water of creosote* is commonly employed for these ends, and is made by adding three or four drops to an ounce of water, or a drop to a hundred drops of water. *Ulcers* of the skin, or *fauces, tonsils*, &c., have been greatly improved by gargles of creosote water. These not only correct the fetid emanations from the ulcers, but stimulate to more healthful action. In some old *phagedenic ulcers*, Dr. Shortt, of Edinburgh, has found an acetic solution to be more efficacious. He adds ten drops of creosote and two drachms of acetic acid to two ounces of water, and applies this to the entire surface of the ulcer, with a fine hair pencil, two or three times a day. *Chancres* were treated thus with obvious advantage.

Nævi materni, or small red tumors found at birth on various parts of the body, and particularly on the head and face, have been recently cured by the use of creosote, applied two or three times a day, sometimes diluted, and occasionally unmixed. Excoriation is speedily excited, and the absorbents are stimulated to unwonted action, so as to remove the body in a few days.

Dr. Hahn, of Stuttgart, managed *chilblains* with *creosote water* and *creosote ointment*. Equal parts of creosote and almond oil well mixed made the ointment or cerate, which was applied to the parts, after having been rubbed with a smooth cork. Once a day the creosote water was applied. A few days sufficed for cure.

The last external use to be named is for the *arrest of profuse salivation*. Merely painting the gums with creosote water has answered for this end, the astringent and styptic power being promptly manifest.

It is stated, also, by a writer in the *Philadelphia Medical Examiner*, that a gargle composed of half a drachm of creosote and a pint of sage tea promptly checks mercurial salivation when the ordinary remedies prove unavailing. It must be employed frequently through the day.

The *internal* uses of creosote are numerous, and the dose somewhat variant and dependent a little on the purity of the medicine. The average adult dose is one drop, but it may be augmented gradually to ten or even twenty with benefit. In very delicate females a half-drop may be quite enough for a first dose.

The *anti-emetic* powers of creosote are very important. We are often perplexed to know what to do with a very irritable stomach. We give this and that to no good purpose, and forget that creosote is often the very medicine for the case, although truth compels us to say that it has failed. Elliotson has lauded it very highly for the arrest of vomiting, and no doubt justly. Sometimes a half-drop will suffice, added to a tablespoonful of water; or a drop or even two drops may be necessary. If the first dose is rejected, repeat in a few minutes, and it will probably remain. If that be thrown up, wait ten minutes, and try it again. If this be retained, give another dose at the end of an hour. This will often suffice.

In the *vomiting* that attends colic and enteritis, creosote has had the effect of calming the stomach long before the cathartics exhibited were able to effect an evacuation of the bowels.

Bloody vomiting has been almost immediately checked by a half-drop, given in mucilage of gum Arabic and repeated every half hour until four doses were taken. (See *London Lancet*, May, 1841.) My son, Dr. Benjamin Rush Mitchell, of the U. S. Navy, employed creosote with success in the *yellow fever* of Salmadina Island, in the Gulf of Mexico, during the late war, chiefly to control the terribly *irritable condition of the stomach*. (See *Medical Examiner of Philadelphia*, July, 1848.)

A practitioner in the far West assured me that one of the most obstinate, unyielding cases of *diarrhœa* he ever saw was

promptly arrested by throwing into the rectum an injection of thirty drops of creosote in a few ounces of thin starch. This was a tremendous dose, and yet it spent its force no doubt on the morbid state of the intestinal mucous membrane almost exclusively.

A paper in the *Lond. Med. Gazette* for February 7, 1857, speaks in terms of decided praise of the good effects of creosote in *diarrhœa*. The adult prescription was thus:—

℞.—Creosot. one to five drops;
Spt. ammon. fifteen to sixty drops;
Aquæ, ℥i to ℥iss;

varied according to urgency of the case, adding, if the pain be severe, a tablespoonful of paregoric elixir. Rarely has it been necessary to give more than two doses. More than a hundred cases were so treated successfully by Mr. Kesterven, the reporter.

Mr. Spinks, of Warrington, reports very decided success in the treatment of *Asiatic cholera* with creosote. In one hundred and one patients treated with this medicine, the diarrhœa ceased promptly. In eighteen patients who had vomiting, rice-water discharges, cramps, and blue skin, it succeeded in all but two. The pulse became full and soft, a free perspiration breaking out over the surface and all the bad symptoms subsiding. The formula generally employed was as follows:—

℞.—Creosote, twenty-four drops;
Muc. g. Arab. ℥ss;
Spt. ammon. aromat.
Spt. camphor. āā ʒij;
Aquæ, ℥viss.

Mix. Take two large tablespoonfuls every hour. (See *Braithwaite*, part xx.)

Dr. Dick, of Glasgow, treats *gonorrhœa* and *gleet* with creosote in preference to copaiba. He administers it in two-drop doses made into pills with loaf sugar or syrup.

Professor Berndt, of Germany, and Dr. Elliotson, of London, report successful management of *diabetes mellitus* with creosote. Elliotson gave an emetic in the first instance, and then administered eight drops of creosote in pill form in the course of a day, gradually increasing to twenty-four drops. The dose was once carried to forty drops in a day. The facts are important, but we could not hope to cure the disease very often by this remedy. The styptic power of the medicine might be beneficial, but then it is needful to keep in mind the nutrition of the system, and by a proper diet to control the quality of the blood. This is often indispensable.

Mr. Whitwell, of St. Marylebone Infirmary, reports several cases of *purpura hemorrhagica* successfully treated with creosote,

and he infers thence its adaptation to scurvy. He employed it internally, and as a gargle and wash. Thus:—

℞.—Creosot. gtt. ss;
Muc. g. Arab. ℥iss;
Alcohol, q. s. to suspend the creosote.
Take this every six hours.

℞.—Creosot. ℥ss;
Aquæ, ℥xij;
Alcohol, q. s. to suspend the creosote.
To be used often as a gargle and wash.

The internal dose of creosote was gradually increased to a drop. (See *London Lancet*, February, 1843.)

Mr. Kelly, an Irish surgeon, has treated *facial neuralgia* very successfully with creosote, as we learn from the *Dublin Medical Press* for September, 1847. The lady for whom he prescribed had been afflicted for many years, and was under treatment frequently, with little or no benefit. He directed three grains of creosote to be mixed with soft bread and divided into three pills, to be taken at the interval of an hour. At the end of six hours her distress had totally ceased, and she was astonishingly relieved. On the next day an ounce of castor oil was administered, and on the day following the creosote pills as before. At the end of a year there was no return of the disease, although previously the paroxysms had been very frequent and severe.

In the *London Lancet* for December, 1842, Dr. Allnatt records his experience in the use of creosote injections in the management of *leucorrhœa*. His formula is thus:—

℞.—Creosot. gtt. xx;
Solut. potass. ℥ij;
Sacch. alb. ℥ij;
Rub together, and add aquæ, ℥viij;
Mix, and use as an injection three times a day.

In three or four days an old leucorrhœa has been arrested by this medicine.

Inhalations of creosote have been happily used in *phthisis* and *bronchitis* by Dr. Thomas Inman, of Liverpool. The mode of using the remedy is very simple. From four to ten drops of creosote are put in the bottom of an old tea-pot and a little boiling water added. The spout is to be protected by a piece of flannel, and the steam is inhaled through it until it begins to feel cool. Care must be taken not to put more than an ounce or two of water in the pot. The immediate effects are a feeling of warmth in the throat and a sensation "as if you had lungs under your ribs," followed by reduced irritability of the mucous membrane, and the greatly improved condition of the countenance.—*Med. Times and Gazette*, May, 1853.

Very few cases of poisoning by creosote have been reported, and as yet no certain antidote is known. The following case was first published in the *Liverpool Mercury* of June, 1839, and is worthy of notice. A lady aged sixty-seven, in good circumstances, had been prescribed for by her physician, who advised her usual dose, but told her not to take it unless compelled by the pain. At four o'clock next morning he was sent for, and on entering the lady's apartment heard her exclaim, "My God, I am poisoned! That man has not sent the draught you prescribed. I have felt all on fire since I took it." The lady complained of agonizing pains, and although all proper efforts were made to relieve her she died in about thirty-six hours. It appeared, on inquiry, that in place of two drachms of spirit of camphor, as directed, the apothecary had added the same quantity of creosote, and the mixture was so strong as to blister the hand of a female who incautiously came in contact with it.

As soon as possible after a large dose of this article has been swallowed it should be dislodged from the stomach by a mild emetic or by the stomach-pump. Diluents, mucilaginous drinks, and opiates should be given, and blisters applied to the epigastric region. To relieve suffocation it may be necessary to resort to artificial respiration.*

Croton Oil. *Croton Tiglium.*—The plant is a native of Ceylon and other eastern countries, and belongs to the natural order *euphorbiaceæ*, which yields the drastic spurge. The root, wood, leaves, seeds, all possess decided cathartic powers. In Batavia the root was employed centuries ago as a *hydragogue* cathartic in the treatment of *dropsy*. In some parts of the East a decoction or infusion of the wood is esteemed a panacea.

The oil was introduced into Europe in 1630 as a cathartic, and in 1632 it was exhibited in *dropsy*. A single drop of the pure oil added to a glass of Canary wine constituted a noted purgative for a long time before the medicine came to be generally known. In *Hufeland's Journal* it was proposed to form a substitute for castor oil by mixing a drop of croton oil with an ounce of almond oil.

Croton oil has been a subject of *adulteration*. Occasionally, the price of the article has been very high, and then a temptation presented for making as much as practicable out of a little,

* *Black urine*, as a sequel of the administration of creosote, has excited considerable interest in the profession recently. Dr. Hughes, in Guy's Hospital Reports, 3d series, vol. ii., has named seven undoubted instances of a brown or purplish-black color so induced. In three cases, five, twelve, and fifteen drops had been taken in a day; in another, only one drop four times a day. In one case the urine had the natural appearance when passed, but heat and nitric acid threw down a black precipitate, which, on exposure, became an indigo-blue deposit.

by the addition of castor oil and sweet oil. We can reconcile with truth the stories told of ten drops given to children with impunity only on the ground of extensive adulteration. Such a case was reported to me some years ago by a physician of the West.

Eleven hundred and four ounces of the oil were rejected by the U. S. examiner of drugs for New York, in March, 1849, being largely adulterated with fatty matters. No wonder that physicians have been so often disappointed in the external as well as the internal uses of this medicine.

The *drastic* action of croton oil is familiar to all who have employed it alone. A single drop laid on the tongue will act thus, and two or three drops rubbed on the umbilical region will purge smartly. From half a drop to a drop will purge a person who has been accustomed to it with almost no griping pain or other inconvenience. But larger doses, as two or three drops, act with violence. It is best administered made into pill with a little soft bread, the bulk being as minute as the manipulation will allow.

The *hydragogue* effect is seen chiefly when it is administered for the relief of *dropsy*, or in cases of long-continued costiveness. The dose being repeated there is an accumulation of the article, and the mucous membrane is stimulated to profuse secretion. Should it act with too great violence a drop or two of some aromatic oil should be given, and repeated if need be in a half hour. The action on the bowels has been so severe occasionally as to induce temporary blindness.

In various *nervous affections* marked by torpor, insensibility, contracted pupils, and a scarcely-perceptible pulse, croton oil is often usefully employed to rouse, by its stimulant action on the bowels, and so divert morbid action from the brain. The following formula is a good one:—

℞.—Croton oil, eight drops;
Castor oil, three ounces;
Mucilage of gum Arabic, one ounce.

Mix well, and add to a quart of gruel; to be used as an injection.

This quantity is administered in two parts, with an interval of an hour. The patient is roused by the action induced in the alimentary canal, and the result is actually due to counter-irritation. (See *Edinburgh Medical and Surgical Journal* for July, 1841.) The same kind of action has also been salutary in *tetanus*, and calls for repetition.

An *emmenagogue* power has been ascribed to croton oil by Dr. Daly, of Madras, which was evidently the effect of high irritation of the lower bowels, and the consequent excitement of the

uterine organs. There were fifteen females in an asylum, laboring under catemenial obstructions, to whom a strong infusion of the seeds of the croton tiglium was administered with complete success. Active purgation was doubtless set up, and hence the effect. The strength of the infusion is not stated.

Dr. Macgregor regards croton oil as far better than calomel for *congestion of the liver and jaundice*. He usually combined tartar emetic and opium with the oil, thus:—

℞.—Croton oil, five drops;
Opium,
Tartar emetic, each three grains.

Mix, and divide into two pills; to be given, with the interval of half an hour, in two doses.

In *jaundice* he gave six grains of tartar emetic, three grains of opium, and five drops of croton oil, made into two pills with crumb of bread. He affirms that the compound rarely nauseates or vomits, but acts as a *sedative cathartic*. (See *Medico-Chirurgical Review*, April, 1846, p. 373.)

Dr. George Fife, Physician to Queen's Hospital, and Professor of Clinical Medicine and Materia Medica in Queen's College, has furnished an interesting paper in the *London Lancet* for July, 1857, to show the efficacy of *croton oil* in *dropsy* dependent on hepatic obstructions. He employs it in drop doses, and assures us that although a *drastic*, it is not a *hydragogue* cathartic, as usually represented. He says that an ounce of Epsom salts will give rise to more watery evacuations than three drops of croton oil, and that the oil at once diminishes the quantity of fluid and exalts the power of the absorbents. He further declares that his patients took the oil with perfect impunity and with the most salutary results. Hence his conclusion that it is the most effective and the safest medicine for the kind of dropsy referred to. He has employed the remedy over thirteen years and in a very large number of cases.

In the *bilious remitting fevers* of India, Dr. Macgregor gave five drops of croton oil with three grains of opium, as a sedative cathartic. He supposed that by this means he completely emptied the overloaded gall-bladder, making the stools decidedly bilious. He says he lost but one out of three hundred patients treated in this way. He usually bled in the onset, then gave an emetic, and next the *sedative cathartic*. (See *London Lancet*, June, 1845.)

The same physician speaks well of *croton oil* in the treatment of *Asiatic cholera*. He says it has seldom failed when given very early and combined with opium. He prefers bleeding; but if

no blood can be drawn, then he gives the following draught immediately:—

℞.—Ol. croton tig. gtt. v;
Tinct. hyosciam. ʒi;
P. opii, grs. v.
Mix.

If the spasms remain and free vomiting does not succeed, the following pills are administered until the skin becomes warm and the symptoms improve:—

℞.—Opii, grs. iij;
Ol. croton, gtt. v.
Mix. To make a pill.

Nine grains of opium and fifteen drops of the oil, in repeated doses, will produce the desired effect generally, though sometimes double the quantity was requisite. To prevent a relapse, sulphate of quinine was given.—*Quarterly Medical and Surgical Journal.*

Dr. Tegart employed large doses of croton oil in the *remitting fevers* of the West Indies about twenty years ago, as we learn from the *Medico-Chirurgical Review* for April, 1846. Very large doses have also been employed successfully in the treatment of *dysentery*, in which it is said to have acted by unloading the congested gall-bladder and pouring bile copiously into the bowels.—*Medico-Chirurgical Review*, Oct. 1845.

The treatment of *sciatica* or *sciatic neuralgia* with croton oil, internally administered, is practically illustrated in the detail of cases successfully managed by Henry Hancok, Esq., as we read in the *London Lancet* for March 4, 1854. Mr. Hancok supposed the disease depended on mechanical irritation of the nerves within the pelvis, induced by a loaded colon or cœcum. To meet this state of things the following prescription was made for a lady who had labored under the disease almost two years:—

℞.—Ol. croton, one drop;
Pill mass. hydr.
Ext. hyosciam. āā grs. iv;
Ext. colocyn. c. grs. viij.
Misce et divide in pill iv. Take two at bedtime.

The lady had been taking morphia freely, but was instructed to lay it aside gradually, and also to abstain from solid food. After the action and effects of the dose had subsided, three grains of sulphate of quinine were ordered to be taken every four hours. Recovery took place rapidly. Several other cases are given, treated in like manner with like result.—*Braithwaite*, part xxix. p. 72.

The *external* uses have had reference mainly to high counter-

irritation, pustulation, &c. Sometimes the oil alone has been resorted to for this object, but more frequently a mixture has been employed consisting of an ounce of sweet oil, two drachms of croton oil, and two scruples of tartar emetic. A single friction of either the simple oil or the mixture named will sometimes be sufficient. But a good deal will depend on individual cutaneous sensibility; and if a single application should fail, let it be repeated until the result is obtained. After friction, a flannel moistened with the oil should be left on the part. At first mere warmth is excited, then obvious redness and great heat follow in from three to twenty hours, with almost innumerable vesicles, which soon maturate and leave small ulcers. If the application be made to a spot recently blistered, pustulation is more speedily effected and it is more abundant. It is needful to guard the eyes in operations of this kind, as contact there would be very injurious.

Dr. Ainslie, in his work on the diseases of India, says that croton oil was thus employed there in 1813, in *rheumatic affections*. In 1831 Andral praised it highly for the same end, and it has since that time become a favorite external mode of treatment. Andral usually wet a dossil of lint with the oil and rubbed this on the part smartly for a few minutes. *Local palsy*, *painful affections of the throat*, *chronic bronchitis*, and *phthisis pulmonalis* have been treated in the same way. In short, in all cases where it is desirable to establish counter-irritation and thus to relieve internal diseases, the croton oil mixture named above will be attended with the best results.

The *Journal de Chimie Médicale* for 1839 has the case of a man, aged twenty-five, poisoned by croton oil, of which he swallowed two drachms and a half by mistake. The patient had been ill for some time of typhoid fever, and the croton oil had been ordered as an external application to the abdomen, to be rubbed on the surface by smart friction. The physician who saw him (three-quarters of an hour after the accident) found him in an alarming condition. The skin was cold and covered with a cold sweat. The pulse was so low as to be nearly imperceptible, and respiration quite laborious. The extremities of the fingers, as well as the lips, had the blue or livid hue of the collapsed stage of cholera. The tongue was cold to the touch, the pupils fixed, but not greatly dilated. The abdomen was exceedingly tender. At the end of an hour and a half the alvine evacuations were excessive and involuntary. The whole course of the œsophagus, as well as the stomach, experienced a sensation of burning. The coldness of the surface increased, the respiration and circulation grew more alarming, and the blue color pervaded the whole body.

At length the skin became wholly insensible, and death closed the scene.

Dissection revealed no lesion of the mucous membrane of the stomach excepting a little softening. In the course of the digestive tube numerous ulcerations were seen, such as are said to be characteristic of typhoid fever.

The treatment consisted in unavailing efforts to induce vomiting, as the stomach was no doubt somewhat paralyzed. Warm water and emetic solutions were freely given, but they did not dislodge the oil, which, no doubt, had passed into the upper bowels.

The late Professor Richardson, of Kentucky, informed me that he knew a child to whom ten drops of croton oil were given by mistake, in one dose, without serious results. It was supposed that the oil was adulterated.

The fatal effects above detailed, as the result of swallowing two and a half drachms, were obviously such as are common to narcotic poisons, though it should be classed rather among the narcotico-acrid poisons.

In a case of actual poisoning by croton oil, the chief reliance should be on counter-irritants, aided by suitable means to control the hypercatharsis and sustain the vital energies.

CUBEBS. *Piper Cubeba. Java Pepper.*—It is obtained from the Indian Archipelago and the Isle of France. It was employed in medical practice two hundred years ago, fell into disuse, and was revived as a remedy for *gonorrhœa*, *gleet*, &c.

This article has a fragrant, agreeable odor, a pungent aromatic taste, with a little bitterness, and leaves on the palate a sensation like that given by peppermint. It contains a volatile oil the loss of which by bad keeping or in process of time renders cubebs inert. This loss is more rapid when the medicine is kept in powder, as the oil escapes constantly, adhering to the sides of the vessel.

The resemblance between cubebs and common black-pepper is striking. The large, heavy, plump, and most fragrant berries are the best, and should be selected. They may be kept in a tight vessel a long while, and should be pulverized or ground as occasion may require.

Powdered cubebs, when in the stomach, act primarily on the nerves of that organ and increase its sympathetic energies, and through this medium the action of the heart and arteries is increased. The active principle is carried into the circulation, and finally impresses the kidneys, and the peculiar odor of the medicine is imparted to the urine. Not unfrequently doses of one or two drachms of the powder act smartly on the mucous membrane of the bowels, causing nausea and diarrhœa, with some febrile

excitement. If no cathartic effect ensues, the febrile heat is evidently increased, the palms of the hands and soles of the feet burn, the face is flushed, and there is headache. All these effects prove the stimulant character of cubebs, and all are often relieved by a free perspiration, which acts like a safety valve to the whole system.

A popular use has long obtained in respect of cubebs that is frequently salutary and safe. I refer to its *expectorant* quality, as resulting from the swallowing of eight or ten of the berries by a person laboring under an ordinary cold. The difficulty of expectoration is often lessened, and the skin coated with moisture, by this simple expedient.

From time immemorial, almost, *gonorrhœa* and *gleets* and various *urinary derangements* have been managed with cubebs. The Hindoo physicians were devoted to this practice, which cannot be safe when there is high inflammation, or febrile excitement is great.

Leucorrhœa has been managed with this medicine, given in powder or in the shape of the oil of cubebs. The ordinary dose of the powder being from a scruple to thirty grains, three times a day, in milk; of the oil, from five to fifteen drops make a dose. Besides the administration by the mouth, injections have also been employed at the same time. So also injections of the oil or powder have been successfully resorted to in the treatment of *gonorrhœa* by Velpeau and other French practitioners. Piorry reports success in the use of injections in *inflammation of the vagina*. He added an ounce of finely-powdered cubebs to a pint of water, and had that quantity thrown up the vagina six times a day. He says he has also given forty-five grains per hour of the powder in treating the same disease. We must add that the practice is not very consistent with our notions of inflammation, but we give it as we find it. (See *Edinburgh Medical and Surgical Journal*, Oct. 1842.)

Cuprum. *Copper.*—The filings of copper were formerly employed, in the treatment of *rheumatism*, in teaspoonful doses, a clear proof that the pure metal was not regarded as at all poisonous. Coins of copper have remained for months in the œsophagus, stomach, and bowels, without doing serious mischief. The metal must be oxidated before it can do harm; and yet a writer in *Ranking's Abstract*, vol. i. p. 2, declares that copper colic has been induced in the workmen in copper. They presented all the ordinary symptoms of severe colic from lead. Albuminous and mucilaginons drinks, with saline cathartics, gave relief.

M. Chevallier has detected copper in the hair of workmen in that metal. It was not deposited on the hair, but actually within the substance itself. The hair, acted on by acetic or nitric acid, gave an acetate or nitrate. It is not said, however,

that any poisonous consequences ensued. (See *London Lancet*, June, 1850.)

The first preparation to be noticed is the *acetate* of copper, sometimes called *subacetate*, *diacetate*, *verdigris*, &c. &c. The *pure* or *prepared* verdigris is made from the crude article, which is formed by exposure of sheet-copper to the action of acetous fumes evolved in the process of wine-making. The refuse of the grapes placed in heaps runs into the acetous fermentation, whereby the copper sheets are oxidized. The oxide so formed joins the acid, and hence the product of the salt. This is subsequently purified and prepared for sale. It contains two equivalents of peroxide of copper to one equivalent of acetic acid, with six of water. The verdigris thus made is a very poisonous salt. A very interesting case of poisoning is reported in the *American Journal of Medical Sciences*, vol. v. p. 269, in which sugared water and the whites of eggs were successfully administered. They are the best antidotes.

This salt is sometimes employed in small quantities to color articles of *confectionery*, and although the portion so swallowed be trifling, it may exert a bad influence. The same salt is sometimes formed in preparing cucumbers for the state of *pickles*, by boiling with vinegar in copper vessels, and a good deal of gastric disease has hence resulted. Whenever the salt finds its way into food in considerable quantities it may set up acute inflammation of the stomach and bowels, or a low form of inflammation, which, becoming chronic, may end in *dyspepsia*. (See *London Lancet*, July, 1846.

Very many sad consequences have resulted from eating food which had been dressed in copper vessels not well cleaned from the oxide of copper formed on the surface. M. Thiery, who wrote a thesis on the noxious quality of copper, observes "that our food is poisoned in the kitchen by the use of copper pans and dishes. The brewer mingles poison in our beer by boiling it in copper vessels. The sugar baker employs copper pans; the pastry cook bakes his tarts in copper moulds; the confectioner uses copper vessels; our pickles are boiled in copper or brass vessels, which are allowed to stand until cold, so that verdigris is plentifully formed by the action of the vinegar on the metal."

Even our soda water is often made in old fountains in which the copper is no longer protected by the original tin coating within, so that the beverage is strongly marked with the copper taste; and if we pass a stream of sulphureted hydrogen gas into a glass of it, a brownish color is struck at once. The fountains of glass and porcelain, now in use, are certainly a valuable improvement, whose tendency will be, as I doubt not, very much to lessen the gastric discomfort of many persons.

Johnson, in his *Essay on Poison*, gives the detail of a sad catastrophe of three men killed, after excruciating sufferings, in consequence of eating food cooked in an uncleaned copper vessel on board the Cyclops frigate; and besides these, thirty-three men were ill from the same cause.

The poisoning of pickles is not always the result of accident. Thousands of jars are sold at high prices on account of the fine lively green color of the pickles, and which is effected by boiling copper coin with the vinegar. The taste is concealed by reason of various condiments present which go to neutralize the metallic taste of the copper. In the fourth volume of *London Medical Transactions* is a case of a young lady who amused herself, while some one was dressing her hair, with eating freely from a jar of pickles prepared in this way. She soon complained of pains in the stomach, and vomiting came on and continued almost incessantly for two days. After this her stomach was greatly distended, and on the ninth day death closed the scene.

If the process of curing pickles in a copper or brass vessel be conducted rapidly and the contents be emptied immediately while hot, and especially if a large silver ladle be employed in the process, the pickles may escape the copper impregnation. It is the easiest thing in the world, however, to detect the copper, if it be there. Pour a little of the fluid matter into a wineglass and add a few drops of liquid ammonia, which will strike a deep blue if copper be in solution.

The *Gazette Médicale* of November 26, 1842, gives the case of a man who was killed by verdigris. Masses of the article were found in the œsophagus, so as to induce the belief that he had taken a very large quantity. There was no evidence that vomiting had been occasioned by the poison to any considerable degree, and it is inferred that death ensued from the violent narcotic influence of an excessive dose. There was a total absence of purgation. The stomach indicated congestion rather than inflammation.

The *American Journal of Medical Sciences* for October, 1842, has a notice of three workmen who died at Lyons from eating peas boiled in a copper vessel. M. D'Arcet, however, mentions the exemption from injury of some Cossacks who cooked in vessels lined with verdigris. He thought the animal matters neutralized the poison.

The *New York Medical Gazette* of 1842 speaks of nine persons of a family in Oldtown, Maryland, who were taken violently sick after eating *hominy* boiled in a copper vessel in which it remained all night; they were relieved by the early application of remedies. A cat which had eaten of it was affected in a similar manner.

The subjoined account of the poisonous action of the acetate of copper will be satisfactory to those who are not familiar with such matters, and they may serve as guides. They present the usual developments as seen in cases that terminate favorably, and are therefore the more important.

The first case is given by Orfila, in his *General Toxicology*.

"A journeyman jeweler swallowed at once a half-ounce of verdigris (acetate of copper) suspended in water. In fifteen minutes he was seized with colic pains and profuse vomiting and purging. In eight hours after, a physician saw him; and then there was not much vomiting, but constant belching of a matter containing verdigris; he was slightly salivated; pulse small, and had a blue tinge round his eyes. In sixteen hours jaundice began to appear. Three alvine discharges in the course of the night relieved his colic pains, and the next morning he ceased to vomit and the pain vanished. Still he complained of a copper taste, and the jaundice had increased. From this time he recovered rapidly, and on the fourth day convalescence was confirmed." It is to be regretted that the treatment is not given.

The next case, taken from the *Revue Médicale* for 1829, presents a picture somewhat different. "A lace-worker, twenty-six years old, of melancholic temperament, and who had before attempted to kill himself with *water hemlock*, (*cicuta virosa*,) put eight copper pieces into a glass of strong vinegar and left them there for seven days, (very deliberate business to be sure.) At two o'clock in the afternoon, having made a good dinner, he drank first one-half, and in fifteen minutes after the remainder of his dose. Not satisfied with this, he washed the coins in more vinegar, brandy, and aniseed-water, and swallowed the whole. Three hours afterward he was found insensible. The muscles were violently contracted; the limbs, in the intervals of the convulsions, were stiff; the teeth set; breathing interrupted; pulse small, hard, and very slow, and the pit of the stomach tender on pressure. With difficulty he was made to swallow some hot water, but he did not vomit. In half an hour he recovered his senses, and told what he had done. The white of eggs was given in large quantities, after which the convulsions ceased rapidly; but he continued to hiccough till two o'clock in the morning. Next day the pulse was full, slow, and intermitting; the belly drawn in, hard, and very painful on pressure; skin pale; convulsions partial and transient. Leeches were directed to the abdomen, followed by poultices. The white of eggs still given freely; the warm-bath used, and opiate injections administered. In the evening he had colic, dyspnœa, great agitation, hiccough, and a hard, contracted pulse. Leeches repeated. The urine scanty and scorching. Passed a poor night, but was

easier next morning. The abdomen no longer tender; the pulse soft, and urine free. In fourteen days after admission he was discharged cured."

The following interesting details, furnished in the *London Lancet* for 1846, by Surgeon Moore, of the British army in India, will be duly appreciated by all students of toxicology.

"The form of disease which was most prevalent among the coolies returning from British Guiana to Calcutta, at the expiration of their contracts of service, may be described as acute inflammation of the mucous membrane of the stomach and alimentary canal, which in its symptoms, course, and termination, presented many of the characteristic features of acute idiopathic dysentery.

"The cause of the outbreak of this particular form of disease, at the commencement of the voyage, was attributed at first to change of diet, change of climate, and to the noxious qualities of the Creek water, the vegetable and animal matters contained in which were at this time undergoing the process of putrefaction.

"Although every precaution was taken to counteract the ill effects of these predisposing causes, the complaint did not seem to abate. For several successive days numerous cases of suffering from the same type of disease were brought aft for my inspection by the sirdars. Perplexed as to the real cause of the disease, then so rife on board, I was descending the middle hatchway ladder to pay the morning visit to the patients in the hospital part of the ship when I was stopped by two or three coolies carrying plates loaded with cold rice and a quantity of ghee. In reply to my questions by what means they had obtained it, it appeared that this rice had been cooked one or two days previously, and was laid aside by them as a reserve store, to eat in the middle of the night or early in the morning, before the rations were served out. When thrown overboard I examined the copper plates, which are invariably used by the natives of India, and found the surface coated with a green composition, evidently one of the salts of copper.

"To neglect and slovenliness on the part of these return coolie laborers in cleaning their copper and brass utensils, was distinctly traced the immediate cause of the disease.

"This greenish composition or verdigris, when not visible on the surface, we seldom failed to detect under the rims of their lothas and thalies in quantities sufficient to be scraped off with the edge of a penknife, and afterward proved by tests to be the acetate and muriate of copper.

"This poisonous substance intermixing with their rice, fish, ghee, and pea-soup, produced in the greater number of cases a train of symptoms almost similar, and corresponding in general

with the annexed abstract which I have copied from the *Medical Register*, in which all the particulars were entered at the time of occurrence.

"In the evening, or on the following morning, a few hours after having eaten a meal of rice and dholl, they came complaining of violent pains and cramps in the stomach and lower bowels, constant vomiting of greenish and yellowish-green bile. When this was not ejected from the stomach their sufferings from dry retching proved more severe, and the feeling of constriction in the lower part of the chest and along the course of the œsophagus more distressing. Every twenty minutes or half hour they were necessitated to go to the chains and endeavor to evacuate the bowels; but in the attempt no feculent matter was discharged: blood in small quantities, slimy mucus stools tinged with blood, shreds of lymph, and frothy ashen-colored secretions were passed from the rectum without affording to the patients the slightest relief.

"The griping pains in the loins and sacrum, at the navel and in the iliac region, the tenesmus, and the burning sensation they invariably experienced about the rectum and close to the sphincter ani, they have all described as producing exquisite torture; pressure made over the different regions of the abdomen, in the epigastrium, and over the transit of the arch of the colon, usually caused a pungent pain.

"In the commencement of the attack the symptoms were those of acute fever, pungent heat of the skin, headache, urgent thirst, loss of appetite, prostration of strength, furred and clammy tongue, foul taste in the mouth, rapid, small, and wiry pulse, varying from one hundred and twenty to one hundred and forty beats per minute.

"In those cases where the form of attack was more rapid, more aggravated, more formidable in its symptoms and progress, (from the quantity of verdigris mixed with the food and taken into the stomach having been in greater proportion,) the depression of the vital powers was more marked; the features of the patient were distorted; his whole frame seemed to writhe under the pain; the pulse was so rapid and at the same time so weak as scarcely to be felt; the skin became cold; the extremities benumbed; the secretion of urine in a few cases was suppressed, in others it was retained in the bladder. The treatment which proved most efficacious in arresting the progress of these symptoms and removing the disease consisted in administering immediately an emetic of twenty grains of ipecacuanha and one grain of tartar emetic, and ordering the patient to drink copiously of barley or congee water. In six or eight hours afterward, ten, twelve, or fifteen ounces of blood were taken away by venesec-

tion, according as the strength of the patient and the state of the pulse indicated. In the evening another emetic of ipecacuanha alone was given, and when practicable the patient was placed in a bath of warm salt water; but whenever this was rendered impossible, from the rolling and lurching of the vessel in heavy, squally weather, blood was abstracted from the epigastric and infra-umbilical regions by means of cupping, and warm stupes were afterward applied for several hours to the abdomen. Castor oil in large doses, repeated according to circumstances, proved the safest and most efficacious purgative in carrying off the feculent matter lodged in the intestines.

"Under this mode of treatment, with few exceptions, the violent character of the original symptoms has been subdued; the acuteness of the fever has been checked in the very onset; the pulse has become fuller, less wiry, less frequent; the torturing pains in the abdomen have been partially, in some cases completely, removed; the incessant discharges of slimy, bloody mucus from the intestinal canal have in a great measure been checked.

"So far the treatment pursued in this the first or acute stage of the disease has proved singularly successful; but in almost all the cases which have come under my observation the mucus discharges from the intestinal canal have continued frequent, generally six or eight motions in the twenty-four hours, accompanied by tenesmus. In this subacute form of inflammation of the mucous membrane, our chief reliance in the treatment was placed upon opium and its different preparations, combining forty drops of the tincture with fifteen grains of rhubarb, or half a drachm of Gregory's powder; quarter-grain doses of the opium in powder, combined with two grains of ipecacuanha and three grains of blue-pill, given every second hour. After each pill an ounce of chalk-mixture was ordered.

"In addition to these internal remedies much benefit was derived from the application of small mustard cataplasms or blisters to those parts of the abdomen where the greater amount of pain on pressure was seated. The diet in each case was restricted to arrow-root; rice, dholl, ghee, salt fish, articles of daily food, were strictly prohibited; and when the condition of the patient admitted, port wine mixed with the arrow-root was at once prescribed.

"In the majority of cases the acuteness of the symptoms once removed, a favorable termination of the case has taken place in five or six days; the convalescence of the patient has been established satisfactorily on the eighth or tenth day. In others, whose constitutions have received a more severe shock, recovery has been more protracted; while in a third class the disease,

slow in yielding to the influence of medicine and resisting those remedial measures which proved successful in the two former classes, has ultimately assumed all the characters of chronic dysentery.

"On the 20th of June, 1843, when we crossed the equator in west longitude 23′ 45″, seven weeks' sail by the day from Demerara, the sirdar ran to the cabin to inform me that one of the stoutest coolies on board was seized with violent cramps in the stomach, cramps in the limbs, frequent vomiting and purging of blood. He was so ill that he did not think he could live half an hour. He had been slightly ill in the course of the day from gnawing pains in the stomach, but made no complaint until the frequency of the purging attracted the attention of his relatives.

"His sufferings from pains in the stomach, in the intestines, and at the anus, were excruciating; his features were distorted; pulse small, frequent, wiry; thirst urgent; constriction of throat and chest distressing; in fact, the symptoms presented in this case were the same as those already recorded, but in their most aggravated form.

"Conjecturing, from the suddenness of the attack, from the general features of the complaint, and from a corresponding train of symptoms observed in parallel cases at a previous time, I did not hesitate to express to my worthy friend, the captain of the vessel, an opinion as to the probable cause; and immediately commenced an inspection of his brass and copper utensils. On the internal surface there still remained a coating of verdigris sufficient in quantity to indicate the immediate cause of the attack, and more than sufficient, if mixed with food, to produce a similar train of symptoms in many other cases.

"The same line of treatment so strikingly successful in former cases was pursued in this, but not attended with the same good results. The treatment advised by those who have written on the subject was next resorted to, but without avail; the relief afforded was merely temporary; the disease was beyond the reach of medical skill; the case ran its course rapidly, and terminated fatally.

"In the post-mortem examination we found on the internal surface of the stomach, from the cardiac to the pyloric extremity, and for a short distance on the internal surface of the œsophagus near its termination in the stomach, extensive and deep-seated inflammation of the mucous membrane and subjacent tissues; the shades of red varied in different parts from a bright vermillion or a bright scarlet to a deep-red or violet color. The patches of dark red approaching to a brownish color were comparatively small and circumscribed, situated in general beneath the mucous membrane of the under surface of the stomach. The mucous

membrane corresponding to these patches was soft, tumid, pulpy, but not excoriated, and free from the appearance of having sloughed. At the pylorus the membrane was intensely inflamed, glistening, and tumid, from a quantity of serous fluid exuded beneath the submucous cellular tissue.

"In the duodenum there existed the pathological appearances of a high state of inflammatory action; throughout the small intestines also we found decided traces of inflammatory action in the mucous membrane, although scattered irregularly over the surface. The mucous membrane of the large intestine presented, in like manner, an appearance of vascularity; in the rectum, also, the inflammatory action had commenced, but was limited in extent.

"Within the peritoneal sac somewhat more than eight ounces of saffron-colored fluid were found: the peritoneal coat of the small intestines (the jejunum and ileum) was numerously studded with minute circular dots or specs of a bright scarlet-red color. On the upper surface of the arch of the colon, in its ascending and descending divisions, these inflammatory spots were extensively, but less numerously, scattered. Between the peritoneal and muscular coats of the stomach, an irregularly-shaped patch of effused blood was noticed; and on the lateral and inferior surfaces of the same viscus, vascularity of the peritoneal coat, and sub-peritoneal exudations of blood and lymph were traced to a short distance. The folds of the intestine were not agglutinated together by lymph, nor were there any traces of it in the peritoneal sac.

"We need not a more demonstrative proof of the deleterious, poisonous, fatal effects produced by the intermixture of verdigris with the food, and its introduction into the stomach, than the case under consideration. The symptoms indicated poisoning; the inspection of the copper vessels confirmed us in the opinion expressed;—the post-mortem examination cleared away from our minds any doubt which may have existed.

"In England, these cases are not often met with; the servants are careful, cleanly, and in general very particular in using copper vessels. Not so in India. In Calcutta, in particular, I have met with cases among Europeans which in their symptoms bore so striking a similarity to those already mentioned that little doubt has remained on my mind that the attack had originated in the intermixture of verdigris with their food and its introduction into the stomach.

"The Bengalee baboorchees, khansamahs, khitmudgars, and musalchees, to whom almost every thing connected with the kitchen is intrusted, are not at all times very particular in cooking the Sahib's khanaw in bright, unstained copper vessels. I

have little doubt that if more attention were paid by the inhabitants of Calcutta to the carelessness of their servants in this respect, and if the kitchen utensils were more frequently inspected by some trustworthy servant in the establishment, we should hear of fewer instances of several members of the same family being attacked on the same evening or in the same night with violent symptoms resembling those of cholera or acute dysentery: fewer families (in consequence of a little precaution against such occurrences) would be placed in mourning, from some one member having fallen a victim to it."

We cannot doubt that many very violent attacks of bowel disease in this country are occasioned by similar neglect to that detailed above. It is important for medical men to be aware of the facts in this relation. Hitherto the subject has been sadly neglected.

In addition to the antidotes named above, it may be added that the salts of copper are decomposable by zinc and copper-filings in the dose of from a half-drachm to two drachms, followed by the free use of warm water.

Acetate of copper is *escharotic*. The salt should be heated so as to expel all its water of crystallization. An efflorescent mass is thus obtained, of which a drachm must be rubbed with an ounce of simple cerate, for use. It is a good stimulant to indolent ulcers.

Ammoniuret of Copper. Ammoniated Copper. Sulphate of Copper and Ammonia.—Either of these names will answer for an old remedy that is yet employed by some practitioners in *chorea* and other diseases of the nervous system. It can be readily made by triturating two parts of sulphate of copper with three of carbonate of ammonia in a glass mortar until the salts become quite moist or semi-fluid. The mixture has a rich blue color and a strong ammoniacal odor, to retain which the process of drying must be carried on carefully by a very gentle heat. The product is to be placed in well-stopped bottles. The effect of the action of the salts on each other is to expel the carbonic acid from the volatile salt and to form sulphate of copper and ammonia. The taste is very styptic and metallic. A scruple dissolves in one ounce of water. The dose is one-eighth of a grain to one grain three times a day, in pill made with crumb of bread, or soft vegetable bitter extract.

Sulphate of Copper. Blue Vitriol. Blue Copperas. Blue Stone. Bisulphate of Copper.—It contains two equivalents of sulphuric acid to one of peroxide of copper. It is largely made from the native sulphuret by the conjoined agency of heat and exposure to the air. It is found abundantly as a native product also. It is soluble in water pretty readily, and the solution has

a harsh, acrid, and styptic taste. The crystals are slightly efflorescent, and are not acted on by sulphuric acid, even with the agency of heat. This is not so with the acetate, and we are thus able to distinguish these salts, should there be doubt.

The medicinal uses are various, being employed as an *emetic*, *tonic*, *astringent*, and *escharotic*. It is called a *prompt* emetic, because of its quick action and consequent fitness for the dislodgement of poisons from the stomach. For this object a half or whole drachm is dissolved in six ounces of warm water, and a third of the solution administered every ten or fifteen minutes till free vomiting ensues. But the emetic power is available also in smaller doses in the management of *croup*. Dr. Serlo, an Italian physician, speaks in high praise of this remedy in what was plainly that variety called *inflammatory* or *membranous* croup. He had treated a little girl with leeches, calomel, tartar emetic, and blisters, but the disease would not yield. He thought of Hoffman's method of using sulphate of copper, and gave the child four grains dissolved in a little water. In five minutes vomiting came on, followed by the expulsion of pieces and shreds of false membrane, after which all the bad symptoms quickly subsided. Subsequently, forty cases of decidedly inflammatory croup were treated with the same medicine, in conjunction with the usual antiphlogistic measures, and all recovered but four, who were in a hopeless state before they were seen by the doctor. The same gentleman gave the sulphate in what he calls *laryngo-tracheitis* of infants, a disease closely resembling croup, and which I suppose to be substantially the same thing. Three grains of the salt were mixed with six of white sugar and administered in one dose, with effective vomiting as the result. After this, quarter-grain doses with five grains of sugar were given every two hours, to keep up a nauseant and sedative action. Those who desire further information may consult the *American Journal of Medical Sciences*, vol. xvii.

As an *astringent*, Dr. Elliotson gave the sulphate in *diarrhœa* of an obstinate kind, occurring in St. Thomas's Hospital, and he found it decidedly superior to all other astringents. It is quite probable that the tonic powers of the salt had something to do in the premises. The dose was from one and a half to three grains three times a day, for adults, as a thing of course. It is best given in pill made with extract of quassia. In obstinate cases of *diarrhœa* in private practice I have combined the sulphate of copper with the sulphate of morphia. The disease is frequently attended with painful sensations that require an anodyne. Two grains of the copper salt with a sixth of a grain of the salt of morphia may be given twice or thrice a day. As a *tonic*, blue vitriol has long been employed alone, or in com-

bination with sulphate of quinine and other articles. In *intermittents* in very feeble persons this combination of tonic and anti-periodic medicine is often valuable. In *epilepsy* and other chronic nervous diseases the long-continued use of small doses of the sulphate of copper is sometimes salutary. In addition to a tonic agency an alterative action is in operation, and both together bring the result. The dose is an eighth of a grain, which may be gradually increased, the dose being taken three times a day. This small dose, with half a grain of sulphate of quinine, gradually increased, has been signally beneficial in *chorea* attended with great debility.

The *counter-irritant* action of this salt is sometimes useful in the treatment of *subacute ophthalmia*. Four grains added to six ounces of rose-water, or infusion of slippery elm, make an excellent *collyrium*, to be used frequently through the day.

The *London Lancet* for July, 1846, states that Mr. Lloyd was in the practice of curing *itch* effectually by a lotion made of an ounce of sulphate of copper and a pint of water. He applied this freely after washing the surface thoroughly with warm water or soapsuds. He seldom knew the lotion to fail.

The *escharotic* property of *blue stone* is familiar to all. The common people use it to "keep down proud flesh," as they say. The same result, substantially, is sought by practitioners, as in *ulcerated sore throat*, for which five grains of the salt in fine powder, mixed with an ounce and a half of syrup of squills, is a good application. A teaspoonful or two is taken into the mouth, and then a tablespoonful of water, and the mixture is freely gargled. If a portion should pass down the throat it will be all the better. The escharotic action is slight, yet often useful. *Cancrum oris*, *gangrenous ulceration* of the mouth of young children, has been well managed by the use of this salt. The disease occurs in hospitals for children, and is often quite fatal. It was so in the *Children's Asylum* in Philadelphia, in 1826, where it occurred as an epidemic. Dr. Coates gives a good account of it in the *North American Medical and Surgical Journal*, vol. ii., where the following successful formula is recorded:—

Take of sulphate of copper, two drachms;
Powder of cinchona, a half ounce;
Water, four ounces.

Mix, and apply twice a day to all the ulcerations and excoriations.

The remedy was furnished, it is said, by an old lady.

Injections of sulphate of copper are sometimes very useful in *leucorrhœa*. From ten to thirty grains may be dissolved in five ounces of water, and a third be thrown up the vagina at bed-time.

The following preparation of copper is given as a new form of lotion in *purulent ophthalmia*:—

℞.—Cupri sulph grs. ij;
Vini opii, ʒi;
Aquæ dist. ʒvij

ℳ.—Fiat lot. Apply freely, with a soft camel's-hair brush, three times a day.

This has answered well in some cases that have resisted the nitrate of silver.—*Assoc. Med. Journ.*, Sept. 27, 1856.

In Dr. Blair's book on the yellow fever of British Guiana, page 146, it is stated that the following prescription is decidedly *prophylactic* in respect of a periodical inflammatory fever sometimes met with in Demerara. It is necessary to continue it some three or four months:—

℞.—Sulph. cupri, gr. i;
Antim. tart. gr. ⅛.

Made into a pill with a little conserve of roses. To be taken twice a day. It usually nauseates till after the first week.

The *incompatibles* of this salt are the alkalies, the alkaline carbonates, borax, acetate of ammonia, tartrate of potash, muriate of lime, acetate of lead, corrosive sublimate, all astringent vegetable infusions and tinctures.

We have seen that copper is poisonous by becoming oxidated and changed into a salt. The sulphate is poisonous, though less violently so than the acetate. Bakers add it to dough to whiten bread. Thirteen persons were tried at Brussels for this offence, and fined and imprisoned. They called it *blue alum*, and pretended to be ignorant of its true quality. The dose thus administered is small, but the daily use is finally deleterious.

The *poisonous* action is more apparent when large quantities are swallowed by mistake. Severe vomiting, gastric pains, colic, tenesmus, bloody discharges, vertigo, cramps, convulsions, ensue. The stomach must be emptied and the whites of eggs freely given in sugared water. The salt is thus decomposed and the oxide thrown down. Zinc filings are also employed, as before stated. Bleeding, general and local, may be necessary, to subdue high arterial action and gastric inflammation. Mucilaginous drinks, after the salt is decomposed, will be useful.

Cusparіæ Cortex. *Angustura Bark.*—This article was formerly very much in use. It is tonic, stimulant, and aromatic, in doses of from five to twenty grains.

This bark yields its properties to water and to proof spirit. Its properties depend on the presence of gum, resin, volatile oil, and a peculiar bitter principle. The bitter principle has been called *angusturin* or *cusparin*.

The angustura bark is not likely to be adulterated nor confounded with other barks. The transverse section of the bark touched with nitric acid becomes very red, in consequence of the presence of brucia, and the rusty spots on the epidermis are made of a dark green by the same acid.

DAPHNE MEZEREON. This is the only species of mezereon in use in this country. The plant is very acrid; the berries have the same property, and are decidedly poisonous. The bark of the root (*cortex radicis mezerei*) is officinal, and enters the compound sarsaparilla decoction. A very volatile oil and resin gives it the acrid quality. The bark, steeped in vinegar, is vesicating. It is also stimulant and diaphoretic. In cutaneous diseases it is probably entitled to some regard, but in syphilis it is worthless.

The decoction is made by adding an ounce to a pint of water and boiling a few minutes. Of this four or five tablespoonfuls may be taken three times a day. In overdoses this decoction is poisonous, from which it is to be inferred that the mezereon is possessed of considerable medicinal power. The poison is to be met by diluents and dilute acids, after properly emptying the stomach.

DATURA STRAMONIUM. *Thorn Apple. Jamestown Weed*, &c. &c.—This is a native of the United States, but found in nearly all countries. It is an exceedingly troublesome weed to farmers, and is very offensive when handled. But it is so universally known that I need not waste time with a description. Every part of the plant has a strong, disagreeable odor, a bitter and nauseous taste. When chewed it tinges the saliva of a deep green, and few animals will even taste it. It is an active *narcotic poison*, and this quality resides in every portion of the plant. It sets up vertigo, delirium, torpor, loss of memory, excessive thirst, paralysis of the limbs, dilatation of pupil, &c., and if relief be not soon had the issue may be fatal. Professor Barton tells of two British soldiers who ate of the plant by mistake, one of whom became furious and ran about as if he was mad; the other died with symptoms of tetanus.

In *Barton's Medical and Physical Journal*, vol. i., it is asserted "That the inhabitants of Vincennes, Indiana, had this plant cut down and destroyed, alleging that its effluvia generated remitting fevers, which were not known there until the stramonium had been introduced into the neighborhood."

Not only the flowers, but the leaves, seeds, stalk, root, and every part of the plant are poisonous. The energy of the poison is said to reside in a peculiar principle called *daturia*.

During the American war, poisoning occurred from the use of the leaves for greens. Some who partook of these became furious, and ran about like madmen. Others were seized with

tetanic spasms, and died. The *Boston Medical and Surgical Journal* for 1836 has the case of a family poisoned in a similar way, only by design. A wretch who had a grudge against the family put a quantity of the leaves into a pot in which some salt beef was boiling. The greens were eaten, of course, as part of the meal. A physician was called in about an hour after dinner, when the countenances had a wild, idiotic look; the pupils were greatly dilated; the sensorial functions perverted; the muscular system jerked as in chorea. The children were laughing, singing, and dancing.

An emetic of sulphate of zinc with ipecacuanha brought away a large quantity of the stramonium, after which camphor, carbonate of ammonia, and a warm aromatic infusion, caused the narcotic symptoms to subside.

Cases are recorded in all our journals of the poisonous effects of the seeds, which children are apt to eat, not knowing their deleterious quality. These occasionally operate in the manner just spoken of in reference to the boiled leaves; but sometimes they induce convulsions, locked jaw, and insensibility, that continue till death closes the scene.

All the unpleasant symptoms of poisoning by stramonium may be relieved by the timely evacuation of the stomach in most cases. Notwithstanding the activity of the seeds, Lyell asserts, in his *Geology*, vol. iii. page 44, that the quacks of Great Britain formerly gave them as an emetic. According to Orfila, the effects of this narcotic closely resemble those of belladonna, differing only in the more exciting operation of the former on the brain and nervous system.

The evacuation of the stomach in cases of poisoning by stramonium should be speedy and potent; and to this end a drachm of the sulphate of zinc should be dissolved in a common teacupful of warm water, a third of the solution being given every ten minutes until the desired effect is induced. Immediately after this operation the patient should drink freely of vinegar and water, and as soon as convenient have the bowels freely evacuated.

The active principle of stramonium resides in an extractive matter, which Mr. Brande procured from the seeds. It is an alkaloid, and known under the name of *daturia* or *daturine*. It is not employed at present as a remedial agent, the *extract* of stramonium being preferred. This can be readily made from a very strong decoction of the seeds by evaporation, taking care not to burn the product by an intense heat. Some prefer the *inspissated juice* of the mature, green leaf, which can be made annually in large quantities, and with very little care can be preserved for use. The leaves must be pounded in a clean glass

mortar, and the juice being collected in a saucer should be exposed to the sun until reduced to a pliable mass. Pack it in well-covered earthen jars, and keep them in a cold place. I advise medical men to prepare this article, and to give it a trial in lieu of the extract.

The stimulating property of stramonium was long ago known to the Turks, who when unable to procure opium resorted to it as a substitute; the Chinese have also been in the habit of adding it to other articles for the purpose of making an intoxicating beer.

It is said that Stoerk, of Vienna, was the first to employ stramonium as a remedial agent in Europe, and he valued it in the treatment of *mania*. In imitation of him, Professor Barton tried the article in the same disease in the Pennsylvania Hospital during my pupilage, but with no marked success. The Swedish physicians were partial to it in *mania* and *epilepsy*. It has been tried very often in this country in what has been called *tic douloureux*, a form of neuralgia that invaded the face; but I do not think it is now regarded with favor.

The practice of smoking stramonium in tobacco pipes, so often resorted to among us for the relief of *spasmodic asthma*, had its origin in Ceylon. The good effects most probably depend on its *expectorant* quality; and this is the secret of its success in the hands of Dr. John Davy in *chronic coughs* with nightly exacerbations, although he frequently gave but an eighth of a grain of the extract, and rarely more than one grain at a dose. Similar doses have been given with good effect in various forms of *rheumatism*, but most probably combined with other articles. There are some cases on record of uterine irritation and painful menstruation very materially benefited by minute doses of the extract.

Two ounces of the bruised seeds digested in sixteen ounces of alcohol for two weeks yield a tincture that has been employed in lieu of the extract. The dose is from ten to twenty drops. It has also been used externally to parts affected with neuralgia. A small quantity is laid on the spot several times in a day and rubbed in by smart friction. Persistence in this plan daily for several weeks has dissipated the pain and removed the disease.

The dose of the extract made as above is half a grain, to be increased gradually to six or eight grains three times a day. Of the inspissated juice a quarter of a grain will suffice, to be augmented daily. Three grains of the powdered leaf make a dose to begin with, and it may be carried up to twenty or thirty grains.

As an external application an *ointment* made of the green leaves has long been popular in the treatment of hemorrhoids

and burns. The ointment is prepared by gently simmering the leaves in lard or sweet oil and straining while hot; it has a bright-green color. Though safe as an application to piles, it is not so to a burnt or scalded surface, especially of large extent. The fresh leaves, bruised and steeped in hot vinegar, make a poultice that was employed by Plenck to soften and remove hard and painful tumors of the breasts of females.

Decoctions.—This term is often confounded with *infusions*. Both may be made with hot water; but the latter are not subjected to ebullition, as the former are. We never fail to boil when we make a decoction, and it is proper to know and recollect that some articles are injured by this process, while the mode of infusion does not exert a deteriorating influence. The act of boiling more perfectly extracts the medicinal properties of some articles than mere infusion, whether cold or hot. But if an article that contains much volatile matter be subjected to the process of decoction, the high temperature and its continued action drive it off and it is lost, no matter how important it may be as a medicinal component. The aromatics without exception belong to this class, and they are often very valuable agents. Many of the roots and barks and leaves afford a better medicine in the form of decoction than in any other way, and may be so prepared, if they contain no active volatile matter that a boiling heat would dissipate. Colchicum, hemlock, digitalis, monkshood, and some other articles would be greatly impaired, and in some climates totally destroyed, so far as the medicinal power is concerned.

As a general rule, all decoctions are best prepared in new and clean vessels of white earthenware, or in vessels of glass, when they can be conveniently employed. Whatever be the material, the vessel should be perfectly clean and furnished with a cover, which not only accelerates the operation but insures a neater and better product.

The following formulæ for decoctions will probably be found convenient for occasional reference:—

Compound Decoction of Calumbo.

℞.—Rad. Calumb. contus.
Lign. quass. contus. āā ʒij;
Cort. aurant. contus. ʒi;
Pulv. rhei, ℈i;
Potass. carb. ʒi;
Aquæ, ℥xx.

Boil down to fifteen ounces and strain, and then add

Ol. lavend. ♏x.

Mix. Take a tablespoonful frequently.

Compound Decoctions of Cinchona.

1. ℞.—Pulv. cort. cinchon. ℥i;
Aquæ, Oij.

Boil these for a quarter of an hour, then add

Fol. sennæ, ℥ss;
Rad. zingib. contus. ʒi;
Sodæ sulph. ℥ss.

Macerate for two hours, and add

Syr. limonis, ℥i.

Mix.

2. ℞.—Cort. cinchon. contus. ℥ss;
Aquæ, Oi.
Boil these for half an hour, and add
Rad. serp. virg. cont. ʒij.
Digest for an hour, strain, and add
Ol. cinnam. ♏i;
Elix. vitriol, ʒiss.
Mix. Half a wineglassful may be taken four times a day.

3. ℞.—Cort. cinchon. opt. ʒiij;
Rad. gent. contus. ℥ss;
Rad. rhei contus. ʒiiss;
Potass. carb. ʒi;
Aquæ, Oij.
Boil for an hour, and strain, and add
Syr. aurantii, ℥iss.
Mix. Dose, one or two large spoonfuls.

4. ℞.—Pulv. cort. cinchon. ʒvi;
Rad. serpentar. ℥ss;
Cort. aurant. ʒij;
Cort. cinnam. ʒss;
Aquæ, ℔iss.
Boil to one pound, and take a wineglassful for a dose.

Compound Decoction of Gentian.

℞.—Rad. gentian. cont. ℥ss;
Rad. calam. aromat. ʒiij;
Aquæ bullient. Oi.
Digest for two hours in a close vessel, and, when cold, strain; and add
Ether sulphuric, ʒij;
Syr aurantii, ℥ss.
Mix.

Decoction of Seneka Polygala.

℞.—Rad. senekæ cont. ʒvi;
Aquæ, Oij.
Boil down to Oi, and add
Rad. glycirrh. cont. ℥ss.
Digest an hour, and strain.

Decoction of Dandelion.

℞.—Rad. taraxaci, ℥iv;
Potass. bitart.
Sodæ bicarb. āā ℥ss;
Aquæ, ℔iij.
Boil down to two pounds, and add, when cold,
Spt. nit. dulc. ℥ss.
Mix.

Acetic Decoction of Hops.

℞.—Humuli lup. ℥ij;
Aceti fort. Oi;
Boil for half an hour, and apply hot, as a poultice.

Decoction of Pomegranate.

R.—Cort. punic. granat. ℥ij;
Aquæ, Oij.
Macerate for twenty-four hours, and then boil to Oi, and strain. The whole to be taken in three doses in two hours, as an anthelmintic.

Decoction of Pinkroot.

℞.—Rad. spigel. ℥i;
Fol. sennæ ℥ss;
Aquæ, bullient. Oi.
Simmer for ten minutes in a close vessel, and strain. Give from a tablespoonful to a wineglassful three times a day, as an anthelmintic.

Depuration.—This is a mode of practice advocated by Dr. Golding Bird in a course of lectures given before the Royal College of Physicians, in London, in 1848. The chief object was to point out the advantages to be derived in the treatment of disease from a rational reliance on the light afforded by the researches of modern chemistry, which are shown to be more particularly applicable to the direction of such therapeutic agents as have the power of stimulating the emunctory organs to discharge effete matters from the system—an operation styled by Dr. Bird the *depuration of the blood.*

Here is at once an epitome of all that is practically valuable in the doctrine of the humoral pathology. The impurity of the blood is the recognized basis of disease, and the separation of that impurity the means of cure.

While the lecturer values the importance of the lungs, the liver, and the skin, as outlets for the same grand end, he endeavors to show the superiority of the kidneys, not only because their function cannot be shared with other organs, but because they may in some degree compensate for the failure of all others in this needful work. For this reason he extends the well-known *alterative* principle to the kidney instead of restricting it, as has generally been done to the liver; and he proposes to regard certain diuretics not as hydragogues merely, but as *renal alteratives.*

With this intention, the author announces a fact which he believes was never before stated, viz., that we have agents known as diuretics which are able to increase the metamorphosis of tissue, and at the same time, by stimulating the secretory apparatus of the kidney, to carry the tissue thus metamorphosed out of the body. In taking a practical view of diuretic agents, Dr. Bird divides them into two classes: those which simply increase the quantity of water, and those which act as *renal alteratives.*

To the former class belong all those agents which out of the body exert no chemical action on organic matter and seem to be incapable of increasing the solid matter in the urine, as copaiba, broom, juniper, squills, &c. &c. In the second series are included those reputed diuretics which exert the influence alluded to and act as depurating agents. Among these are named the alkalies, their carbonates and other salts, with those acids which are convertible into carbonic acid in the animal economy; such as the lactates, citrates, and acetates. These are supposed not only to augment the bulk of the urine, but also to exert a direct chemical action on the tissues, and to increase the quantity of the solids. That they do so is proved by actual experiment the results of which the author has adduced.

The doctrine of *depuration of the blood* is a very old one, much older than Dr. Bird. We regard it as no less true for the valuable researches of this intelligent physician.

Dr. Bird thinks that one of the most important elements in the treatment of the old physicians was the water of the potions employed, and which was given not by *tablespoonfuls*, but by *pints.* He remarks that if a patient take an extra pint or two of water, there being no organic lesion to prevent, he will excrete a large bulk of urine from the necessity created for pumping off the excess of fluid taken into the stomach. Thus a pint or a quart of water proves a diuretic, as our daily experience may serve to evince. But one may ask, What is this but the mere drawing off the excess of water, and how can such a process be a proof of blood-depuration? The proof may be had by collecting the urine and calculating the amount of its solid con-

stituents. It will thus be manifest that not mere excess of water has escaped, but with it has been washed out of the system a certain quantity of the solid debris. Becquerel first pointed out this truth, and enforced it by many experiments. Nor is it difficult for a careful observer to satisfy himself, by collecting all the urine he passes in twenty-four hours and noting the proportion of solid matter it furnishes. Let him take two, three, four, or five bottles of Seltzer water on the next day, in close succession, and the result of his investigation will be still more striking. Observations of this nature afford a key to the many undoubted cures effected at mineral springs.

A man sick of some chronic disease which, like rheumatism, is the product of unhealthy constituents of the blood, starts for one of the Brunnens, or Spas, and with doubtful devotion swallows a prodigious quantity of the warm, bubbling water. His stomach is positively distended, it may be, and he fears the result. Presently he begins to secrete an abundance of urine, and is engaged alternately in drinking and urinating the whole morning. He has nothing else to do, and is obeying the advice of his medical counsellor. At the same time, as far as practicable, he takes active exercise, carefully avoiding fatigue. The wear of tissue is thus augmented, and the copious water-bibbing positively aids the metamorphosis of tissue and washes its results out of the system. These and similar facts account for the vaunted success of hydropathic quackery, which clears out the effete matters by a literal washing out through the solvent powers of the vast quantities of water consumed by the patient. The old tissues thus cleaned and purified are fitted for the deposit of new structure, and hence the salutary results which are sometimes permanent. The deep-red hue of the urine soon fades away, and the natural straw color is restored, because the lithates and the lithic acid, previously in excess, have been diluted and carried out by the kidneys.

The action of depurating remedies, even by the kidneys, is, therefore, as certainly alterative as is the action of small doses of mercury, or nitrate of silver, long continued. In reference to the cure of rheumatism, acute or chronic, no plan offers better prospects of success than that of depuration, or elimination by the kidneys, the skin, and the bowels. Hence the value of this mode of practice, which merits a much more attentive study than has yet been given to it. We are much indebted to Dr. Bird for his zealous labors in this department.

As the pith of Dr. B.'s lectures on this interesting topic may be found in part xviii. of *Braithwaite's Retrospect*, we trust that all who desire to be well informed on obscure points of pathology and practice will devote sufficient time to the perusal and study

of this matter. The experimental details and the inferences based on them are so conclusive as to be irresistible and unanswerable. Such, at least, is the conviction forced on us, even despite of the cherished prepossessions of former years.

DIAPHORETIC.—This is from a Greek word, meaning *to carry through*. The idea is that some internal remedy propels fluid matter from within to the surface, and we call this superficial discharge a perspiration. To maintain a diaphoretic action, it is necessary that the patient be in bed, covered quite warm. This differs, obviously, from a sweat brought out suddenly in hot weather by taking a draught of cold water.

Diaphoretics have been divided into several grades or orders, but all of them depend for their effect on the action they induce on the arterial system. This is not less true of the internal agents, as essential oils, ethers, camphor, hot teas, and the like, than of the external appliances, as vapor-baths, frictions, and exercise.

In common with other means, diaphoretics require a suitable state of the system. Every practitioner knows that he cannot excite a perspiration on the first day of a high burning fever by any sudorific as well as after the action has been reduced by blood-letting or vomiting freely. The spiritus mindereri, probably one of the very best diaphoretics, will not sweat when the fever is at its maximum and no efforts have been made to abate it. Draw ten or fifteen ounces of blood, and even that will often induce a moisture. Give a dose or two of the diaphoretic now, and the surface will soon be covered with perspiration. If the general system be under the par of healthy excitement, the diaphoretic will gently stimulate, and sweat will follow. If much above the par, it may augment the excitement, but cannot induce sweating.

DIET.—We have not space to enter fully into this important topic; but, in addition to the remarks given under the head of *alimentaria*, we deem it proper to make the following suggestions; and first in importance in this consideration is the regulation of infantile diet. If the mother enjoy good health, the best nourishment for her infant is her own milk, and it is so because it is the wise provison made by Heaven, and cannot be improved. If she be careful to eat and drink those things only which she knows by experience are best suited to her condition, the child will thrive and do well. But if the maternal vigor be impaired, the digestive functions out of order, and assimilation imperfect, the infant will not acquire substantial vigor, even though the mother's milk may be in great abundance. Under such circumstances, it may be necessary to change the supply of nutriment. This may be essential to the well-being of mother and child; for

it would be a vain effort to aim, by a change of diet, to improve the mammary secretion, if there be such derangement of the digestive function as to render impracticable the formation of healthful blood. Yet, by procuring another supply of milk from a perfectly sound frame, it might be practicable to change the essential nature of the infant constitution, and thus insure its invigoration and growth.

In the absence of a nurse whose breasts can furnish the requisite supply of salutary nutriment, infants may be raised by the use of the sucking-bottle, or by spoon-feeding. Some of the finest children I have ever seen have thus been reared, and they have grown to maturity in the enjoyment of robust health. In all such cases it should be the constant aim to provide the best substitude for the natural food (I mean the mother's milk) that can be obtained. This is the secret of success. Cow's milk, more or less diluted and properly sweetened, arrow-root, tous les mois, and the like, have all been resorted to with frequent success, and all occasionally with an opposite result.

A fundamental rule in all this matter is to observe *rigidly the law of cleanliness* and *moderation*. Every vessel and implement employed in the feeding of infants should be *perfectly* and *always clean*, and every article of food should be *sound*, *fresh*, *pure*, and *well prepared*. For want of attendance to these simple items the digestive functions and the assimilative powers of infants have been ruined, a scrofulous diathesis has been roused into activity, or it has been formed and rapidly developed. Even when the utmost cleanliness has been attended to serious evils have resulted from *over-feeding*, an evil whose ultimate tendency is almost as deleterious as starvation.

In reference to the diet of *mature* age, any one can readily understand how certainly and fatally bad food operates, when he calls to mind the horrid effects of the potato disease on the population of Ireland. And when, as in that unfortunate country, the depressing influence of misfortune in almost every form is superadded to a deleterious diet, we are at no loss to solve the secret cause of a terrible epidemic. But, in addition to the universal prevalence of fatal fevers, the rapid development of incurable scrofulous disease has followed in the train of similar causes. Many cases of this kind have occurred in families whose sensitive feelings induced them to shrink from public observation when calamities overtook and prostrated them. The tone of their general health first gave way, and then local disease was excited from trivial causes.

The power of modifying adult constitutions by suitable change of diet and general living is as certain and real as we ever find it to be in infants. Who does not acknowledge this to be true in

regard to *scurvy*, a disease of blood-deterioration originally, and curable by changing the quality of this vital fluid?

The law which regulates the change here is equally applicable to a thousand cases; and its due importance in the management of physical education is inconceivably great. "This has been well exemplified in the art of *training*, where diet and exercise are reduced to a practical science for the attainment of certain results, and with remarkable success. In the hands of a trainer the almost breathless and oppressed frame of a person overburdened with lymph and fat speedily becomes converted into an active, firm, and well-conditioned organization, exhibiting a promptitude of action both of mind and body the direct opposite of its former manifestations; and if such a change can be effected by rigid adherence to rules, in the course of two or three months, we may easily conceive the degree of improvement which would follow the uniform observance of proper regimen and dietetic precepts in ordinary society." (Combe, *On Digestion.*)

Without pretending to enter very minutely into the philosophy of diet, let every one bear in mind that a very small amount of observation and reflection will suffice to teach what articles of food agree best with the stomach and whole system. It is the violation of the dictates of nature on this very point that engenders three-fourths of all our diseases. We learn with ease the right and salutary lesson, but we act as though it had never been studied and understood. If our food fail to oppress or disturb us in any way, if we feel invigorated and refreshed by it, we are warranted in the conclusion that it is safe and proper, no matter by what name it may be called. But if, though taken in moderation, we realize in a few hours after our meals a distressing or even unpleasant languor, we may rest assured that the food, however much esteemed by many as light and very digestible, is not the right aliment for our nature. "One man's meat may be another's poison." These remarks apply with equal force to drinks and luxuries, to dress, and nearly all our habits.

The diet of the sick includes not merely articles of food that are positively proper, but it enters into varied details touching the modes of preparation, the quantity to be eaten at a time, and the most suitable hours of the day for this end. It points also to articles that are decidedly improper, or only relatively so, keeping in view at the same time those changes in the human constitution in virtue of which things once disagreeable or injurious become innoxious and even salutary. These things are susceptible of vast modification and amplification too, calling for large experience and tact in order to do full justice to the subject. There can be no reasonable doubt that the success of one of the most barefaced humbugs of the day depends chiefly on

the rigid enforcement of dietetic rules carried to such extremes often as to intrench on the ridiculous and to extort a smile from credulity itself. May not the regular profession of medicine once in a great while condescend to take a hint even from the hoodwinked devotees of superstition?

DIGITALIS PURPUREA. *Digitalis. Foxglove.*—This is a biennial plant, growing in dry, gravelly soils, in the temperate regions of Europe. It is now to be met with in many of our own gardens, where it is cultivated as an ornamental appendage. In June and July its elegant bell-shaped flowers, somewhat in form of the finger of a glove, sometimes purple, sometimes nearly white, make a pleasing addition to the floral variety. Every part of the plant has medicinal properties, but the leaves and seeds are preferred. The fresh leaf has a slightly nauseous flavor and a bitter taste, and should be collected just as the plant is about to flower, care being taken to select the most perfect leaves. The process of drying, in order to preserve the color and other qualities, is best conducted in a well-aired, dry loft; or if it be desired to employ artificial heat to effect the drying more rapidly, the temperature should never exceed 212°.

The *variable doses* of digitalis as spoken of in the *London Lancet* for October, 1845, are to be explained only on the ground of the defective or augmented medicinal energy, as resulting from cultivation, climate, locality, &c., which exert a marked influence on many prominent articles taken from the vegetable kingdom. It is important that physicians should be aware of this fact in the history of active remedies, as it will serve to account for the phenomena otherwise unintelligible.

Villiers, in the *Journal de Médécine* for November, 1817, reports the case of a man affected with humid asthma who took by mistake a drachm of powdered digitalis leaves instead of a grain. In other words, he took *sixty doses at once.* Quickly he was seized with vomiting, vertigo, and confused vision. Frequent and violent efforts to vomit caused some mucus and bilious matter to be ejected, followed by great pain in the bowels, which required the use of lavements for relief. These symptoms continued at intervals through the next day, and the patient was much exhausted, with the pulse slow and irregular. On the third day the vomiting ceased, but the abdominal uneasiness continued. Anodynes, spices, and stimulating drinks were employed, and recovery gradually took place. The man's vision continued to be confused for a fortnight, and as soon as the effects of the poison vanished the cough and dyspnœa returned.

In the October number of the *Edinburgh Medical and Surgical Journal* for 1839, we have a very interesting but fatal case recorded. A child six years old, affected with scarlatina, took

a mixture in the course of the day containing five grains of powder of digitalis, and an injection was administered consisting of tincture digitalis and tincture of squills, each one ounce. On the next day a drachm of the leaves of digitalis was given, in form of injection, in three divided portions. This induced colicky pains, frequent stools, bilious vomitings, hiccough, faintings, and intermittent pulse. These symptoms continued during six days, when the abdomen became tympanitic and painful on very slight pressure; the pulse still intermittent, the urine more scanty, and anasarca becoming more general. The powders of digitalis were resumed, but with no benefit. Several fits occurred which threatened to destroy the child; still the digitalis was continued, although it excited constant nausea and vomiting, and at the end of about sixteen days death took place. The attending physician seemed greatly surprised that so *little digitalis* should produce such effects. But, as the editor of the journal very properly observes, "For a child only six years old, less than the one-half or one-eighth of the quantity would have been such an overdosing as might justly warrant the opinion that the result was due to the digitalis alone."

The opinions of medical men touching the *therapeutic* powers of digitalis have ever been variant; yet it has been pretty generally agreed that it possesses sedative, narcotic, and diuretic properties, and that it calls for good judgment and discrimination, because of its obvious tendency to *cumulate*. This feature demands from the physician a caution to all persons to whom he is exhibiting the medicine, for weeks or even days in succession. They should be directed to preserve the horizontal position not only while taking the article, but for a week, or at least for several days, after its discontinuance. Imprudent rising from bed, or even sitting in the half-erect posture, has brought on syncope with fatal issue in a few moments. This result is supposed to depend on the deeply-sedative influence exerted on the heart and arteries, in virtue of which the power of propelling the blood to the brain is so impaired that an erect position cannot be tolerated. The pulse changes from forty or fifty to one hundred and twenty in an instant.

When by imprudence a partial syncope is induced, the patient should be made to resume the horizontal posture at once, and take ten, fifteen, or twenty drops of liquid ammonia, or sulphuric ether, in a tablespoonful of water, and repeat in fifteen minutes, if not relieved. Sinapisms to the wrists and ankles will be proper at the same time.

Dr. Beddoes has furnished a case in which opium saved a patient from the poisonous action of digitalis. He labored under anasarca, and was very feeble. A large quantity of a

strong infusion of digitalis had been taken in mistake. Three grains of opium were administered in two doses, and then fifteen drops of laudanum every hour, in port wine. (See *Medical Facts*, vol. v. p. 18.)

The statement just made is abundantly sufficient to prove the *sedative*, and even the *narcotic*, character of digitalis. Given in large doses, it always displays these properties, and the most usual manifestations are nausea, fainting, convulsions, purging, cold sweats, with fatal termination if relief be not soon obtained. It is not difficult to understand why it is that so many pernicious consequences have followed the exhibition of this medicine. Its injudicious employment has done vast mischief, and no doubt constitutes the basis of much of its unpopularity. Yet we do not doubt that in the hands of discreet, observant men, it has often done good. Digitalis has been much employed alone, and also in combination, as a *diuretic;* and even when so exhibited we must not be unmindful of its depressing influence on the arterial system already adverted to. The combination hinted at is generally with calomel, or squill, or both. When thus employed, the powder of the leaf is well rubbed with the other articles, the proper division being made into powders or pills as may be most desirable.

The *tincture*, although highly valued by some, is not the best form of administration. The liability to a collection of dregs at the bottom of the bottle, and the possibility of these being poured out into vials for use, render the tincture a hazardous medicine in careless hands. In addition to this, it contains much less of the proximate principle, *digitaline*, than the *infusion*. Some have preferred the ordinary tincture, made by digesting four ounces of the best dried leaves in a quart of diluted alcohol (that is, equal parts of alcohol and water) for the space of two weeks, expressing first and then filtering through paper. The dose is from ten to twenty drops three times a day. Others have more frequently employed *Drake's saturated tincture*. The name teaches, significantly enough, that this preparation, first announced by Dr. Drake, of England, is a very potent article. It is made by filling a bottle with the best dried leaves and adding as much diluted alcohol or brandy as can be poured in. The fluid is *saturated* with the medicinal properties of the plant, and is so strong that not more than five drops can be safely given to an adult as the first dose.

The *infusion* is prepared by adding a drachm of the leaves to half a pint of boiling water. Let the mixture remain for half an hour, and then strain or filter, adding a few drops of the oil of cinnamon, say four or five; or we may add one drachm of digitalis and two drachms of cinnamon to a half-pint of boiling

water. Digest four hours in a covered vessel, and strain. The adult dose is a tablespoonful three times a day, and gradually augmented.

If the powder of the leaf be preferred, supposing the article to be fresh and good, a half-grain three times a day, and increased by fractional parts daily, will be a proper portion for an adult. If either of the above forms be employed, it is proper to continue the administration until there is obvious reduction of arterial excitement, provided we look for the sedative effects, and for a manifest increase in the urinary discharge if we prescribe the medicine as a *diuretic*.

There is an additional *therapeutic* use named in a foreign journal. A quack somewhere in England gave six ounces of a strong decoction as a *laxative*, and killed his patient by a terrible hypercatharsis that ended fatally in twenty-two hours.

It is possible also for exceedingly large doses to develop *expectorant* qualities. We infer this from a fact stated in the *Edinburgh Medical and Physical Journal*, of an old asthmatic who took an ounce at one dose and was cured. The force of the extreme dose spent itself on the morbid condition constituting the *asthma*, and no doubt promoted expectoration. An ounce would be regarded as a poisonous dose, and no one would venture to administer it. Besides this power of existing disease to control poisonous action, it is also proper to bear in mind that opium, although confessedly a poison, has been successfully employed to counteract the deleterious agency of digitalis. (See *Medical Facts*, vols. v. and vi. p. 18.)

Dr. Glass, of Wirtemberg, has lately given the result of his experience in the use of digitalis in *delirium tremens*, eleven out of thirteen cases having recovered under its administration. He employed the infusion, and carried it so far as to induce *narcotism*, or more properly *digitalism*.

The use of digitalis has been obviously beneficial in *dropsy* resulting from obstruction to the cardiac circulation. By subduing the heart's action it relieves that congestion of the vascular system which is the cause of the effusion of serum. But being a diuretic also, it may and does relieve the loaded vessels by carrying off in the urine some of the water of the blood.—*Headland's Action of Medicines*, p. 287.

Junius Hardwicke, Esq., of Rotherham, confesses that he once made a sheer experiment with digitalis in a bad case of *neuralgia* that seemed to defy his powers wholly. He resolved to administer half-grain doses of digitalis, in form of pill, every three hours, and so great was the relief that the man called for more pills, and was thus cured. Mr. Hardwicke says he has since given the remedy in many cases of spasmodic and rheu-

matic neuralgia in various parts of the body, with success.—*Braithwaite*, p. xxxii. p. 60.

The *external* use of digitalis is far more safe than the internal administration, and equally salutary, and we beg leave to urge this method on all who feel inclined to test the powers of digitalis. A Portuguese physician reports success in the use of squills and digitalis *endermically*, in the treatment of *ascites* and *anasarca*. He blistered the abdomen and thighs, and on the raw surface applied compresses wet with the mixture. The dropsy was of the *asthenic* variety, and the external application was preferred on that account.—*Medico-Chirurgical Review*, April, 1843.

A writer in the *Revue Médicale* says he has employed digitalis externally, in the treatment of dropsical affections, for more than twenty years. He rubbed the infusion or tincture into the abdominal surface three times a day. Andral, Christison, Trousseau, Bayle, and many others, have commended this practice very decidedly. In one or two days the flow of urine was obviously increased, and in a week the water was completely evacuated. Dr. Joret, in a paper in the *Archives Générale* for 1834, speaks emphatically of the diuretic powers of the decoction of digitalis applied to the abdomen, in portions of from two to four ounces, morning and evening. He says it may be thus employed without risk when gastro-enteritis is present. This gentleman has paid special attention to the medicinal powers of digitalis, and affirms, as has been already announced, that the infusion contains more digitaline than the tincture; that the dry plant is better than the fresh leaf; that special culture, season, climate, &c. greatly vary the strength, so that while a violent diarrhœa has followed the use of three grains of the powder, thirty-six and even sixty-five grains have been taken with impunity.

I have only to add that in consequence of early prepossessions, based on observations of its injurious action in the Philadelphia almshouse and in private practice of distinguished physicians, I have never been an admirer of the medicinal properties of foxglove. I have rarely employed it, excepting in *hydrothorax*, attended with elevated arterial action, and then I combined it with calomel. Thus:—

> Take of calomel, ℈j;
> Powder of digitalis, ℈ss;
> Conserve of roses, enough to make twenty pills.

One to be taken three times a day, and the quantity of digitalis to be very gradually enlarged, with careful attention all the while to the effects on the pulse.

Digitaline, the active principle of digitalis, is highly praised

by Dr. Christison, especially in dropsy, associated with disease of the heart. He has speedily removed the effusion by its use, and thus enabled the patient to return to his usual avocation. It acts with more speed than digitalis does, and with greater force after the action begins. Sometimes it has induced alarming depression by abating the heart's action too much. The dose is one-seventy-fifth of a grain three times a day, a very small one certainly. But it must be borne in mind that one-tenth of a grain will kill a small dog. The dose may be given in a pill with mucilage, or conserve of roses, so as to make a grain in weight.

M. Laroche has found the digitaline to control *nocturnal seminal emissions* very happily. A very bad case was soon much relieved by doses equal to one grain of the powder of digitalis. The night after the use of the remedy the emissions ceased for the first time.

Diosma Crenata. (See *Buchu.*)

Diospyros Virginiana. *Persimmon.*—The bark and fruit are the parts of this well-known tree that are employed medicinally. Familiar as every one is with its appearance and the obvious qualities of the ripe and unripe fruit, it would be a waste of time to dwell on these points.

The first notice I remember to have seen of it was in the inaugural dissertation of the late Professor Woodhouse, formerly of the University of Pennsylvania. His thesis was entitled *The Chemical and Medicinal Properties of the Persimmon*, and was printed in 1792. The bark was examined by Dr. W. and found to contain tannin and gallic acid, which accounted for its *astringency*. Its medicinal uses were predicated on its astringent power, and extended to *diarrhœa*, *hemorrhages*, &c. &c. A writer in the *American Journal of Pharmacy* has pointed out a difference in the ripe and unripe fruit in respect of astringency. The unripe fruit was found to contain tannin, sugar, and a little malic acid, while the fully ripe fruit abounds in sugar and malic acid, with merely a trace of tannin. This diversity, however, was pretty much what many a schoolboy had often realized. He well recollects how his mouth was drawn up almost to a point when he attempted to eat the half-matured fruit, and equally well the grateful qualities of the same fruit in perfection. This corrugating or astringent quality is the same, as to its source, in all vegetable matter.

The astringency of the persimmon bark led to its use in preparing gargles for *sore throat* with or without ulceration. The late Professor Barton, in his *Contributions toward a Materia Medica of the United States*, commends it for this end, and names it also as an old remedy for *intermittents*, familiar to the

common people. In a paper of more recent date, published in the *American Journal of Medical Sciences*, by Dr. Mettauer, a very intelligent practitioner of Virginia, the medicinal qualities of the unripe fruit are well spoken of. The astringency of the article led to its exhibition in diarrhœa, hemorrhage, &c., and with happy results. The forms of infusion, syrup, and tincture are named, a tablespoonful being the usual dose for an adult. The same author regards the ripe fruit as possessed of *anthelmintic* properties.

DISCUTIENTS.—This term refers to all those external applications the tendency of which is to remove tumors. They most probably effect the end by stimulating the absorbents to more vigorous effort. Various poultices and fomentations belong to this class.

DISINFECTANTS.—The word has reference to infection, and implies its abatement or removal. Any agent capable of overcoming the disagreeable agency of insalubrious exhalations of any kind is, properly speaking, a disinfectant. Chlorine and its compounds are prominent examples.

DISPLACEMENT.—This is a process which secures the activity of drugs that are employed in the shape of tinctures and infusions. The mixtures, solid or fluid, are put into the displacement vessel, or percolator, as it is called, which is a kind of funnel, furnished with a fine seive, and, generally, with a stop-cock in the lower part and a cap or stopper above. The drug in coarse powder is mixed with enough of water, or alcohol, or other solvent, to saturate it completely. This process may be effected, if desirable, in a mortar, or in the tight percolator, its stop-cock being then closed. The mixture is pressed into the percolator —not too forcibly, however, as that might retard the operation —and is to remain there from a few minutes to twelve hours. When it is intended to draw off the liquid, a further addition of fluid is required, the addition being gradually made. The stop-cock is now opened and the filtered fluid collected in a suitable vessel. Further additions of the menstruum are to be made until the prescribed quantity of tincture or infusion is obtained.

DIURETICS.—The Greek word whence this term comes means, simply, a discharge of urine. Any agent that increases the flow of urine is a diuretic, and hence the range is extensive, embracing many articles named in our books of Materia Medica, and some that are not. Among the latter we cite certain mental operations, as fear, about which every schoolboy and candidate for graduation knows something in his own experience. Some diuretics appear to act partly as tonics, combining bitterness with a quality that leads to a diuretic result. Some act by stimulating the kidneys, and these are, of course, improper in a

state of high arterial excitement. Very many act chiefly as diluents in virtue of the quantity of fluid swallowed, and we may cite warm water, or barley water, or gum Arabic water, as in point. Others appear to operate by reducing the excitement of the whole system, including, of course, the heart and arteries as well as the kidneys. The lancet, leeches, the cold dash, and digitalis may act in this way.

It must be obvious from this brief statement that all articles called diuretic cannot be alike proper for all sorts of patients, and that the discretion of the physician is demanded in order to make the proper adaptation. But it is not needful to enlarge here, as we shall find frequent opportunity for noticing this subject hereafter when we treat of individual diuretics.

Dolichos Pruriens. *Mucuna Pruriens. Cowhage, or Cowitch.*—This is the down or hair of a plant known in India by the name of *kiwach*, and long in use there as an anthelmintic. The young and tender pods form articles of diet in that country. When quite mature, these pods are of a brownish color, and are covered with countless sharp, pricking hairs, which keenly irritate the skin; and for this reason their anthelmintic action has been called purely mechanical.

The pods being dipped into honey or molasses, have the hairs stripped off until they acquire the consistency of an electuary, of which a tablespoonful is an adult dose and a teaspoonful sufficient for children. It must be soon followed by a purgative, as castor oil.

Drimys Winteri. *Winter's Bark.*—This tree was employed as a spice in the treatment of scurvy, in Drake's voyage round the world in 1759, by Captain Winter, who brought some of it to Europe. The tree grows from six to forty feet high. The bark is in flattish quills four or five inches long and two inches in diameter and a sixth of an inch in thickness. It is smooth externally, of a pale or reddish-yellow color, with red oval spots, of an aromatic odor and a warm, pleasant, spicy taste. Its properties are due partly to tannin and a pale, warm, pungent, volatile oil. Hence it has been used as a substitute for cinnamon and canella bark. It is tonic, stimulant, and aromatic. The adult dose may vary from ten grains to a drachm.

Dutch Liquid.—This is an exceedingly volatile fluid, more correctly named the *chloride of olefiant gas.* On account of its high volatility some hold it to be the best of all local anæsthetic agents. Its action endures longer than that of other agents, and its odor is less disagreeable. From fifteen to thirty drops, covered with a moist compress, will suffice to allay pain in most cases.

Ectrotic Medication.—A Greek word, signifying *to abort* or

produce abortion, has given us that peculiar form of medicinal administration called *ectrotic*. It is comparatively a new topic in medical lectures or in books on Materia Medica. In 1825 Bretonneau and Serrès published an article in the *Archives Générale*, on the use of cauterization in smallpox, and called the process *Méthode Ectrotique*. The operation was said to cause the abortion of the pustules—in other words, to prevent their maturity, and eventually to secure the face from scars or pits. In place of actual cauterization nitrate of silver was employed, sometimes in very strong solution, and often in the solid stick form. From fifteen to forty-five grains, dissolved in an ounce of water, made a suitable solution, to be applied by a camel's-hair pencil to each eruption. Bretonneau first opened the apex of each pustule, and then applied the caustic. Serrès affirmed that the simple application, without puncture, not only aborted the pustules, but averted or abated phrenitis, otitis, ophthalmia, &c. &c. Velpeau took off the apex of each pustule with the point of a lancet and placed the caustic on the spot. It is affirmed that if the operation be performed on the second day of the eruption, no perfect pustules are seen, the inflammatory action being completely arrested.

Serrès, Chomel, and others, tried the *emplastrum de vigo*, a compound mercurial mixture, in order to obtain a like ectrotic result, and with success. A mask is procured, and the plaster being spread on its interior surface, is placed on the face. If applied on the second day of eruption, it prevents pitting or scarring. To test the value of this plaster, trial has been made of simple diachylon, but without success. The result is plainly independent of the exclusion of the light or air, because the simplest plaster would accomplish this perfectly. I am aware that a Southern practitioner has affirmed that confinement in absolutely dark apartments will secure the face from pitting, and possibly it may be so.

In the *Philadelphia Medical Examiner* for August, 1846, we are told that cases of smallpox have been happily managed with tincture of iodine so as to save the face from deformity. This use of iodine grew out of its frequent employment in various inflammatory affections in lieu of nitrate of silver, and the well-known success of the latter as a means of ectrotic medication in France.

ELATERIUM.—Inspissated juice of the *momordica elaterium*, or *wild* or *squirting cucumber*. As a remedial agent this has age to recommend it. The *Lexicon Medicum* of 1702 defines it the "juice of the wild cucumber inspissated and brought to a hard consistence." Formerly the term elaterium was applied

to every sort of powerful medicine that induced copious watery stools.

Wild cucumber has been cultivated expressly for medicinal use. The fruit when fully ripe is somewhat like a small oval cucumber, covered with prickles. It falls from the stem, and, bursting, throws out its juice, and has hence been called the *squirting* cucumber. The fruit is gathered in September, and the juice is gently expressed, strained, and set aside for a few hours. A gray sediment falls, which being dried with care, furnishes a kind of extract. Clutterbuck's elaterium was made by selecting the juice that surrounds the seeds and slowly inspissating it. This species is more energetic than the other, acting violently as a cathartic in doses of the eighth of a grain. The other variety is administered in half-grain doses. The stools are not only frequent and copious, but very watery, and hence the article is called a *hydragogue cathartic.*

Good elaterium is very light and friable, of a light-gray color, and contains a proximate principle of great potency called *elatin.*

Elaterium was originally exhibited almost exclusively in *dropsical* affections. Hippocrates and Dioscorides both were familiar with it, and especially in this relation. Some of the old physicians employed every part of the plant as a remedy for dropsy. Sydenham and Ferriar exhibited the inspissated juice.

I have employed it a very few times, and then not satisfactorily. In the case of an officer who had served in Mexico, in the army of Iturbide, I pushed it as far as I could, and although some present benefit seemed to follow, there was no permanent advantage. The man had labored for years under hepatic disease, the liver being enlarged and not performing its functions. When he came under my notice he had a greatly enlarged abdomen, and assured me that he had taken a great deal of mercury to no profit. I gave him the elaterium in doses of a sixteenth of a grain three times a day, gradually raised to a quarter of a grain. The quantity of fluid evacuations was incredibly large, and their frequency alarmed me. He bore the operation pretty well, and his abdomen resumed its wonted size, but he was not really improved. The belly was quickly distended again, and I felt satisfied that an indurated liver and a permanent derangement in the equilibrium of the circulation precluded the practicability of restoration. The local action of the cathartic was tried often enough to satisfy me that its effects were only transient.

It is reported that some cases of *chorea* have been signally benefited by the use of elaterium; and when active purging is really demanded the remedy may answer, although I would be

slow to make trial of it. The mode of exhibition was as follows:—

℞.—Powder of jalap, thirty-six grains;
Powder of elaterium, one grain;
Powder of ginger, twenty-four grains.

Mix, and divide into twelve powders. One to be taken every four hours, until the bowels are freely evacuated.

Some physicians, fearful of the violent operation of elaterium given by the mouth, have preferred to use it in form of *suppository*, made by mixing one or two grains with soap and then passing the mass up the rectum. Irritation soon ensues, spreads to the whole canal, and copious evacuations follow.

The *elatin* before named makes about one-half of the elaterium by weight. It is separated by digesting elaterium in alcohol by a slow heat for twenty-four hours and filtering the solution. The residuum should be washed several times with pure alcohol; and the solutions so obtained, on being evaporated, yield a solid green substance. This is to be boiled in pure water, which dissolves a part and leaves a portion undissolved, which is the *elatin*. This product is nearly tasteless, greenish, insoluble in water, soluble in alcohol, inflammable, and emitting while burning an aromatic odor. Elatin is also separated by the agency of sulphuric ether. One grain of the pure article dissolved in ninety-six drops of pure alcohol gives a tincture a drop of which acts violently on the bowels. It is quite too potent for safety.

ELECTRICITY.—This is a very ancient remedy, sometimes beneficial, but oftener exerting a mischievous influence. Nor is it difficult to account for the preponderance of evil over the good that has been accomplished by this agency. The right and safe application requires much more knowledge than appertains to the mere electrician. A man may be able to construct a beautiful and powerful machine and to display electrical phenomena very happily, and yet he may be a minister of ills without number to those who place their systems in his power. The electrician who would not injure his employers must have a pretty extensive acquaintance with disease, with constitutional peculiarities, with temperaments; with physiology, pathology, and anatomy as the basis of both. And in addition to these acquirements, it is important that he be not a novice when he undertakes to treat dubious cases.

From what has been said it must be quite obvious that the mere mechanical electrician must do more harm than good, and when he realizes the latter it may be fairly attributed to mere accidental or providential interference.

He who would make a right use of electricity must know what affections may be the better for its agency, as well as those whose

aggravation must ensue as a necessary result. He must be aware that disorders growing out of defective energy or exhaustion, and not those that flow from positive irritation and oppression, are most likely to be relieved and cured by electricity; that it is specially applicable to torpor of the vital functions, causing diminution of nervous and muscular action no matter how induced. High arterial excitement, whether local or general, forbids electrical operations, while apathy and depression may demand their aid. It is vastly important to decide accurately whether organic derangement does or does not exist ere resort be had to this agent. This is obviously true in respect of blindness and deafness more or less complete. These may depend on compression or actual disease of the nervous structure, or simply on a lack of nervous energy. In the one case an obstacle prevents the right functional development, and will do so as long as it remains. In the other there is no hinderance to the function, and mere feebleness is the secret. Here are states very nearly opposite; and while the one might be much improved the other would probably be made worse by the same appliance. Hence the vast importance of being able to determine whether the ear or eye is or is not *structurally* at fault. If such be the fact, electricity can do no good, but may do much harm. If the function of the organ be the only matter at fault, its debility may be removed by the moderate use of electricity, which may act as a gentle stimulant and tonic. Of these important distinctions the common strolling electrician is ignorant, and he employs his machine simply because a man is blind or deaf and fancies he can be relieved.

What are usually called *diseases of the nervous system* have frequently been relieved by the aid of electricity, and hence the common use of the remedy by paralytic persons. Whenever benefit has followed the administration in such cases, it is clear that there was only a defect of nervous power in the palsied part, and a total absence of organic lesion that could control or arrest the right action of the brain and nervous system.

It may be important to decide, before we resort to electricity, whether the disease or affection be primary or secondary. If it be purely sympathetic or secondary, there will be little prospect of good from a trial of the remedy. If the primary state depend on excess of energy, electricity must be pernicious, unless preceded by proper evacuations.

In almost all cases in which tonics are proper electricity may be useful. In scrofula with debility, calling for tonic treatment, electricity has often been a good adjuvant, removing obstructions of the glandular and lymphatic system, effecting resolution of indurated glands, &c. &c. In the deep depression of the vital forces met with in low fevers, electricity is a dangerous agent.

The suddenness of its operation may extinguish the flickering taper in a moment.

Our remarks thus far have reference to common electricity, and we propose to say a few words in the next place on *galvanic electricity*.

It is not necessary to give any directions for the making of galvanic machines, as they are now to be had in every city in very neat and portable forms, most happily suited to the purposes of the medical practitioner.

To show the importance of this means of cure and mitigation we propose to make a few references to the *medical inquiries* of Dr. Philip, in which an ingenious effort is made to prove that the galvanic fluid is really, or may be made a substitute for, the nervous fluid. We are not unapprized of various efforts that have been made to nullify the results which this gentleman reached after a long course of patient investigation; and we know, too, that these efforts were abortive. We have paid enough attention to the subject to be assured that the conclusions of Dr. Philip are legitimate. He fed rabbits with parsley, and after the lapse of some hours divided the par vagum, or eighth pair of nerves, which furnish the supply of nervous power to the stomach and lungs. As a consequence, respiration ceased or became exceedingly laborious, nausea, with efforts to vomit, supervened, and the animals died by suffocation. The stomach having been opened, the parsley was found to be unaltered, not in the smallest degree digested. Similar experiments were made with other rabbits fed in the same manner, but acted on by galvanic currents sent to the stomach by the application of one pole of a small pile to tinfoil rolled around the end of the divided nerves, the other pole being applied to a disc of silver on the epigastrium. In these cases the dyspnœa and inclination to vomit did not occur. After the lapse of twenty-six hours the rabbits were killed and the parsley was found to be almost entirely digested. What could be more conclusive than experiments like these, frequently made, and always with the same results?

Dr. Philip was induced, as a consequence of the experiments named, to apply galvanism to relieve and cure *asthma*, *dyspnœa*, *indigestion*, &c. &c., aware that these maladies were often set up by a deficiency of the nervous energy. He hoped to be able to compensate for this defect by the use of galvanism as a substitute. He had reached the conclusion that this agent, if not actually identical with the nervous power, could be made to perform its usual functions when that power was greatly deficient. He maintained its competency to assist the nerves of organic life, but did not believe it capable of aiding the nerves of volition. A late writer in the *Medical Gazette* of London (Grantham)

contends for the actual identity of the galvanic fluid with the vital action of the nerves of volition as well as those of organic life.

The practical applications of galvanism by Dr. Philip were successful not only in his own practice, but in the hands of others. The deranged conditions of the lungs and stomach included in the terms asthma, dyspnœa, and indigestion, were most happily relieved and cured by this instrumentality. I have known the most simple form of galvanic arrangement (so simple, indeed, that some have denied its power altogether) to relieve a very distressing asthma of long standing. The patient was under the care of the late Professor Eberle, in Cincinnati, and the contrivance consisted of a metallic wire thrown over the left shoulder, at either end of which was a small metallic plate that remained constantly next to the skin and hanging down so that the anterior plate might be as near as possible to the heart.

I do not say that the confidence inspired in the patient's mind by the assurances of his physician did not contribute to the result, but I am very sure that the doctor relied much on the feeble galvanic arrangement.

Doubtless the medical uses of galvanism grew out of its resemblance to common electricity, which had long before been made subservient to the wants of the profession; and as they are modifications of a common agent it has happened that their applications have been successfully made to the same forms of morbid action. The administration of galvanism is to be conducted on the principles marked out for the use of ordinary electricity in every respect, and thus guided, both will prove safe.

These agents have been employed with great success in cases of *opiate poisoning*. Whether the results depended on actual decomposition of the opiate or on such stimulus to the nervous system as saved it from the shock inflicted it is not needful to inquire. The issue is the matter of greatest moment.

We have spoken generally of the efficacy of the agent in nervous diseases, but feel it our duty to give briefly the facts of a case of *aphonia* of long standing cured permanently by galvanism. This disease, marked by a partial or entire loss of voice, is frequently associated with defective nervous energy of the organs of voice, and hence the propriety of the remedy.

The report states that the galvanic circuit was completed by putting a silver piece on the tongue and touching it with the negative wire of a galvanic battery whose other wire was alternately connected with and separated from different parts of the external larynx. In this way shocks were repeatedly sent to the

nerves of the organs concerned in the formation of the voice. (See *American Medical Journal*, Oct. 1847.)

The same agent has also been employed as a promoter of uterine contraction in Great Britain, and also in this country. Dr. Radford and others, in Edinburgh, have resorted to it as an accelerator of parturition in cases of topor of the uterus; and also as a means for arresting *uterine hemorrhage*, by inducing prompt and efficient uterine contractions. A writer in the *New Orleans Medical Journal*, July, 1846, has furnished testimony to the same point.

In *Bell's Select Medical Library*, volume third, may be seen a good deal of testimony to show the efficacy of electricity and galvanism in *asthma*, *dyspepsia*, *palsy*, *epilepsy*, &c., to which work we refer our readers.

The last therapeutic use of galvanic electricity to be named refers to its *escharotic* power. This is not generally known to the profession, and yet is too important to be withheld. M. Pravaz, in the *Revue Médicale* for 1830, furnishes the following statement touching the management of the bites of rabid animals. He applied the wires of a common pile to the bitten part, within a quarter of an inch of each other, occasionally moving the wires over the spot. The animal fluids were speedily coagulated and the poison modified, or its action arrested. A pile of forty or fifty pairs will produce an escharotic effect fully equal to that from a solution of five grains of nitrate of silver in an ounce of water. The stronger the battery the more intense will be the escharotic action. And it is believed that the remedy may be usefully applied to old and *indolent ulcers*.

Electricity, in all its forms, has been resorted to in the hope of restoring persons apparently dead by drowning. And it is believed that at no distant day there may be such a wise use of the agency in suitable cases as to insure success. During my pupilage I assisted in numerous experiments made by my preceptor, the late Dr. Parrish, on dogs that were drowned in the pneumatic tub. As soon as they could be removed to a table, the galvanic battery, consisting of the ordinary pile, was brought to bear upon them with marked effect. One wire was passed into the mouth, the other into the rectum, and the spasmodic contractions, the opening of the eyes and jaws, seemed to be certain indications of restoration. But the desired end, viz., actual resuscitation, could not be attained.

It may be expected by some that a considerable space would be allotted to the vaunted miracles of *animal electricity* or *animal magnetism*, or *mesmerism*. But the vagaries of this subject are so perfectly in keeping with the stale tricks and illusions of *jugglery* that I cannot regard them as entitled to a serious notice.

There may be, and probably is, some truth mingled with the huge mass of delusion and falsehood; and the same might, with a show of propriety, be affirmed of the devil, albeit his accredited title is the father of lies. The developments of the mesmeric philosophy have been marked by a periodicity of type, coming and going by fits and starts, as the interest of the operatives prompted; and they are destined to annihilation as they come in contact with cultivated minds and vigorous common sense. We cannot close these remarks better than by giving the following quotation from an article by Dr. Wigan, (author of *Duality of the Mind*,) in the *London Lancet* for 1845. "The treadmill is the only cure for mesmerism, at least of those who make it a means of extracting money from their dupes; as for the poor creatures who pursue the 'science' as amateurs, they must be left to themselves. We can prevent gaming-houses, but we cannot prevent domestic gambling. At any rate, while such exhibitions are tolerated, it is a shameful injustice to punish old women for giving poor servant girls delightful dreams by prophesying handsome and wealthy husbands, and taking their half-crowns in exchange for the cheap bliss."

ELIMINATION.—The *London Medical Gazette* for 1844 contains a valuable paper by Dr. Bentley Todd on the treatment of *acute rheumatism*, in which he strongly advocates what is called the *treatment by elimination*, and called also the *eliminating* practice.

This, like the *depurative system* recently advocated by Golding Bird, is a virtual and practical enforcement of the doctrine of the humoral pathology. We have long taught this very doctrine of elimination as vastly important, though not under the same phraseology. That it is strictly correct and founded on the laws of the human system we have not a doubt. The sooner it is universally recognized the better.

Elimination means neither more nor less than the conveyance of morbid matter out of the body through the various emunctories or outlets. It is based on the simplest pathology, viz., that disease is often caused by some sort of morbific matter in the blood which may be carried out of the body. *Rheumatism* is taken as an appropriate example, whose *materies morbi* is held to be *lithic acid*, and its natural outlet by the skin. Many chemists affirm that it will escape also by the kidneys; and that as vitiated digestion increases its quantity in the stomach and bowels, part of it may be carried off through the alimentary canal. The indications are, therefore, to promote the action of the skin, the kidneys, and the bowels; to use antacids, to give large quantities of fluids in order to dilute the materies morbi abundantly, and so to aid in the drainage effected by diaphoresis

and diuresis. Such is the simple process by which the *elimination* of morbid matter is proposed to be effected.

Any medicine which is naturally eliminated would act as an eliminative medicine. Thus, if a drachm of urea be dissolved in water and injected into the veins of a dog, it causes copious urination, which continues till the whole is excreted. Lactic acid is diaphoretic. In rheumatism the sweat is largely increased, because an excess of lactic acid is formed in the blood. These instances well illustrate the point.

By reference to the article *depuration* it will be seen that Dr. Todd and Dr. Bird have substantially the same views of pathology, and hence the similarity of their practical directions. The subject is too important not to gain the special attention of medical men. We regret that we have not room for a fuller notice of this very interesting topic.

EMETIC TARTAR. (See *Antimonium.*)

EMETICS.—This term refers to any and every agent capable of dislodging the contents of the stomach, and consequently embraces some things that are not, strictly speaking, medicinal—as offensive sights, smells, tastes, disgusting recitals, the mere talk about taking a dose of physic.

It is important just here to inquire whether vomiting is opposed to nature in such a sense as to justify the *infinitesimal* practitioners in refusing to administer emetics in croup—in other language, to ascertain whether the remedy is not so explicitly urged by nature herself as to make its utter neglect criminal. And here it is only necessary to appeal to the history of infancy in all countries in order to reach the conclusion beyond the possibility of mistake, that some *vomiting is indispensable to infantile existence and thriving*. To control a sucking child in regard to the quantity of milk drawn from the maternal fount is often, very generally, indeed, impracticable. In ten thousand instances it cannot be done. What then? the stomach is overloaded, and the surplus cannot find egress by the bowels. Nature meets the difficulty, and evacuates the stomach or throws off as much as the emergency calls for. This process is repeated twenty times a day in the first year of life, and yet the most vigorous constitutions are the result of all this, or of something else. At all events the repetitious vomiting, twenty times a day for months, does not prevent the development of perfect vigor, and this reiterated evacuation of the child's stomach is a thing that every mother looks for, and which, therefore, occasions no alarm. Indeed, you will often hear experienced females assert that the infants who throw up almost as fast as they suck, and then take the breast with avidity, with the certainty almost of throwing up

again, are among the most vigorous children that are raised to maturity; and such is the fact.

If these things be so, (and the testimony of the civilized world says they are,) how can emetics be rejected in those diseases of young children which in thousands of instances have been promptly relieved by them, on the naked assumption, made in the very face of nature, that such remedies are unnatural and therefore hurtful? Shall we heed the voice of nature, or the mysticism of the infinitesimal practice? Judge ye. The practitioner, call him what you may, is not fit to take the charge of a case of inflammatory croup, threatening instant suffocation, if he is so wedded to his infatuation as to withold a prompt emetic because "it is a means at war with nature." The premises are false, and the conclusions cannot be true. There never was and never can be an infinitesimal dose exhibited that is the one-thousandth part as safe, while it is less than a millionth part as salutary, as the prompt emetic given to a child laboring under inflammatory croup, after due local or general bleeding has been premised. The writer has had twenty cases of croup in his own family, at least, and all with happy termination; nor has he ever lost a patient with that disease to this day, and yet his reliance has been chiefly on emetics. Of all the classes in Materia Medica not one is so safe, so easily tolerated by infantile constitutions, as emetics, and it is so because nature has made it thus.

In quite young subjects vomiting takes place so spontaneously, to appearance, as to occasion very little disquiet. Not so in more advanced life, except in rare instances. For the most part the act of vomiting is preceded by uneasy sensations, consisting of various degrees of nausea, and this augmenting until the full effect occurs. Before the emetic development is complete the face becomes pale, the pulse flags, the spirits are depressed, there is anxiety, listlessness, and a tendency to faint. Presently a sweat breaks out, which affords relief; but if the vomiting be severe, there will be pain or uneasiness about the clavicles. Such are some of the attendants on the act of vomiting. The relaxation of the whole system often has the effect of arresting morbid action, and the copious perspiration that ensues often contributes to this result.

The mere emptying of the stomach is only a physiological effect that in itself has no necessary bearing on the cure of disease. It is the *therapeutical* result, or that which grows out of the fact that other and even distant parts feel the force of the local action in the stomach, which gives so much importance to this class of remedies. Hence we cure a severe headache sim-

ply by a mild emetic, and without any application directly to the head.

It has been supposed by some that emetics operate by their local stimulation of the coats of the stomach. Such may be the fact, though not in every instance. Sometimes a considerable lapse of time occurs between the taking of an emetic dose and the beginning of its action, much longer indeed than would seem necessary for a purely local impulse. Hence the inference that emetics generally enter the circulation prior to the vomitive development. Tartar emetic introduced into a vein will vomit in a shorter space of time than if it be swallowed. Magendie proved that when emetics have caused vomiting the effect may be arrested by pressure on the medulla oblongata, just as the convulsion induced by strychnia may be checked by pressure on the motor tracts of the spinal marrow. The inference thence deduced was that the action of emetics does not depend on local stimulus of the gastric nerves, but on the agency of the emetic after entering the circulation, as an indirect stimulus to the origin of these nerves, whereby contractions of the stomach and of the abdominal and other muscles are secured. These nerves comprehend a branch of the eighth pair, the intercostal and phrenic.

Notwithstanding all this, vomiting does sometimes follow a direct impression on the nerves of the œsophagus and stomach. A feather and other mechanical contrivances act in this manner, for the effect is immediate. The sailor's emetic is of the same nature.

An irritant in the structure of the stomach, caused by disease, will so interfere with the proper functions of the organ as to induce frequent vomiting. It may operate like a foreign body thrust against the walls of the stomach, proving a mere irritant, though a perpetual one. Tumors pressing on the pylorus, thickening of a portion of the walls of the stomach, are cases in point. The latter may be often very obscure, and hinder a correct diagnosis. Such a case fell under my notice in the person of a robust farmer of excellent habits. Irritability of stomach, and then frequent vomiting, the rejection of solids and fluids, and mental depression as a consequence, made out an embarrassing case. Enlargement and scirrhus of the liver were suspected, and appropriate remedies resorted to, but in vain. Dissection showed a thickening of the anterior wall of the stomach, with a base not less than two and a half inches in diameter, tapering to a point, with a thickness of texture amounting nearly to an inch and a half. This constituted the entire pathological state of the patient, and was the exclusive source of his gastric distress.

Whatever be the cause of vomiting, there is indispensable to its full display a certain action of the stomach and certain muscles of the abdomen and thorax. Some prominent French and English physicians have contended that the stomach is wholly passive, that vomiting is effected by the action of the diaphragm and abdominal muscles exclusively. Some reject the agency of the abdominal muscles and make the diaphragm the principal agent. Dr. M. Hall designates vomiting a kind of violent expiratory effort, not unlike the act of coughing, which often excites vomiting in delicate persons. We see no good reason to doubt that the muscular coat of the stomach performs its part, and favors the process by due contraction. Whatever be the muscular force employed, it is clear that the nervous system is deeply implicated. If the nervous energy be suspended, as in profound intoxication, it is not easy to excite vomiting. But if the intoxication be partial, the nervous excitement actually augmented, vomiting will often come on spontaneously, or it may be induced without difficulty.

The length of time requisite for the proper action of emetics is various. Some act very speedily, and are hence called *prompt.* As instances, we cite the sulphate of copper and the sulphate of zinc, both being employed in cases of poisoning on account of the celerity of their action. The *slow* emetics include such as are obtained from the vegetable kingdom; a fair specimen is found in ipecacuanha, which not unfrequently requires from thirty to forty-five minutes for action. There is something, also, in diversity of the same constitution at different times, to explain, if we knew it precisely, why the length of time varies so much and so frequently. Persons of a torpid habit are operated on slowly, and require large doses as a general rule. Females are more readily vomited than males, and children than adults, because of the greater laxity and yielding nature of their fibres.

Emetics are to be considered as unsafe for persons disposed to apoplectic attacks, because the vomitive efforts increase cerebral determination. They induce a temporary interruption of the pulmonary circulation, prevent the return of blood from the head, and so set up or increase liability to congestion. And yet apoplexy has been prevented and relieved by emptying the stomach. Over fullness, or the presence of offending matters in the stomach, may be an occasion of apoplectic seizure, and then the sooner the offending cause is dislodged the better.

Emetics are also unsafe for persons laboring under hernia or prolapsus of any kind, as well as for females in advanced stages of pregnancy. And yet there are women who, from mere habit, take emetics at all times, and with no bad result.

The *proper time* for taking emetics is worthy of a passing

remark. As a general rule, the evening will be found to be the best time, provided there is no urgent reason for taking them sooner. There is a natural propensity to repose as the day declines, and this bent of our nature is gratified by deferring the exhibition until seven or eight o'clock at night.

The *protracted action* of emetics is occasionally embarrassing. They do not cease to evacuate and irritate when we desire them to do so. The case may be alarming, and sometimes puts all our efforts at defiance. Perhaps a solution of Epsom salt may serve our purpose, by turning the irritation downward. A teaspoonful of common house salt in a teacup half full of water has answered the purpose. Or a little old wine, or a few drops of laudanum, or a teaspoonful of brandy, may suffice. The bowels should be opened in all cases, and if the above-named expedients fail, make a blister on the epigastrium of the size of a dollar by the use of boiling water or concentrated ammonia, and to the raw skin apply a half-grain of a salt of morphia, to be repeated in half an hour if necessary. A half-drop or whole drop of creosote given every half hour has sometimes succeeded.

The application of emetics in the treatment of disease is very extensive and of great value. We shall have frequent occasion to refer to this hereafter, as we have done heretofore.

EMETIN. (See *Ipecacuanha.*)

EMETO-CATHARTIC.—The term sufficiently explains itself. A mixture of calomel and ipecacuanha is very often of great value, because of the twofold results to which it gives rise, viz., vomiting and purging.

EMMENAGOGUES.—This term comes from two Greek words the import of which is *to move the menses.* A question has been raised here that has not, perhaps, been definitely settled. Is there any medicine or agent capable of exerting direct power to move the menses? If it be true that the catamenia come originally from the ovaries, the question may be even more embarrassed; under any circumstances it is a difficult one. If all real emmenagogues be *ovario-spinal* excitants, then it is more than probable that they are all indirect agents.

It is very certain that means of the most opposite qualities have been the accredited agents in the rectification of catamenial derangements; and we are forced to infer that all do not act alike, just as we know that the constitutions acted upon are dissimilar. General and local bleeding, purging, vomiting, abstinence, tonics, antispasmodics, the mildest as well as irritant articles, have all been apparently successful.

The facts teach the vast importance of prescribing medicine or means of any kind for the relief of menstrual irregularities with special reference to the peculiarities of each case, and not

to be governed by the reputation assigned to any remedy, however strong the testimony may be in its favor.

EMULSIONS.—These are defined to be soft and oleaginous mixtures, not unlike new milk. They present some compounds that are frequently available in practice. The following samples may suffice:—

Camphorated Emulsions.

1. ℞.—Ol. amygdal. dulc. ℥ss;
Pulv. gum Arab. q.s.
Camphoræ, grs. x.
Rub these well together, and add
Aq. cinnam. ℥iv;
Syr. limon. ℥ss.
Mix.

2. ℞.—Amygdal. dulc. ℥ss;
Amygdal. amar. ʒss;
Aquæ, ℥viij;
Pulv. gum Arab. ʒij;
Camphoræ, ℈i.
Mix, to make an emulsion.
Dose, a tablespoonful once every three hours.

3. ℞.—Camphoræ,
Potass. nit. āā ℈i;
Pulv. gum Arab. ʒi;
Ol. limon. ℈i;
Aquæ, ℥viij.
Mix.

Pectoral Emulsions.

1. ℞.—Spermaceti, ʒi;
Pulv. gum Arab. ʒij;
Ol. amygd. dulc. ℥i;
Syr. simp.
Syr. tolutan. āā ℥ss;
Aq. rosar. ℥iv.
Mix.

2. ℞.—Ol. aymgd. dulc. ℥iss;
Vitelli ovi i;
Muc. gum Arab. ℥ss;
Vin. ipecac. ʒiss;
Syr. scill. ℥ss;
Aq. fœnic. d. ℥iv;
Mix.

3. ℞.—Muc. gum Arab. ℥i;
Morph. acet. gr. i;
Ol. amygd. dulc.
Syrup tolut. āā ℥ss;
Camphoræ, grs. v;
Aquæ rosar. ℥iij.
Mix.

ENDERMIC MEDICATION.—The definition given of this term in some of the medical dictionaries is incorrect, and has led to false apprehensions of the value of the practice. It is said to be "that mode of using medicines in which they are *rubbed into the skin, especially* after the cuticle has been removed by a blister. The words italicized are exceptionable. They lead to the impression that the mere friction of medicines on the sound surface constitutes *endermic* medication. It does not, and is only the old-fashioned *Iatraleptic* treatment. *Endermic* medication demands the previous separation of the cuticle; and for want of this precaution the plan of treatment has been laid aside by many as of little value. The design of this removal of the entire cuticle from the blistered spot is to present an absorbing surface, and thus insure a result that mere friction on the sound skin cannot accomplish. One of the fullest papers on this subject was published by Dr. Gerhard, in the *North American Medical and Surgical Journal*, vols. ix. and x.

I have tried this plan so frequently and with such uniform success that I cannot but commend it to such of the profession as have not given it a fair trial. It is among our best means for

speedily quieting irritability of the stomach and general irritation, when it is difficult or impracticable to administer the proper remedies by the mouth.

In *cancer uteri*, when large doses of opium have ceased to relieve, the spasms have been greatly mitigated by passing a seton through the soft parts in the vicinity, coated with cerate containing two or three grains of acetate of morphia. The repetition of this appliance daily, or several times a day, has prolonged life and made it comparatively pleasant. Here, the endermic principle was fully carried out. In *chronic rheumatism* in any and every part of the system, the same plan has been successful. The painful part must be blistered, and the cuticle removed to such an extent as to allow of the introduction of the salt of morphia. Speedy relief is obtained in a few hours, and may be continued by a repetition of the dose to the raw surface. In the *Retrospect of Braithwaite*, part xiii., may be seen decided testimony to the same point. The *London Lancet* for September, 1846, speaks in high terms of the endermic use of the acetate of morphia for the relief of *neuralgic pains* in various parts of the body. *Asthma* has been promptly relieved, in a French hospital, by the same use of the acetate of morphia to the chest. And there is sufficient evidence to show that the endermic application of the salts of morphia and extract of belladonna to the raw spine will do more for the relief of patients affected with *delirium tremens*, *tetanus*, and *hydrophobia*, than any other external applications.

Nervous headache of obstinate and distressing character has often yielded speedily to the salts of morphia laid on the temple, from which the cuticle has been detached. A half-grain, repeated twice or thrice a day, will generally suffice. The most delicate mode for endermic medication is effected by the introduction of a sharp thumb-lancet, armed with a solution of the acetate of morphia, under the cuticle, as in vaccination. To insure the result, it is proper to make several punctures of the skin. In a chronic case of neuralgic rheumatism of the inferior extremities, with intense suffering, I advised the insertion of the morphia salt in the same way, and with most happy consequences.

Sulphate of quinine, digitalis, aloes, iodine, and many other articles, can be employed in the same way.

ENEMATA. (See *Clysters.*)

EPISPASTICS.—Any application capable of inflaming the skin and causing an effusion of serum under the cuticle is an epispastic. Various articles possess this property, which is displayed especially by *cantharides*, to which article the reader is referred.

ERGOT. (See *Secale Cornutum.*)

ERRHINES.—Derived from two Greek words, importing, *in the*

nose. Errhines refer to articles which, applied to the lining membrane of the nose, excite sneezing, and augment the secretion.

ETHER.—The mutual reaction of an acid and alcohol gives rise to an ethereal product, and it follows that the chief difference in ethers is owing to the difference in the acid employed. Hence sulphuric, nitric, hydrochloric, acetic, phosphoric ethers have peculiar qualities belonging to each. The chloric ether, in the formation of which chloride of lime supplies the place of an acid, is a different article in some respects from all other ethers. Volatility, inflammability, levity, and a peculiar odor called ethereal, are the distinctive features of the ethers.

The *sulphuric* or *vitriolic* ether, being the most in use, claims attention first. It can be made by heating in a glass retort equal quantities of sulphuric acid and alcohol, gradually mixed. The vapors which pass over are carefully collected in a vessel kept constantly cold by means of ice. The product has the strong smell of sulphuric ether, is colorless, pungent, intoxicating, very volatile, and combustible. The two qualities named prompt to caution, in pouring the fluid from one vessel to another with a lighted taper near at hand, especially in hot weather. The vapor is readily kindled, and the contents of the vessel may be in a blaze instantly. If a carboy happen to meet with an accident so as to be fractured, and the ether thus escape in form of vapor, the whole atmosphere will be impregnated, so that the incautious taking of a lighted candle into the place will set the vapor on fire. I knew a gentleman, afterward a professor in Tennessee, who was severely burnt by an accident of this sort, the scars being indelibly fixed on his face.

It should be recollected by all dispensers of ether that when added to water, if it be a very concentrated article, the ether will float on the surface, and therefore the vial should be well shaken. We do not often get an ether quite so strong, however, for it is generally over-diluted with alcohol. When needed in a chemically pure state, it should be tested for sulphuric acid, a portion of which is often present. The solution of hydrochlorate of barytes added to a little of the ether will give a copious, insoluble, white precipitate of sulphate of barytes.

The action of ether on the surface of the body is often an important practical auxiliary, and it varies with the manner of use. Thus, if it be poured on a spot and be allowed to evaporate, a marked feeling of cold will ensue; and in this way severe *headache* has sometimes been treated successfully. On the same principle it has been employed to reduce *hernia*—the cold and consequent contraction of the parts favoring the result. *Burns and scalds* have been well managed in the same way.

But if a compress be soaked in ether and bound to a part with

a well-applied bandage so as to prevent evaporation, in place of a feeling of cold there will soon be greatly augmented heat. In this way sulphuric ether proves a *rubefacient*, and even a *vesicant*.

Exhibited internally, sulphuric ether has been regarded a good diffusible stimulant, and the dose for this end must be frequently repeated. From fifteen to thirty drops may be given to an adult on sugar or in water every fifteen or twenty minutes. Brande records the fact that a teaspoonful at one dose, given a little while before an expected chill, has prevented it by the sudden and severe shock inflicted. Something like temporary suffocation is induced in this way. Dr. Challeton affirms that he has been in the habit of curing *ague and fever* by this practice, and has succeeded also by giving the ether in smaller doses, at intervals of four hours, on the well day. (See *American Medical Journal*, Oct. 1847.) The practice, however, is more ancient than either of the gentlemen whose authority has been given. This is evident from a statement made by Mr. Davidson, a London apothecary, in vol. v. of *Medical Facts*, an old and almost obsolete journal.* He relates several cases of *tertian* and *quartan ague* cured by swallowing a drachm of sulphuric ether just before the expected cold fit. He regarded it as always successful and safe when there existed no organic obstruction. He mentions a case of *epilepsy* cured in the same way. In very delicate females, and in persons predisposed to *apoplexy*, I should consider the practice unsafe.

Teaspoonful doses of sulphuric ether have been administered in fits of *hysteria* and *epilepsy*, and although the desired effects appeared to follow, the practice must be regarded as hazardous. The mere *antispasmodic* use is a different thing, and may be resorted to with safety in very many cases in doses varying from twenty to sixty drops given on sugar. Fits of *colic* dependent on flatulence are often soon relieved in this way. Sometimes we combine it with the fetid tincture and spirits of camphor advantageously. The employment of sulphuric ether for the relief of *pertussis* and *asthma* was based on its antispasmodic action, and I have no doubt that twenty-drop doses of the latter and five-drop doses of the former may often be salutary. (See *Wood's Addenda to Medico-Chirurgical Review*, July, 1847.) Aware that doses of ethers, as usually exhibited, were much reduced by evaporation before being swallowed, recourse has been had to the exhibition of the medicine in capsules. M. Clertan has seen neuralgia, hemicrania, and gastralgia arrested at once by two or three of these capsules, while common ether draughts and ether in syrups have signally failed.

* Published nearly a century ago.

The capsules can be administered in a dose of certain uniformity. They are inodorous, and may be kept on hand for an indefinite time without deterioration. Besides all this, the ether in capsules never irritates the membrane of the mouth or pharynx, and hence does not induce coughing.—*Braithwaite*, p. xxvii. p. 320. See article *Capsules*.

The inhalation of ether has long been practiced by persons laboring under *nervous headache*, and they have often been signally relieved. I have known such persons to put the bottle to the nose and snuff up the vapor for the space of five minutes, with frequent success. This was probably the earliest and simplest inhalation of ether with the view of assuaging pain. Dr. Pearson, of London, more than a century ago, resorted to inhalation of cicuta and sulphuric ether for the purpose of making expectoration free and easy. From twenty to thirty grains of powdered cicuta leaves were added to an ounce of sulphuric ether and the mixture digested for the space of three days. A pretty strong ethereal tincture was thus obtained, one or two teaspoonfuls of which added to a small teacup of warm water, with a funnel over it, constituted the inhaling apparatus. From five to ten minutes served for the inhalation of enough to develope decided *expectorant* qualities.

A pernicious practice prevailed in the Northern Liberties of Philadelphia many years ago, in the inhalation of ethereal gas by young lads merely as a matter of sport. Common hog's bladders were procured and fitted with a kind of mouth-piece of ivory, or wood, or tin, as happened. A small quantity of sulphuric ether was placed in the bladder, which was then dipped in hot water to convert the ether into gas or vapor. The inhalation of this gas acted variously, resembling in some the effects of nitrous oxide gas. In others, severe pain in the head and phrenitis followed, and at last one of the boys died of inflammation of the brain. The *poisonous* agency was so obvious as to call forth the action of the municipal authorities. A paper on this subject was published by Dr. Klingle, since deceased, and reference is made to the facts in my *Elements of Chemical Philosophy*, published in 1832. An account somewhat similar was published in a medical journal in the West a few years ago.

The inhalation of ether has come into pretty general use in various parts of the world, with the design of annulling consciousness, and so enabling patients to endure painful operations. It has also found its way into the practice of midwifery, and has some bold and respectable advocates.

In *Ranking's Abstract*, part vii. page 140, the reader may find a case of inversion of the womb that continued for sixteen and a half months, refusing to yield to all the usual means of

reduction. It was finally managed by the anæsthetic power of sulphuric ether.

The moral relations of the state of unconsciousness induced by ethers are exceedingly important to society. A dentist attempted a rape on a girl of sixteen, to whom he gave the ether in order to prepare her for the extraction of a tooth without pain. (See *Medical News*, Oct. 1847.) And a preacher was deposed in the South, a few years since, for attempting to have connection with a female by resorting to the same anæsthetic agent. These and similar facts may serve to show how deleterious this instrumentality may prove in the hands of depraved men.

My own opinion of the principle involved has been set forth with sufficient plainness under the article *chloroform*, to which the reader is referred. And yet it is conceded that cases may arise in which the inhalation of sulphuric ether and chloroform may be proper. Dr. Tusson, a surgeon in the Ottoman army, gives his personal experience of the efficacy of ethereal inhalation in *Asiatic cholera*. He was attacked in the night, alone, and wholly unprovided with medicine, except a bottle of sulphuric ether. He applied this to his nose and drew in the vapors as fast as he could. His respiration became tranquil, his general uneasiness subsided, he fell into a sound sleep which continued about six hours, perspired freely, and awoke in comfortable circumstances.

In all diseases likely to have a fatal termination, as tetanus and hydrophobia, it is entirely proper to employ ethereal inhalations, and they have been used with success.

The pure sulphuric ether of the manufacturers, diluted with twice its weight of rectified spirit, constitutes the sulphuric ether as commonly employed in practice. The compound spirit of sulphuric ether contains some oil of wine, and is a substitute for *Hoffman's anodyne*. The aromatic spirit of sulphuric ether is ether combined with aromatic oils. The absolute sulphuric ether can be preserved a great length of time, while the common article is liable to decomposition, especially if kept in a careless manner.

Nitric ether is prepared pretty much in the manner as detailed in respect of sulphuric ether. The chief difference is in the acid. Pure nitric ether is rarely employed in practice. The article called *sweet spirit of nitre*, *spiritus nitri dulcis*, &c., is the alcoholic solution of nitric ether; hence it is sometimes called *ethereal nitrous spirit*, *spirit of nitrous ether*. The diluted as well as the concentrated article has a peculiarly grateful odor, a pungent yet rather sweetish taste. The sweet spirit of nitre mixes well with water, and is readily decomposed if badly kept.

Its freshness and goodness, it is said, may be shown by the addition of tincture of guaiacum, which gives a deep-blue color, which is supposed to result from a small portion of free nitric acid.

There is a good deal of diversity in the profession touching the medicinal power of sweet spirits of nitre. Some physicians hold it to be indispensible, while others never employ it. My own opinion is somewhere between these extremes. Alone it is not often useful, while blended with other articles it is occasionally valuable. I think it increases the diaphoretic action of spiritus mindereri, and may be added with advantage. Added to antimonial wine it is sometimes well suited to the diseases of children, and the effect is *diaphoretic* and *diuretic*. Five drops of the latter and ten of the former may be given to a child a year old, and repeated every hour or two. The effects are increased by the exhibition of warm diluent drinks.

The late Dr. Eberle administered the spiritus nitri dulcis as a *direct sedative* in fevers, in tablespoonful doses. But I feel assured that the primary action is *stimulant*, and consequently the final action, if sedative, must be in the nature of an *indirect sedative*.

In purchasing this article physicians should prefer the highest priced quality. It is really the cheapest, and can be preserved for the longest time.

Acetic ether, made by the distillation of acetic acid and alcohol, is not much employed, It has had some repute in the treatment of *gout and rheumatism*, externally applied. Dr. Sedillot prescribed a half-ounce to be rubbed into the affected parts, and to be repeated every two hours. He regards it as a *sedative* and *anodyne*.

Chloric ether has been noticed briefly in the article *chloroform*. It is made by the distillation of a mixture of chloride of lime and alcohol, as is stated under the article *chloroform*. It is a very grateful stimulant and antispasmodic.

Dr. Black (see *London Medical Gazette*, 1833) has found it to afford prompt relief in *spasmodic asthma* in drachm doses. He speaks of its pleasant qualities in very decided terms, and thinks it a valuable medicine.

A reporter in the *Association Medical Journal* for Sept. 8, 1854, (Geo. B. Mead, Esq.) deals in large figures to prove the efficacy of chloric ether in the treatment of intractable *diarrhœa*, such as he saw in the epidemic form in Bradford, Yorkshire, in 1846, '47, and '48. He says he has used the remedy in fifteen hundred, and, not improbably, in three thousand cases, without one failure; well, that is success, certainly, and perhaps

there is no mistake. Time, the potent revelator, will show how the matter stands. The prescription is,

℞.—Etheris chlorici, ʒij;
*Speciei pro. conf. arom. ʒss;
Misturæ cretæ compos. ℥vi.

ℳ.—Fiat mistura. One-fourth of this to be taken at once, by an adult, and the same quantity repeated every half hour, or at longer intervals, according to the violence of the seizure. Sometimes an opiate was added, but this was rarely needful.

The effects were marvellous. The spasms and pains were abated as if by a charm, the diarrhœa ceased, extremities regained a natural temperature, pulse rose, and the whole aspect was decidedly changed for the better.

Ethiops Mineral. (See *Hydrargyrum.*)

Eupatorium Perfoliatum. *Thoroughwort. Boneset.*—This is an indigenous vegetable found in almost every part of the country, sometimes along small streams and in meadows. The whole plant is medicinal, and is so well known to the common people as well as to physicians that a description is not needful. The leaves and flowers are generally preferred. When chewed they impart a bitter taste with a peculiar flavor, destitute of asastringency or acrimony. All the valuable properties of the plant are taken up by water, and hence the cold infusion and decoction are employed. The powder and cold infusion as well as the extract possesses useful *tonic* properties, improving digestion and invigorating the whole system.

The warm infusion or decoction is *emetic*, *sudorific*, *cathartic*, and *diuretic*. The *extract* is readily prepared by making an intensely strong decoction and slowly evaporating the filtered liquor. The infusion or decoction may be made just as strong as practicable, and needs no detail.

It is proper to say that for many years the common people have been in the habit of curing *ague and fever* with the boneset alone, and I know physicians in the West who resort to it for this end. They administer a strong infusion or decoction as hot as it can be swallowed comfortably, for the purpose of *vomiting* freely. This is accompanied with copious *sweating*, and the bowels are also evacuated. During the intermission, the cold infusion, or cold decoction, or the extract, is given freely, to operate as a *tonic* and *antiperiodic*. From two to five grains of the extract may be taken every hour. Many practitioners esteem the boneset in all these relations as fully equal to Peruvian bark.

* Some readers will be puzzled to understand this part of the formula. It refers to the powder used in making the aromatic confection, the composition of which is cinnamon, cardamom seeds, and ginger, in fine powder, each ʒij, to be intimately mixed.

Dr. Peebles, of Petersburg, Virginia, reports very favorably of boneset in the treatment of *epidemic influenza*. (See *American Journal of Medical Sciences*, April, 1844.) Here it acts chiefly in virtue of its emetic and sudorific properties.

In persons of feeble constitutions, who cannot bear tartar emetic, the warm infusion of boneset will be found a very safe and efficient emetic, not being followed by the prostration and loss of tone consequent on antimonials.

EXERCISE.—This is a very valuable therapeutic agent, calling for sound judgment in order to salutary administration. We regret that it is not in our power to enter into its relation to convalescence, especially as we would like to do so, did our limits permit. We can only say that it calls for the wisest principles of practical medicine to make it safe and valuable.

EXPECTORANTS.—This term is derived from two words importing *from, or out of the breast*. It has reference to the various applications for promoting expectoration and relieving the chest from the difficulties attendant on that process, and is applied to all agencies, of whatever kind, that cause the evacuation of mucus from the secreting surface of the respiratory tubes and cavities. They aid in the natural process of expectoration, and rouse it when dormant. They may be regarded as uncertain agents, because the glandular structure concerned is less prone to be excited by medicines whose province is *elimination* than those glands whose special office is to eliminate. Happily they are of very various power, and hence if one fails to accomplish the desideratum others can safely come in as adjuncts or substitutes. This book furnishes a large variety.

The articles and means to promote expectoration are often administered most empirically. One man uses them because they have been employed by others, and that is the best reason he can give. Ask him how a medicine taken into the stomach can prove expectorant, and he is dumb or will give you a stupid explanation. He has never troubled himself about the matter, and cares not a whit how you explain it. Tell him that you employ the lancet as an expectorant, or the sulphate of quinine, or a decoction of bark, for the same end, and you excite his wonder, for that is all new to him. The lancet and tonics as expectorants? Nonsense! he exclaims; the idea is preposterous.

Let me say to all such unthinking practitioners that no remedy operates so promptly and effectively as an expectorant as does the detraction of blood when well-timed. We see it often in inflammatory affections of the chest, and others might see it too if they did not attach such vast importance to some trifling medicine exhibited at the same time. The strictured state of the thoracic organs is relieved by bleeding very speedily; the parts

are relaxed, spasms yields, and the sputa will find vent with little difficulty. It is on the same principle that minute doses of tartar emetic accomplish the same end.

But, says one, how can the decoction of bark or any tonic do that which you say can be effected so readily by the lancet? We reply that these remedies are adapted to opposite conditions of the system, and their right use calls for judgment rather than for memory. A debilitated condition may be as real a cause of difficult expectoration as may a state of stricture or spasm; and we find it to be so in old persons especially. A few doses of the bark decoction or some other kindred medicine will often invigorate so promptly as to be followed by all the tokens of good that the most noted expectorant ever produced.

It is quite obvious from these views that a reflecting and really practical man may very much enlarge the number of therapeutic resources not merely in respect of expectorants, but of all other means; and hence the value of a sound discriminating philosophy, that surveys the actual system in its entire extent unfettered by the stereotyped fantasies of the schools. The man who does his own thinking rather than allow anybody and everybody else to think for him is the man to make the wisest adaptations for the cure of disease.

Making all due allowance for the operation of certain means by sympathetic agency, we feel confident that the expectorant action of most remedies depends on their power to reduce or elevate the general vigor—in other words, that they are dependent, directly or indirectly, on their potency as stimulants or sedatives. We perceive this manifestly in reference to the lancet and tartar emetic, and have no doubt that less potent means operate pretty much on the same general principles. The counter-irritant action of a blister on the chest, although explained by its counter-irritation merely when it proves expectorant, does really deplete from the organs implicated; and this is most obvious when we keep up a discharge from the irritated surface for several days, to make the result more certain.

EXTRACTION OF TEETH.—I notice this here because of its importance to health. Sound teeth have been extracted with decided and permanent relief of chronic and distressing affections. I knew a lady who suffered severely for a long time with *facial neuralgia* that resisted all kinds of treatment. She had not a decayed tooth, but felt confident that the removal of three or four sound ones, in close proximity to the part affected, would give relief. She resided in the country, and applied to her physician to extract the teeth, a service which he was unwilling to perform, as the teeth were perfect. Discovering her determination to accomplish the object at all risks, he was at length in-

duced to comply with her wishes. The teeth were removed and the neuralgia ceased, nor has it ever returned.

Decayed teeth are frequently very prejudicial to health, and should be removed in all cases of chronic disease affecting the nervous system. I have known *epilepsy* to be permanently cured by the extraction of all the decayed teeth of the individual. A case of *catalepsy* that fell under my notice some years ago, and which had resisted all ordinary means, yielded to this device. I have known very troublesome *neuralgia* of the face and neck to disappear under the same treatment. It merits the serious attention of all practitioners.

The *London Lancet* for February 14 and March 21, 1857, contains two valuable articles on the effects induced by *carious teeth*. Supposed cancers of the cheek, fistulous sores of the face about the lower jaw, malignant-looking tumors on the tongue, sores in the throat, purulent discharges from the nostrils, and other unpleasant consequences are detailed in numerous cases presented in the articles. We refer the reader to *Braithwaite's Retrospect*, part xxxv. pp. 97–98, for a fuller account.

Extracts.—These are often useful preparations, containing in a small bulk a large amount of medicinal power. Concentrated decoctions of vegetable substances, by slow evaporation, furnish the most of our extracts. These are sometimes injured and even ruined by the application of too intense heat, in consequence of which the vegetable is decomposed and rendered worthless. This may account, in part, for the very large doses of extracts reported as having been administered almost without effect of any kind. A good extract should possess, in some degree, the odor of the vegetable from which it is made, and be wholly free of a burnt or empyreumatic smell.

We may prepare all the extracts either with water or alcohol. The principal difference is in the greater liability of the one than the other to spoil. The antiseptic quality of alcohol secures an extract for an almost indefinite period, while the watery preparation will soon spoil, unless kept in a very cold place. There are also some ingredients of vegetable matter that require alcohol for solution, and these cannot, of course, be taken up by water. Of the vegetable matters, easily procured every year, very efficient extracts can be made simply by forming a very strong decoction with water and evaporating to a due consistence. Hemlock, stramonium, and some other narcotics, can be thus made into extracts of a very good quality, and may be kept with due care until the next season, when a fresh supply can be procured.

Farina Triticea. *Wheat Flour.*—We introduce this article here chiefly to notice its excellence as a remedy for *burns* and

scalds. In the year 1832 a paper was read before the *Ohio Medical Lyceum*, in Cincinnati, by Dr. Jno. Thomas, of England, setting forth the manner in which he had treated burns and scalds with the greatest success, viz., by covering the parts completely with wheat flour and allowing it to remain until spontaneously separated. The *London Lancet* contains a paper by the same individual, and somewhere near the date named above. The plan was reported as attended with the happiest results: soothing the burning pain effectually and speedily, promoting, at the same time, the salutary healing beneath.

The *New York Medico-Chirurgical Bulletin* for 1831–2, copies largely from Dr. Thomas; and the extracts furnish cases in which the *flour* and *Kentish* practice were tried simultaneously on the same person, an arm being dressed in each way. The former was admitted to be by far the better plan of treatment, and its action ascribed to its complete exclusion of the atmospheric air, in agreement with the suggestion of Baron Larrey, "that the injured surface should be exposed as little as possible."

I have been in the habit of naming this practice in my lectures, and of accounting for its complete success by the perfect manner in which it excludes the air from the exquisitely tender surface, as the above statement teaches. The January number for 1850, of the *American Journal of Medical Sciences*, has a paper furnished by Dr. Reese, of New York, in which the flour treatment is very highly praised. As there suggested, the numerous steamboat scaldings would probably be more happily managed by the flour dressing than in any other way; and the article is always at hand.*

Wheat flour is also a very pleasant application to parts laboring under erysipelatous inflammation; and it would be much more signally efficacious if the surface were perfectly coated with the flour. Burning and itching of the skin from any cause is speedily relieved by this dressing freely applied. We are aware that rye flour and buckwheat flour are employed for the same purpose.

Wheat flour presents also a convenient mode for the exhibition of gluten, as an antidote for the poison of corrosive sublimate. A small handful stirred into a quart of water will answer for this end, and the mixture should be given *ad libitum*.

Within a few years a very neat article has been introduced, called *farina*, and sold as a superior kind of diet for the sick.

* Shortly after this work first appeared, (in the summer of 1850,) Dr. R. took exception to my remarks as to the early use of flour in the treatment of burns, and claimed to have introduced the practice to the notice of the profession anterior to the publication of Dr. Thomas. We do not now recollect his precise statement, but think it simply right to give credit where credit is due.

It would seem to be a sort of sublimated wheat, abounding in nutriment and being quite agreeable. It is prepared like arrow-root, for which it is often used as a substitute.

FENNEL. *Sweet Fennel. Anethum Fœniculum.*—These well-known seeds are decidedly aromatic and warm. They contain a great deal of essential oil, and are stomachic and carminative. The root is said to be pectoral and diuretic. The oil of fennel-seed possesses all the qualities of the seed, and is useful in flatulent colic in doses of one to five drops on sugar.

FERRUM. *Iron.*—The simplest medicine derived from this source is the article called *limatura ferri*, *ramenta ferri*, or, in plain English, *iron* or *steel filings*, or *dust of iron*. The exhibition of this agent as a *tonic* and *anthelmintic* is universally known to the profession. It is probable that, in all cases of its tonic action, the filings are first oxidized and then changed partly or wholly into a lactate. If the action be *anthelmintic* only, the effect may be, and probably is, dependent on the mechanical property of the filings. The dose may vary from five grains to half a drachm, and is readily exhibited in syrup.

Iron reduced to an impalpable gray powder by the action of hydrogen gas on the heated oxide, according to the method of M. Bouchardat, has been regarded as a better preparation than the filings, because more readily changed into the lactate in the stomach. The dose is from five to ten grains. (See *American Journal of Medical Sciences*, Jan. 1847.)

The article called *clinkers*, a refuse of the smith's forge, and probably an impure oxide, has been employed as a tonic. (See *Braithwaite's Retrospect*, part v.)

The well-known *rust* of iron (rubigo ferri) is among our best ferruginous medicines. It is called the *carbonate*, *subcarbonate*, *proto-carbonate*, *precipitated carbonate*, *sesquioxide*, &c. &c. And while some physicians make important practical distinctions in regard to these names, my own belief, as the result of a good deal of observation, is that the same identical article is sold under all the titles given,—the real difference depending wholly on the purity of the medicine, as secured by frequent washings with pure water. It can be made with little difficulty by dissolving one hundred and forty-four grains of crystallized carbonate of soda in a sufficient quantity of water to take it up. This solution is to be poured into a vessel containing one hundred and thirty-nine grains of crystallized green sulphate of iron dissolved in an ounce of water. The precipitate must be collected on a filter and repeatedly washed. In the process there is mutual decomposition, the resulting compounds being sulphate of soda and carbonate of iron. As the collected precipitate dries it changes color gradually from a dingy green to a brown,

which is the proper color of the *rust* of iron. The latter name is readily comprehended. Iron exposed to moisture and air soon becomes rusty or oxidated, and in this state it absorbs carbonic acid from the atmosphere. A carbonate of the protoxide of iron is thus spontaneously formed.

This preparation is justly regarded as one of our best tonics, whether given alone in five-grain doses or in the shape of what are called the *tonic powders*, consisting of the rust, some vegetable bitter, and aromatic. Thus:—

℞.—Carbonate of iron,
Powder of Calumbo,
Powder of ginger, each a drachm.

Mix well, and divide into twelve powders, one of which to be given three times a day in syrup or sweetened water.

The *mistura ferri composita*, or *compound iron mixture*, is made on the same principles as the rust of iron, and very closely resembles *Griffith's tonic mixture*. The dose is from one to three tablespoonfuls three to five times a day. It is thus prepared:—

℞.—Gum myrrh, (in powder,) a drachm;
Carbonate of potash or soda, twenty-six grains;
Rose-water, seven and a half ounces;
Pulv. sulphate of iron, a scruple;
Oil of cinnamon, ten drops;
White sugar, two drachms.

Rub all the articles well together, excepting the sulphate of iron, and then add that salt, shaking the whole frequently. Double decomposition ensues, and carbonate of iron is formed. The mixture is clearly an incompatible one, chemically considered, and yet it is often a very useful one.

It must be borne in mind that all the preparations of the carbonate of iron sometimes induce *cardialgia;* this may result from too large or too long-continued doses. To prevent or modify this result, a few grains of the white oxide of bismuth, or the calcined magnesia, will be found to answer very well.

The carbonate or rust of iron is not soluble in water, while the *bicarbonate* dissolves readily. It is in the latter form that the salt exists in chalybeate springs. We can make an excellent substitute for the water of those springs by dissolving three grains of sulphate of iron and sixty-one grains of bicarbonate of potash or soda in a quart of cool water, in a close vessel, taking care to shake frequently. The bicarbonate is thus formed, and held in solution. It is the superabundance of carbonic acid, furnished by the bicarbonate of potash, that holds the oxide of iron in solution. This is manifest from the action of a spirit-lamp heat on the new solution. It drives off the excess of carbonic acid, and the iron is precipitated.

Carbonate of iron is liable to accumulate in the rectum and other bowels when administered for several weeks and in large doses, and some fatal results have followed. The evil can be prevented by occasionally exhibiting a cathartic dose sufficient to evacuate the canal. (See *Medico-Chirurgical Review*, vol. xxx.)

Very favorable accounts have been furnished to the profession of the use of carbonate of iron in *pertussis*. In the *Dublin Journal of Medical Science* we find a paper by Dr. Lombard, of Geneva, on this subject. He gave to children six years old thirty-six grains per day in syrup, and thus reduced the number and severity of the paroxysms promptly. In *chlorosis*, there is not a better medicine, if the way be quite clear for the mineral tonics. In *chorea*, I have succeeded admirably with the tonic powders before named, the shower-bath, and carriage exercise, after a state of debility had been induced by too free use of cathartics. Some old cases of *tic douloureux* have been successfully managed with large doses continued for a long time.

In all diseases in which the blood is manifestly at fault, the red globules and other solid constituents being very deficient, the preparations of iron soon evince their tonic and invigorating power. The whole appearance of the patient is soon changed for the better, simply because the blood is restored to its natural condition. The experiments of a distinguished foreigner have shown, very conclusively, that the solid ingredients of the blood in chlorotic patients were augmented one hundred per cent. by the use of iron for the space of two months. The propriety of the remedy in such cases is therefore demonstrated. I need hardly say, if the preparations of iron can thus enter and change the qualities of the blood, that the presence of iron in the urine can be made manifest. Hence, after but a few weeks' or days' exhibition of chalybeates, the mineral can be *detected* in the *urine*.

A *syrup* of carbonate of iron is held to be a better form of administration than any other by some who have tried it and prefer the carbonate to other salts of that metal. There are syrups vended which may or may not be genuine, and hence the need of an acquaintance with the best mode of preparation. Take of carbonate of potash, half an ounce; sulphate of iron, three drachms and one scruple; simple syrup, eighteen ounces; water, ten ounces. Dissolve the sulphate of iron and carb. potash each in five ounces of the water, and mix the solutions. Collect the precipitate on a cloth filter, wash it with pure water, squeeze it into a pulp as dry as may be, and then rub it well with the syrup. The dose of this syrup is from two drachms to half an ounce, and can be taken by many who refuse the naked rust of

iron, even when put in wine. This formula was given by Dr. Richardson in the *Association Med. Journal* for July, 1854.

The combination of iron with muriatic acid (hydrochloric) furnishes a very good medicine, which is prescribed in the form of tincture, called *muriated tincture of iron, tinctura ferri muriati, tinctura ferri sesquichloridi, tinctura ferri chloridi, tinctura martis in spiritu salis*, &c. &c. It is made of the rust of iron, a half pound; hydrochloric acid, a pint; alcohol, three pints. The acid and rust are mixed in a glass vessel and shaken frequently during three days. The result is a simple muriate or hydrochlorate of iron, to which the spirit is next added. The mixture, after having been strained, is bottled for use. The tincture, so procured, has a grateful ethereal odor, is of a dark-brown color, having a marked chalybeate taste, very astringent, and decidedly styptic.

This tincture has been employed both externally and internally. Among the external uses we name the treatment of *cancrum oris*—a disease that is very fatal to young children—by its application to the gums and other parts affected. (See *Medical News*, Jan. 1844.) Also, the expedient devised by Professor D'Outrepont, of Germany, for the arrest of *uterine hemorrhage*, occurring before and after labor. He employed, not strictly speaking, the tincture, but the muriate made before the addition of the alcohol. He applied this, diluted with water in a sponge, so as to plug the vagina, having previously thrown up a portion by injection. (See *American Journal of Medical Sciences*, Oct. 1844.)

The internal uses are valuable also. The adult dose is from ten to thirty drops three times a day, in infusion of quassia, or tansy tea, or simple water. The late Prof. Physick frequently administered it in *retention of urine*, and with decided and prompt relief. In *hemorrhage* of the passive kind it is among our best medicines. Old drunkards are liable to *hematemesis*, which is speedily controlled by fifteen-drop doses given every half hour. I have employed it very happily in the management of *gleets* of long standing. The dose to begin with is about ten drops, gradually augmented to forty, three times a day. It has also been administered with good results in *gonorrhœa*, when the more common treatment had lost its power. It cannot be proper if there be any symptoms of inflammation. The usual prescription is thus:—

℞.—Muriated tincture of iron, one drachm;
Sweet spirits of nitre, seven drachms.
Mix.

The dose is from forty to sixty drops in simple water three times a day. The tincture has also been employed in discharges

of blood from the urethra, in *leucorrhœa*, &c. &c. (See *London Lancet*, Dec. 1840.) The same journal for October has three cases of *diabetes mellitus* cured by the tincture. The prescription was as follows:—

℞.—Muriated tincture of iron, two drachms;
Laudanum, a drachm and a half;
Sulphate of quinine, eight grains;
Water, six ounces.

Mix.

The dose was an ounce three times a day. Animal diet was strictly enjoined at the same time.

The muriated tincture has been employed by Mr. Bell, of Edinburgh, for more than a quarter of a century, with almost uniform success, as a remedy for *erysipelas*. It prevents suppuration entirely, and leaves the patient in a more robust state of health than he enjoyed before.

The bowels having been duly evacuated, fifteen drops of the tincture are given in water every two hours, till the disease subsides. If the attack be more severe, twenty-five drops may be given every two hours night and day, however high the delirium. The only local application employed was hair-powder and cotton wadding. The bowels must be kept free all the while. Persons from sixteen to seventy-three years of age have been thus treated, with success. The diet should be generous.

Dr. Balfour has given a good account of a similar practice in the *Monthly Journal of Medical Science* for May, 1853.

The following preparation had admirable success in arresting *incontinence of urine* in an old man. The difficulty appeared to depend on weakness of the bladder, merely a want of tonic contractility of the muscular fibres.

℞.—Tinct. ferri. sequihydrochlor. ʒij;
Bals. copaib. ʒi;
Strychniæ, gr. i;
Infus. quass. ℥xij.

℔. fiat mist. Dose, an ounce three times a day.

The man was relieved by two doses only, having had no difficulty afterward. (See *Association Medical Journal*, Nov. 10, 1854.)

The *poisonous* action of the tincture merits a few remarks. Dr. Combes, of Leith, in England, gives a case in the *London Lancet*, vol. xxxi., of a gardener who swallowed an ounce and a half in mistake for whisky or rum. Violent pains of the throat and stomach ensued, with nausea and efforts to vomit. The skin became cold, the pulse scarcely perceptible. In a little while an inky fluid was thrown up and bloody stools discharged. He appeared to recover under the use of mucilaginous drinks and

emollient clysters. In about two weeks afterward he was found to be very much emaciated, laboring under severe gastric distress, thirsty, and costive. In five days more he was dead. The *post-mortem* examination revealed extensive inflammation of the stomach, and a cicatrized patch three inches in length.

In the *London Lancet* for Dec. 1843, is the case of a young female who took an ounce in four doses, in the same day, to *induce abortion*. She was saved by the use of mild cathartics and diluent drinks.

The *sulphate of iron* is a good medicine. It is *tonic*, *astringent*, slightly *escharotic*, and by some regarded as an *emmenagogue*. It has been known under the various names of *green vitriol*, *green copperas*, *vitriolated iron*, *sal martis*, *proto-sulphate of iron*, and *sulphate of the protoxide of iron*. It is prepared largely for commercial purposes, from iron pyrites or the native sulphuret, by exposure to air, moisture, and heat. The sulphur of the pyrites is changed to sulphuric acid, the iron is oxydized also, and the acid and oxide join to form the salt. The impure product is dissolved in pure water, evaporated, and crystallized, to get an article of comparative purity.

The ordinary adult tonic dose is from a half-grain to two grains twice or thrice a day, in pill form or otherwise. In cases of debility of the alimentary canal attended with occasional spasmodic pains and some looseness, I have found no medicine preferable to the sulphate. The form of disease named occurs not unfrequently in females tolerably advanced in life, although it may and does appear in the other sex. The prescription most successful is as follows:—

℞.—Sulphate of morphia, three grains;
Sulphate of iron, twelve grains;
Extract of gentian, enough to make twenty-four pills.

The dose is a pill twice a day, which will generally suffice. The symptoms subside in the course of three or four days, or a week, if the patient be careful to avoid all exciting causes of bowel affection.

Sometimes the daily use of the sulphate for several days will occasion pain in the head if the bowels be not kept in a soluble state. The medicine should be discontinued for twenty-four or thirty-six hours, and a mild laxative or enema administered. The tonic and astringent power of the sulphate is also evinced in its tendency to arrest *excessive perspiration*. For this end two or three grains may be taken at bedtime. (See *American Journal of Medical Sciences*, October, 1846.)

The iron pills of Blaud, so popular in the management of *chlorosis*, were based on the sulphate of iron. To make them,

equal parts of this salt and the subcarbonate of potash are to be well mixed, each having been previously reduced to a fine powder by itself. The mixture is then to be beaten with enough mucilage of gum Arabic to incorporate the articles thoroughly. The whole is to be made into pills of the usual size, and to be taken so as to increase the quantity considerably every three days. Thus, on the first, second, and third days, two pills are to be swallowed morning, mid-day, and evening. On the fourth, fifth, and sixth days, four are to be taken morning and evening. On the seventh, eighth, and ninth days, six pills morning and evening, and so on. From ten to thirty days are reported as the range of time necessary for a cure. (See *Medico-Chirurgical Review*, April, 1846.)

It may be proper to say just here that pills of the sulphate of iron can be made with much less trouble with the addition of a soft bitter extract than in any other way. The pills thus made retain their form under all states of weather.

A watery solution of the sulphate of iron is a good lotion for *old ulcers*, and the strength can easily be suited to individual cases. From a drachm to a pint of water will sometimes answer very well, but a half-ounce of the salt may be necessary. Velpeau praises a solution of an ounce to a pint of water as a wash for *erysipelatous inflammation*. From five to ten grains dissolved in six ounces of rose-water will give a good collyrium, and is especially suited to *subacute ophthalmia*.

Injections of sulphate of iron, a grain to the ounce, employed daily for a few weeks, will, it is asserted by Mr. Vincent, almost invariably cure *prolapsus ani*, and render an operation unnecessary. The same injection is also employed to complete the cure of internal piles, after having excised them with the knife. (See *Braithwaite*, part xix.)

An article called by the manufacturer the *bisulphate of iron* was highly extolled some years ago as an *emmenagogue*. It was made by adding rather more sulphate of iron to water than it could dissolve. A small quantity of sulphuric acid (a drachm to six ounces) was added, and ebullition effected in a clean Florence flask by the help of a spirit-lamp. The whole of the precipitated salt is quickly taken up, and a transparent solution is obtained. The dose is from fifteen to forty drops three times a day. It is an excellent tonic, and suited to cases attended with great debility.

Phosphate of iron has been much praised by Carmichael and others. There are two varieties of the phosphate, the yellow and the blue; the latter is the agent employed in practice. It can be made by mixing equal parts of saturated solutions of phosphate of soda and sulphate of iron. Double decomposition

ensues, and the blue phosphate is thrown down, which, after washing and drying on a filter, is to be kept in well-stopped glass bottles. It is nearly tasteless, and almost insoluble in water. The ordinary adult dose is five grains three times a day, in syrup. Those who have advocated it the most strenuously have done so on the ground of its ready assimilation with the animal economy, because its acid is an animal acid. It has been employed chiefly in *amenorrhœa* attended with great debility.

The *tartrate of potash and iron* has been a good deal employed as an infantile tonic, because of its tastelessness. It is sometimes called *tartrate of iron*, but incorrectly. It is a triple salt, or a salt composed of an acid and two bases, not unlike *Rochelle* salt. It can be made by incorporating two parts of cremor tartar with one part of iron filings, and exposing the mixture to the air some fifteen or twenty days, moistening frequently with a little water. The iron filings are oxidated, and the oxide combines with the excess of tartaric acid in the cremor tartar, (or bitartrate of potash,) and hence the resulting compound of tartrate of potash and iron. It is of a brownish-green color, without smell, and having a very faint styptic taste. It attracts some moisture, yet enough to deliquesce, is very soluble in water, and the solution can be kept unchanged a long while. One part added to seven of pure water makes a proper solution for use. The dose is a teaspoonful three times a day for a child from two to five years old, and it may be gradually augmented to a half-wineglassful. It is a very good *tonic*.

The articles called the *ammoniated tartrate of iron* and the *wine of iron* are of too little value to justify their introduction here.*

The *prussiate of iron* has enjoyed a good share of professional confidence. It is the well-known *Prussian blue*, and technically the *ferrocyanate of the peroxide of iron*. In large manufactories the prussiate of potash is produced by heating in an iron pot a mixture of dried blood, skin, horn, bone, animal offals of every kind, with potash. The pot, being closely covered, is exposed to a furnace heat so as to effect something like calcination. A pasty mass is thus obtained, which is impure prussiate of potash. On adding this to a concentrated solution of sulphate of iron a deep-blue is instantly struck, Prussian blue being the result. Evaporation drives off the water, and the blue compound is thus obtained.

This preparation was formerly exhibited in the treatment of *intermittents*, having been highly extolled by Dr. Zollickoffer, of Maryland, who labored to bring it into general use. The adult

* A very good substitute for wine of iron is made by adding ten to twenty grains of rust of iron to a tablespoonful of wine, and that may be repeated thrice in twenty-four hours.

dose was from five to fifteen grains, repeated several times a day. It was held to be a *tonic* and *antiperiodic*. The late Professor Eberle regarded it with favor as a remedy for *chronic hysteria* attended with general relaxation and weakness. In *chronic menorrhagia*, so troublesome just at the time when the menses are about to cease and the system is greatly enfeebled, Dr. E. held the prussiate to be an excellent medicine. In these cases he prescribed two grains, with half a grain of aloes, three times a day. He employed the prussiate also in *chronic uterine hemorrhage*, with intense nervous debility, in ten-grain doses, gradually increased for the space of eight or ten days.

A writer in the *Journal de Médicine et de Chirurgie Pratiques* speaks in very high terms of the use of prussiate of iron in *chorea* and *epilepsy*. Several cases are detailed in which the curative result was gained in from four to eight days. The following is the formula:—

Take of Prussiate of iron, fifteen grains;
Extract of valerian, forty-five grains.
Mix, and divide into twenty-four pills.

One pill to be taken three times a day at six hours' interval, and each pill to be followed by a wineglassful of infusion of valerian. (See *London Lancet*, June, 1850.)

Citrate of iron was introduced to the notice of the profession by Dr. Ritchie, of Germany, who regarded it as a very superior *tonic*. It can be made by mixing equal parts of iron filings and citric acid, having first dissolved the acid in a little water. The whole should be frequently stirred and exposed to the sun, to allow the complete oxidation of the iron. The oxide thus produced joins the citric acid, and citrate of iron is formed. The adult dose is from five to fifteen grains. A compound very similar has been made by exposing iron filings and lemon or orange juice in a similar manner.

The *citrated aromatic wine of iron*, called also *tinctura ferri aurantiacea*, and the *vinous solution of the per and proto-citrate of iron*, has been long a favorite with the German practitioners; and is probably a good article. It has a grateful odor and taste, is aromatic and *carminative* as well as *tonic*. It is made thus:— Take four ounces of the purest iron filings or fine iron wire and beat with them, in a stone mortar, four Seville oranges free of the seeds. Place the whole in a wide-mouthed vessel and allow the mixture to stand for three or four days. Then add ten ounces of Madeira wine and two ounces of spirit of orange peel. Digest for two weeks and then filter. A dark-colored aromatic liquor is the product, being highly chalybeate and quite agreeable to the taste and stomach. The dose is two teaspoonfuls with

one of syrup of lemon, for an adult. It was employed chiefly in passive or atonic *uterine hemorrhage*, in *chlorosis* with great debility, &c. &c. (See *American Journal of Medical Sciences*, Oct. 1844.)

A very pleasant chalybeate draught suited to cases of debility can be made as follows:—Take six hundred and twenty-five scruples of water, (twenty-six ounces,) one scruple of dry citrate of iron, four scruples of citric acid, five scruples of bicarbonate of soda; add the citrate of iron and citric acid to the water to make a solution, then the bicarbonate of soda. Instantly cork the vessel tight and secure the cork carefully. All the carbonic acid gas extricated by decomposition is thus retained in the mixture, which is a highly agreeable and efficient tonic, especially suited to passive *uterine hemorrhage* and feeble *chlorotics*. (See *American Journal of Medical Sciences*, 1843.) The dose is a wineglass half-full three times a day, and it should be swallowed quickly or the carbonic acid gas will be lost. To those who desire a pleasant chalybeate tonic either of the two preparations last named will be very acceptable.

M. Duchesne Dupare has given an article in the *Gazette des Hôpitaux*, (an abridgment of which may be seen in part xxx. *Braithwaite*, page 175,) to show the good effects of *arseniate of iron* in *hepatic* and *squamous* diseases of the skin. He says it never induces the unpleasant results which frequently follow the ordinary arsenical medicines. It is given in doses of one-twenty-fifth, one-tenth, or even one-fifth of a grain at first, gradually augmented, suited to the age, peculiarities, &c. of the patient. In many cases adults were treated with one-fifth of a grain doses, continued for weeks thrice a day, and with success. The length of time needful for recovery is of course variable, as under any other treatment.

Persesquinitrate of Iron.—This has been much praised by Dr. Christison as a remedy for *diarrhœa* after every trace of inflammatory action has subsided. Professor Graves extols it very highly for the same purpose. (See *Graves's Clinical Lectures*, p. 128.)

It is sometimes called the *solution of nitrate of iron*, and can be made by adding very small bits of iron wire, weighing an ounce and a half, to three ounces of nitric acid, twenty-seven ounces of water, and one ounce of hydrochloric acid. The iron placed in an earthen vessel is to be first acted on by the nitric acid mixed with fifteen ounces of the water. A pretty smart action ensues, and persesquinitrate is formed. The liquor is to be decanted, strained, and filtered. Then add the hydrochloric acid and the rest of the water. The whole process occupies about two hours, and when completed a dark-red liquid is ob-

tained, which in certain exposures seems to be nearly black. The solution fades very much unless excluded from the light. It is very astringent, though void of causticity. It resembles the muriated tincture in point of therapeutic qualities, but it has a peculiar tendency to lessen the irritability of mucous membranes. The dose is from ten to thirty drops, gradually increased. A very good paper on the medicinal virtues of this medicine may be seen in the *American Journal of Medical Sciences*, vol. xxiv. Dr. Adams, of Michigan, gave it to a child six months old, laboring under *diarrhœa*. Two drops three times a day, continued for ten days, worked a most salutary change. The same physician has employed it also in the diarrhœa of adults, and thinks it eminently suited to the chronic form of that disease. It has been administered also in *leucorrhœa* and *menorrhagia* with marked benefit, and has been found a useful application to the small *ulcers* that invade the mucous lining of the *mouth*, both of children and adults. Here it acts by virtue of its astringency mainly.

Dr. Reynolds, of Hertford, declares that he has succeeded in controlling the diarrhœa and other symptoms of *Asiatic cholera* by a few doses of the persesquinitrate of iron. His testimony is confirmed by other practitioners. Sometimes the muriated tincture was employed, but it did not answer as well as the other preparation named. (See *Braithwaite*, part xx. p. 345.)

Iodide of Iron. Ioduret.—Several publications have been made touching this compound of iron and iodine, the best of which is the memoir of Dr. Thompson. One part of soft iron wire, or best iron filings, and three parts of iodine are to be well rubbed in a porcelain or wedgewood mortar, adding a little water at a time until fifteen parts are added. The mixture is then put into a Florence flask, adding a little more iron and some distilled water. Boil with a spirit-lamp till the solution acquires a pale-green color; filter and evaporate gradually in a clean flask. To get the dry iodide out of the flask, the latter must be broken; and as the medicine is quite deliquescent, it must be kept in a close glass bottle. When well prepared, it is of an iron-gray color, quite brittle, breaking with a foliated fracture, and having somewhat the appearance of metallic antimony. When quite dry, it is inodorous, has a styptic taste, but without acrimony. When this preparation deliquesces, some of its iodine escapes, and it is thus injured, more or less.

In dissolving the iodide of iron for use the solution should be boiled with a portion of clean iron wire and then filtered, after which it can be kept a good while. The solution is of a pale green-yellow color, and contains three grains of iodide in each fluidrachm. In order to keep the iodide unchanged, some per-

sons add syrup or sugar, which prevents decomposition. The addition of a small piece of iron wire is said to answer the same end. I think as good a mode of administration as any is to add the dose of the solid iodide (from one to three grains) to half an ounce or an ounce of the syrup of ginger. There is no risk of decomposition then, and the medicine is readily taken.

Cod-liver oil may be used with advantage as a vehicle for iodide of iron in scofulous cases. Two grains of this may be dissolved in each ounce of the oil.—*Headland's Action of Medicines*, page 351.

It should be borne in mind that the watery solution of the iodide is decomposed by chlorine, mineral acids, gallic acid, tannin, the alkalies, alkaloids, the metallic salts generally, and by all astringent vegetable infusions.

Dr. Thompson was led to place a high value on this medicine, partly because of its great solubility, although both of its components are insoluble, or nearly so. In *scrofulous affections*, *chlorosis*, *incipient scirrhus*, *rickets*, *amaurosis*, *bronchocele*, *atonic dyspepsia*, and in all conditions of direct debility, Thompson speaks in high praise of iodine and hydriodate of potash. He suggests, as a good form of exhibition, to add two grains of the iodide to half an ounce of water, with a drop of oil of cinnamon, for a dose, to be repeated thrice a day. It must be recollected that in such solutions, unless instantly swallowed, the iodide is converted into the hydriodate.

The advantage of the iodide or the hydriodate is obvious. Iodine alone impairs the tone of the stomach; but the iron, joined to it, guards against this accident. Hence the appetite is improved while the scrofulous diathesis is met. The alimentary canal is usually stimulated by the medicine, and costiveness avoided as well as diarrhœa. The stools are always made nearly black, and their fetor is corrected. Sometimes the kidneys are excited and the flow of urine is augmented, and, after four or five days' administration, the iodine and iron can be detected in the urine.

In addition to the methods pointed out above for the use of the iodide it is well to notice the *chocolate of the iodide*, or hydriodate of iron. Lugol speaks in praise of this compound. One hundred and fifteen grains are added to a pint of ordinary chocolate, and a half-teacupful may be taken in a day, or even a larger quantity. *Lozenges* have also been prepared, and may doubtless suit some persons very well. To make them,

Take of Iodide of iron, a drachm;
Powder of saffron, four drachms;
Sugar in powder, eight ounces.
Mix, and divide into two hundred and forty lozenges.

The dose is eight or ten lozenges per day. The *New York Journal of Medicine and Surgery*, Sept. 1846, has a formula somewhat different. Thus:—

Take of the iodide, and of
Saffron, each, fifteen grains;
Mucilage of tragacanth, enough to make a mass.

To be divided into one hundred lozenges, ten of which to be taken daily in *scrofulous affections*, *skin diseases*, *amenorrhœa*, &c. &c.

The iodide of iron is also occasionally employed by way of injection and lotion. The proportions are about four drachms to a pint of water.

When iodide of iron is taken the iodine passes out in the urine, but either none of the iron leaves the system or only the merest trace can be detected in the urine. Quevenne found that after administering fifteen grains of iodide of iron the iodine appeared in the urine in ten or fifteen minutes. In forty-eight hours three-fourths had been excreted in this way; but during the same period only a trace of iron was discovered in that secretion. This, says Dr. Headland, page 168 of his book on the *Action of Medicines*, well illustrates one important difference between the *catalytic* (iodine) and the *restorative*, (iron.) The former must be excreted, the latter may be assimilated.

Lactate of Iron.—This medicine has acquired great popularity in a very brief space of time. With the French it is a great favorite, and, I think, deservedly so. It has been preferred because of the presence of an animal acid and the consequent belief of its more easy assimilation to the animal economy. Berzelius has found the lactic acid in muscle, milk, and all the secretions. It has been conjectured that the solvent power of the gastric juice is due to the fact that it is composed largely of lactic acid, and hence the belief that lactate of iron is formed in the stomach whenever filings of iron are swallowed.

Lactic acid is obtained in quantities from whey, and is procured from dairies where much cheese is made. With the acid so got, iron filings are mixed, adding water in quantity equal to the acid. The oxide of iron resulting unites with the acid, and hence the lactate, which crystallizes on cooling in the form of thin crystalline plates or layers. This salt is not very soluble in water, reddens litmus paper, and has a decidedly ferruginous taste. If the watery solution be allowed to stand a good while, it absorbs oxygen and assumes a yellow color. Bouillaud, Rayer, Andral, Fauquier, Gœlis, and others, have employed it as a tonic, and esteem it one of the best chalybeate preparations. It can be administered in form of pill, lozenge, &c. In *chlorosis* and *amenorrhœa* it is said to be an admirable medicine. The

dose is about six grains twice a day. Bouillaud gave twenty grains in twenty-four hours. Its effect on the appetite is speedily conspicuous.

Chalybeate bread has been made for the use of chlorotic girls, by adding the lactate to dough in the proportion of five grains to three and a half pounds of bread. The absence of unpleasant taste makes this bread a desirable adjuvant. In the hospitals of France it has been used with success, requiring rarely over two weeks for complete restoration. (See *American Journal of Medical Sciences*, January, 1842.)

Tannate of Iron is a medicine of recent introduction into Materia Medica. It can be made by the action of pure tannic acid on the purest carbonate of iron. Four hundred and forty grains of the latter, finely pulverized, must be added gradually to a solution of ninety grains of the acid, in a porcelain vessel. The mixture must be shaken till effervescence ceases, and then exposed to a heat of 212° (boiling) until it acquires the consistence of soup; after which pour it on evaporating dishes to be dried by a temperature not above 98°. The product is tannate of iron, of a maroon color, insipid, insoluble, non-crystallizable. It may be administered in form of syrup or pills.

A writer in the *London Medical Times* for Oct. 1848, M. Benedetti, commends this medicine very strongly in the treatment of *chlorosis*. The time necessary for relief and cure varies from twelve to twenty-five days, according to the nature of the case. The dose was from five to thirty grains per day. (See *Ranking's Abstract*, vol. ii. No. 2.)

One of the results of the use of an iron medicine is the restoration of deficient coloring matter to the blood. If this fluid be analyzed before and after such use, it is found to have undergone a remarkable change, most particularly in the quantity of hæmatosin which it contains. Dr. Headland relates a case (in his book on the *Action of Medicines*, page 165) in which blood, drawn before the use of iron, was found to contain only fifty parts of blood corpuscles in one thousand, instead of one hundred and twenty, the normal average. The ammoniaco-citrate of iron was prescribed in five-grain doses three times a day. After a month's use the blood was again analyzed, and the amount of corpuscles was found to have risen to seventy-six parts. At the end of another month they reached to upward of one hundred in one thousand parts of blood. Meanwhile, the general health was much improved.

Chalybeates have therefore a speedy and obvious effect in restoring to the blood this want of hæmatosin. As the precise chemical condition of the iron in hæmatosin has not been shown, so the precise changes which chalybeates undergo before they

supply the deficit in a fit and proper form are not known. All the known soluble compounds of iron, except the ferrocyanide and ferridcyanide of potassium, possess this restorative power.

The following preparations of *iron* may be administered conveniently in *glycerine* in the proportions named: five grains of iodide of iron to ʒi of the solvent. The mixture is clear, of a beautiful lemon-yellow color, with a highly ferruginous taste. The proto-carbonate of iron can be dissolved in glycerine so as to be eight times stronger than the compound iron mixture. The solution is of a dark leek-green color, and is pleasantly ferruginous to the taste. The citrate of ammonia and iron, eight grains, will dissolve in one drachm of the solvent. The mixture has a dark iodine color, and is slightly ferruginous. The perphosphate of iron, five grains, will dissolve in ʒi. The fluid is opake, of a milk-white color, and slightly ferruginous.—*American Druggists' Gazette*, July, 1857.

FIRING.—A novel mode of effecting counter-irritation has been introduced under the title of *firing*. The machine for this purpose is very simple. The whole length is about six inches, one-half of which is occupied with the wooden handle, the balance consisting of iron. An iron shank is made to terminate in a disc or button with a convex surface, the disc being not larger than a dime. Sometimes the face of the disc or button is quite flat. This is to be held in the flame of a spirit-lamp until the finger in contact with the shank feels quite hot. A quarter of a minute is sufficient to heat the instrument to this degree, and it is then ready for use. The hot disc is just tipped against the skin from spot to spot as often as it may be deemed necessary. A hundred applications may be made to a limb in a minute. In the course of a quarter of an hour, and often in a few minutes, the whole skin becomes of a bright red, and the patient feels a glow of heat over the part. The iron is never red-hot; indeed, it is very little hotter than boiling water, seldom makes an eschar, and hardly ever anything like a blister. On the next day you may notice some circular red marks, but the cuticle is not raised at all; and, if needed, the disc might be reapplied to the same spot.

Dr. Corrigan says he employed it in the case of a medical friend, who could not guess what the application was. He knew that he felt a smarting sensation suddenly inflicted, but did not suspect the source until he saw the instrument. The doctor further says, "Some of our resident clinical clerks have preferred it in their own cases, when suffering under local rheumatism, to any other kind of counter-irritation, as being the least troublesome, the most rapid, the least painful, and most effectual."

A gentleman, in leaping from a railway carriage, strained the muscles of his loins. For two or three days he used liniments and a warm bath. He continued to suffer so much that he sought other advice. He could not sit down without much inconvenience, and to rise from a chair was a labor of torture. While conversing with him, and drawing off his attention, Dr. Corrigan heated the iron and fired him over the loins. He was instantly well.

The remedy has been used in all varieties of rheumatism and in arsenical palsy with most happy results. In addition to the paper of Dr. Corrigan, which appeared in the *Dublin Hospital Gazette*, March, 1846, several other papers have found their way into the journals fully confirmatory of his statements. We regard this *firing* as one of the very best counter-irritants known to the profession. For further testimony, see *Braithwaite's Retrospect*, part xx.

Fish.—The dietetic qualities of fish have been variously estimated, and we do not intend to enter into the subject fully. The question came up during the season of Asiatic cholera whether fish might be eaten or not, and the profession pretty unanimously decided in the negative. In the hot months of summer all kinds of fresh fish are notoriously less salubrious than in cold weather. The substance of the fish is softer and tends more rapidly to putrescence, and hence it is undesirable to partake of that kind of diet just then. Moreover, it is well known that fish cannot be kept as well in hot weather as in the cold months, even though packed in ice; and it is not improbable that half-spoiled fish have had this show of preservation just to make them more saleable. Much will depend on idiosyncrasy as regards the salubrity of fish at any season of the year; and not a little on the nature of other articles that may be eaten at the same time. Incompatibility may render fish exceedingly unwholesome.

We desire to call attention especially to the well-known fact that, from some unknown causes, lobsters, muscles, congers, eels, oysters, and various scale and shell-fish, acquire poisonous qualities. This is particularly the case in the West Indies, but is sometimes realized in this country. On this point, Dr. Christison has well said that, "While it is one of the most singular circumstances in the whole range of toxicology, it surpasses all others in the obscurity that covers it." He remarks further, "That some species of fish, particularly in hot climates, are always poisonous; that some, although generally salubrious and nutritive, such as the oyster, and still more the muscle, at times acquire properties that render them unfit for eating; and that others, including the various kinds of shell-fish, and even the

richer sorts of vertebrated fishes, are always poisonous to certain individuals. Yet, hitherto, chemists and physiologists have in vain attempted to discover the cause of their deleterious agency."

The excellent papers of Christison, Thomas, Ferguson, and others, on the poison of certain fishes, relate to tropical climates; but it is notorious that the oyster, lobster, crab, and mackerel found in the New York, Philadelphia, and other markets, do occasionally induce poisonous results. The muscle eaten by some persons always occasions more or less sick stomach, headache, and cutaneous eruption, in our most northern latitudes. And the various kinds of shell-fish never fail to bring on a like condition in many individuals, who, of course, are compelled to abstain from them.

In respect of muscles, there is unquestionably not a little due to constitutional peculiarity or idiosyncrasy.

Millingen, in his *Curiosities of Medical Literature*, says that a family in Boulogne was poisoned by muscles, and all the other families who ate freely of them escaped unhurt. He speaks, too, of an entire family eating crabs without injury, excepting in the case of a young girl, who was so severely sickened that she quickly died.

An interesting case of poisoning with muscles is related in the *London Medical Gazette*, vol. xix. page 85. About a dozen were eaten by the patient, a female aged thirty-nine, of good general health. The family ate of the same meal, without injury. In a quarter of an hour she was seized with weariness, gastric pain, itching of the skin, swelling of the face and eyelids, cramps in the legs, &c. Milk was given freely, and caused a speedy abatement of all the symptoms, and final recovery.

The *Madras Herald* of Feb. 2 mentions the arrival there of the ship Gangas, which had suffered severely from fatal sickness on board, arising from a singular circumstance. Shortly after leaving Mauritius, the Gangas hove to off a fishing-bank and let down the boats to fish. The men were successful, and ate plentifully of what they had caught. They were affected in a very extraordinary manner, being swollen like porpoises, and in the course of a few days fifteen of the men died.

The *Abington* (Va.) *Statesman* of August 3 says, "A few days since, two families, residing on the north fork of Holston River, in this county, were poisoned by eating an eel caught in that stream. They partook of the eel at the usual breakfast hour, and in the course of a few hours were assailed with the symptoms usually attending the disease called milk-sickness. Medical aid was promptly called in, and they are now recovering."

It was supposed, many years ago, and the conjecture has since

been revived, that the poison of fish was occasioned by copper; but there is not the slightest foundation for this opinion. The most accurate and oft-repeated experiments disprove the notion entirely. And we are compelled to believe that the evil is partly attributable to some peculiar quality of the fish at certain times, and partly to the inexplicable idiosyncrasy of individuals.

This view is corroborated by the statement of Dr. Grainger, who resided for several years at St. Christopher's Island. He says it often happened that fish of the same kind caught at one end of the island were among the best and most wholesome in the world, while those caught at the other end, at the same time, were not only dangerous but often fatal; and that the same species which on one day served for good nourishment proved the next day highly deleterious.

The *symptoms* commonly following the use of poisonous fish are, uneasiness and pain about the stomach, with sickness and headache, vertigo, redness and swelling of the face, a species of nettle rash over all the body, shortness of breath, sometimes cold extremities, delirium, and convulsions. These usually commence in a couple of hours, and quickly reach their maximum of intensity. The duration of the attack, whether fatal or not, is very variable, death sometimes occurring in a few hours, and sometimes not for three or four days.

The *morbid appearances* in the dead body throw little light on the subject. A slight inflammation of the stomach and bowels is sometimes evident, yet in some cases there is nothing of the sort.

The *treatment*, in the first instance, consists in means to dislodge the poison. For this purpose, the stomach-pump, or an emetic of sulphate of zinc will be necessary. This may be followed by oleaginous cathartics and clysters. Diluents and mucilaginous drinks will also be proper; and if the gastric irritation be great after the dislodgment of the poison, anodynes, particularly in the endermic way, will be proper. From twenty to forty drops of sulphuric ether on a little sugar have also been employed with advantage, it is said, to quiet the irritable condition of the stomach. The application of rubefacients to the epigastrium may also be very serviceable, and in some cases leeches will be found necessary.

It is proper to mention here the very painful affection occasioned by a wound inflicted by the *fins of a fish* just after being caught. Catfish are most likely to do this mischief. The wound is small, but a most distressing, stinging sensation, attended with some tumefaction, speedily follows. Young persons of considerable firmness cry out under the pain thus occasioned. A very

simple expedient will generally give prompt relief. If an onion be cut in half and the clean surface applied to the wound, the unpleasant symptoms soon vanish. I have tried this remedy frequently, and with uniform success, having learned its value from a lady whose family physician I was for several years. It is more than probable that liquid ammonia would answer equally well with the onion.

FLANNEL.—The importance of this as a part of clothing is generally conceded. There are some, however, who do not use it in their own persons, nor advise it for others. The testimony of some of the ablest men in the profession has settled the point conclusively as regards all very changeable climates. It is next to impossible to guard against all the vicissitudes that occur in this country, even in the season of winter, when most care is paid to the clothing. Especially is this true of those who have all their days been accustomed to a more genial clime, and who, from the necessities of business, are compelled to sojourn in New York or Philadelphia through the winter. In vain do they throw around them the heavy cloak while the surface of the body is unprotected by the non-conducting flannel. I have known persons who wore flannel next to the skin to be so completely proof against chilly sensation in the coldest weather that they were seldom if ever seen with a great coat or cloak, or anything of the kind; while others, in the same town, wrapped in two or three overcoats, were all the while complaining of the cold, and the reason was that the latter could not be induced to wear the flannel shirt.

There are those who wear flannel advantageously throughout the year, selecting, however, the thinnest and oldest garments for warm weather. Such persons are guarded against the evils of profuse perspiration, which hurt others so seriously who wear muslin or linen next to the skin. The latter allows the ready and rapid evaporation of the perspirable matter, which the flannel is calculated to check. The wearers of fine flannel are less apt to be chilly after a free perspiration than those who do not wear it, and the reason is obvious.

It has been contended, and perhaps correctly, that in order to derive the full benefit from flannel, it ought not to be worn at night. The body being sufficiently protected in bed, does not require the aid of flannel, and is better without it. In the event of perspiration at night, too, the flannel, it is said, is rendered less fit for the development of non-conducting power in the daytime, when that power is most needed.

All delicate persons with weak breasts, and who fear pulmonary attacks, should wear flannel throughout the winter season and a considerable portion of the spring. It is desirable to

change the garment once a week, or more frequently if the individual perspire much.

The application of a soft flannel bandage around the body, covering the stomach and bowels completely, was found to be salutary during the prevalence of epidemic *cholera* in this city in 1849. The bandage should be three or four inches wide and three or four yards long, and applied so as to give support to the body. Such a contrivance, although simple, has calmed the fears of the nervous who confided very much in its efficacy.

A like bandage has proved useful a thousand times in the management of *cholera infantum*. It not only operated mechanically, but prevented the accidents which follow sudden changes of the weather; and if it should irritate the skin, so much the better, as that would tend to attract disease to the surface. A very silly objection has been raised against this practice, viz., that it induces internal congestion, or augments it. The very opposite is the true state of the case, as every sensible practitioner knows.

Galium Aparine.—*Goose Grass or Cleavers.*—This is an old remedy for dropsies, acting as an aperient and diuretic. It enters all the books of what is called the *botanical practice*.

We have seen several very favorable notices of this article within a few years in the foreign journals, and perhaps in some of our own. The plant grows abundantly in the United States as well as in England, and has long been known to the peasantry of the latter as a remedy for certain cutaneous diseases, and especially the *Lepra vulgaris* of the books. Dr. Winn read a paper before the Lond. Med. Society not long since, to show its application to cases of *scrofulous* and *cancerous* diseases. He thinks that Dioscorides knew something about its virtues, and that the Italians and Germans have long been familiar with it. At first Dr. W. employed a decoction of the galium, but afterward procured an inspissated juice from Mr. Hooper, of Pall Mall, a teaspoonful of which is equal to a pint of the decoction. In ordinary cases a drachm, three times a day, is the proper dose; but in obstinate eases it must be doubled. The best analysis makes the juice to contain acetate of potash, gallic acid, tannin, extractive, and water. It is believed that the remedy cures cutaneous affections dependent on a strumous diathesis, chiefly by its power on the kidneys as an eliminator and depurator.—*Braithwaite*, part xxix. p. 47.

Gallæ. *Galls. Nut-Galls. Oak Apples.*—The last name is given to the galls when green. They are a peculiar kind of excrescence, formed by a small insect which deposits its egg in the tender shoots of the tree. When the maggot is hatched, it gives rise to a morbid growth of the adjacent parts, and after a

time it eats its way out of the nidus and escapes. The galls should be plucked before this, for when the insect has left its nest the gall is less astringent and less firm than before. The Aleppo and Smyrna galls are said to be the best because most astringent. The taste of galls is very astringent, and a little bitter; externally they are rough, and of a deep bluish-gray or olive color. The active soluble ingredients are tannic and gallic acids; and as these are readily dissolved by water, we get the active properties by making aqueous solutions. A drachm of coarsely-bruised galls added to six ounces of boiling water makes a good *gargle* for relaxation of the soft palate and uvula, and for general soreness of the fauces. In *gonorrhœa* and *leucorrhœa* the infusion of galls is sometimes employed, but is never safe if there be high inflammatory action.

The *ointment* of galls has long been a popular application to hemorrhoidal tumors. The proportions are a drachm of the powder of galls to an ounce of lard; and some add a half-drachm of camphor. A portion of the size of a nutmeg is to be applied at bedtime, taking care to wash the parts well with warm soapsuds prior to each application.

The powder of galls and gallic acid have been highly praised in the treatment of *uterine hemorrhage*. From five to eight grains of the acid joined to some aromatic may be given every three hours.

Galls has been successfully employed in cases of *purpura hemorrhagica* in subjects varying from twelve to sixty years of age. Five-grain doses were given every three hours, and two compound rhubarb pills at bedtime. Not more than four scruples were required in any instance.—*Association Med. Journal*, Sept. 1853.

Many years ago *intermittents* were treated with the powder of galls combined with cloves; but the practice fell into disuse.

Two writers in the *London Lancet* for April, 1850, speak highly of the use of gallic acid in the treatment of *albuminous urine*, given in ten-grain doses every three, four, or six hours. It is conveniently administered in a little infusion of orange peel, or any other aromatic. The use of this acid for two or three weeks has sufficed. The precise *modus operandi* is not stated, but as the acid is easily detected in the urine it is to be inferred that the action is chemical and that the blood is altered by it for the better.

Gallic acid is also commended in the treatment of *Asiatic cholera*, by Dr. Nankivill, of Torquay, in the same journal. Injections containing half a drachm of the acid with twenty drops of laudanum, in three ounces of starch, were thrown up the rectum after each evacuation, and five grains of the acid with a

sixth of a grain of opium were given in pill after each act of vomiting. External stimulation was employed at the same time.

Christison designates gallic acid an internal or constitutional astringent, and notices its exhibition for the relief of mucus discharges from the bowels or urinary bladder. He says he has seen menorrhagia very promptly subside under its use, and he hints at its fitness for cases of albuminous urine. He calls three grains the *usual* dose, but says he has given thirty-six grains in twelve hours in urgent hæmoptysis.

A writer in *Braithwaite*, part xix., calls gallic acid the best internal styptic, *decidedly better than tannin*. He gave it in five-grain doses two or three times a day, in mucilage or in pill.

This acid is obtained from galls by slow oxidation of their tannin under the influence of atmospheric air and moisture, or more quickly by the oxidating agency of sulphuric acid. It may be given in quassia infusion, or in pills made up with conserve of roses.

GARGLES.—This term is from a Greek word signifying *I wash the mouth*, and it means any liquid preparation to act on the internal parts of the mouth and throat. Gargles are often very useful in relieving the throat and lessening inflammatory action of the fauces, tonsils, &c. The more important are the *astringent*, *tonic*, *emollient*, *anti-scorbutic*, and *anti-scrofulous*.

Astringent Gargles.

1. Take of alum, half an ounce;
   Water, a pint.
   Mix.
2. Take of nitrate of silver, ʒj;
   Water, ℥ij.
   Mix.
3. Take of strong vinegar, half a pint;
   Powder of borax, half an ounce.
   Mix.
4. Take of sugar of lead, a scruple;
   Water, four ounces.
   Mix.
5. Take of port wine, ℥vi;
   Tannin, ℈j. Mix.
6. Take of lemon-juice, four ounces;
   Barley water, half a pint.
   Mix.
7. ℞.—Infus. rhataniæ, ℥vij;
   Elix. vitriol, ℥ss;
   Syr. limon. ʒi. Mix.
8. ℞.—Pulv. alum. sulph.
   Potass. nit. āā ℥ss;
   " bitart. ℈ij;
   Acet. dist. ℥vi; dissolve and add
   Aq. rosar. ℥ij. Mix.
9. ℞.—Infus. rosar. ℥viij;
   Pulv. catechu, ℈ij;
   Elix. vitriol, ʒi;
   Morph. sulph. grs. iv.
   Mix.
10. ℞.—Sod. bibor. ʒx;
    Pulv. catechu, ʒss;
    " capsic. an. ℈ij;
    Mellis, ℥ij;
    Elix. vitriol, ʒi;
    Aquæ, Oi.
    Mix.

Tonic Gargles.

1. ℞.—Infus. cinchonæ, ℥vi;
   Acid. hydrochl. ℈ij;
   Mellis, ℥ss.
   Mix.
2. ℞.—Decoct. cinchonæ, ℥iv;
   Acid. hydrochl. ℥iss;
   Infus. rosar. comp. ℥iij;
   Mellis, ℥i.
   Mix.
3. Take of decoction of Peruvian bark, eight ounces;
   Lemon-juice, two ounces.
   Mix.

4. Take of oak bark,
Virginia snake-root, of each an ounce;
Boiling water, eight ounces.
Mix.

5. Take of Peruvian bark, two drachms;
Tannin, a scruple;
Boiling water, eight ounces.
Mix.

6. Take of extract of rhatany, two drachms;
Peruvian bark, half an ounce;
Boiling water, a pint.
Mix.

Emollient Gargles.

1. Take of powdered gum Arabic, half an ounce;
Slippery elm, an ounce;
Boiling milk, half a pint.
Stew the whole for ten minutes.

2. Take of sweet oil, four ounces;
Or as much butter;
Vinegar, half an ounce.
Melt together, and use when warm.

Antiscorbutic Gargles.

1. Take of horseradish-juice, four ounces;
Vinegar, two ounces;
Peruvian bark, an ounce;
Boiling water, a pint.
Mix.

2. Take of lemon-juice, two ounces;
Water, eight ounces.
Mix.

Antiscrofulous Gargles.

1. Take of cod-liver oil,
Vinegar, each, eight ounces.
Mix.

2. Take of hydriodate of potash, a drachm;
Water, six ounces;
Iodine, ten grains.
Mix.

3. Take of iodine of zinc, five grains;
Water, ten ounces;
Iodine, three grains.
Mix.

Cayenne Pepper Gargle.

℞.—Cayen. Afric. ʒij;
Aquæ bullient. Oi.
Digest for one hour, strain, and add
Aceti fort. ℥ij;
Sodæ mur. ℥i.
Mix.

Antiseptic Gargle.

℞.—Decoct. cinchon. grs. vi;
Pulv. camphor, ℈i;
Acid pyrolig. ℥i.
Mix.

Chlorine Gargle.

℞.—Liq. chlor. sod. ℥i;
Mellis, ℥ss;
Aquæ, ℥vj.
Mix.

Saltpetre Gargle

℞.—Nit. potass. ʒij;
Oxymel scill. ℥i;
Decoct. hordei, ℥vi
Mix.

Gentiana Lutea. *Gentian.*—This excellent bitter tonic grows in Switzerland, Austria, Burgundy, and North America. The active properties are soluble in water as well as in alcohol.

The root is usually a little contorted, the epidermis wrinkled, and of a brown color. When broken the interior yellow color is manifest. The best quality of gentian is tough, flexible, and perfectly sound, having no trace of the depredations of worms. The perfection of the root for medicinal purposes requires the tree to be four years old. The name *gentian* is said to be derived from Gentius, King of Illyria, who employed it one hundred and sixty-seven years before the Christian era, to improve the appetite and promote digestion. The effect of gentian on the pulse is very feeble, although it enters the circulation. It is regarded as one of the best vegetable bitters, especially when combined with iron.

Alcohol takes up the active properties of the root, and hence we have a tincture, which is made also with brandy and whisky. There is not an article connected with Materia Medica that has made so many drunkards as the tincture of gentian. It has been kept for centuries in grog-shops and regular taverns under the name of *bitters*, to be dealt out before breakfast, and at all times. As a medicine it is not called for by any contingency whatever; and for all the purposes of a bitter tonic the *compound infusion* is far better. It is an excellent article for drunkards who are about to reform. To make it the following formula may be adopted:—

Take of the sliced root of gentian,
Orange peel, dried and bruised, each, an ounce;
Fresh lemon peel, two drachms;
Bruised cinnamon, a drachm;
Boiling water, twelve ounces.

Macerate in a covered earthen vessel for one or two hours, then strain, and keep it in a cool place. The dose is a wineglass half-full several times a day. For feeble *dyspeptics* a scruple of calcined magnesia added to six drachms of the infusion and a drop of the oil of cinnamon will be found a very good medicine, to be taken at one dose and repeated two or three times a day. The best time for taking it is an hour before a meal.

The *extract* of gentian, when well made, is an excellent medicine, and a good adjuvant for making pills of other articles. It is made by boiling a pound of gentian root in a gallon of water down to half a gallon, straining while hot, and evaporating the fluid to a proper consistence. Persons of delicate constitution, with heartburn and quite feeble, are relieved by two grains of the extract and two of carbonate of ammonia made into pill and taken three times a day. The proximate principle is called *gentianine*, but is not equal to a good extract.

Geranium Maculatum. *Cranesbill.*—The root and probably other parts of this plant were known to the Indians at a very early period as possessed of valuable astringent properties, which led to its use in dysentery and other affections. It is found in various parts of the United States growing in open woods, and flowering from April to June. Analysis shows that the root contains a good deal of gallic acid and tannin, with several other components that modify the astringency.

As an astringent geranium is not very unlike kino and rhatany in its effects on the system. The late Prof. Barton spoke in high terms of its efficacy in *cholera infantum*, where its tonic and astringent powers combined to give it effect. In many parts of the country the same use is made of this plant by the common people, who sometimes designate it as the *alum* root, because of

its astringent likeness to alum. In ordinary *sore mouth, sore throat, subacute inflammation of the fauces*, &c., a gargle of the root is strikingly beneficial. The strongest infusion or decoction, or a diluted tincture of the root, may be employed for these ends. The internal administration may be in the form of powder or decoction or extract. The dose of the powder is from fifteen to fifty grains. The decoction, made with two ounces of the bruised root to a quart of water, boiled for half an hour, may be given in one or two-ounce doses. Two or three grains of the extract will make a fair adult dose; and the extract itself can be readily made by boiling half a pound in two quarts of water until a third of the fluid is lost, or even a half. The strained liquor, by evaporation, yields the extract.

Glycerine.—This term is from a Greek word, and means *sweet*. It is the sweet principle of oils and fats, and acts in them as a base. It is gelatinous, and is left in the process of soap-making. The reputation it has acquired as a remedy for deafness is a principal reason for introducing it here.

The mode by which it was procured at first for practical purposes is as follows: Digest equal parts of ground litharge and olive oil with a little boiling water, stirring, and adding water as it evaporates. When it is of the consistence of soft plaster it is to be well washed with hot water. Decant and filter; then pass sulphureted hydrogen through the mass in order to throw down the lead; after which filter and evaporate to a syrup in a water-bath. The syrupy product is glycerine, and looks a little like mucilage of gum Arabic.

When perfectly pure and anhydrous, glycerine is almost colorless, of a sweet taste and syrupy consistence. It has a faint but not disagreeable odor, and a strong affinity for water, with which it readily combines. It unites readily with oils; dissolves many gums and resinous substances; does not crystallize nor ferment like sugar; will not evaporate beyond a certain point; and is finally destroyed by boiling.

A very interesting paper in the *Edinburgh Medical and Surgical Journal* sets forth the solvent power of *glycerine* very advantageously in respect of a large number of remedial agents, as the preparations of quinine, iron, senna, rhubarb, lemon-juice, cinnamon, cloves, &c. The solutions are very much in the nature of syrups, and the writer of the article is strongly impressed with the belief that alcohol and syrup will soon be superseded by glycerine.—*American Druggists' Circular and Gazette*, July, 1857. We have noticed these solutions already, and hold them to be valuable.

Mr. Startin, Surgeon to a London Hospital for skin diseases, published some notices of this article in the *London Medical*

Times for August, 1847, from which we make a few extracts. He supposed that its *antiseptic* and *uncloying* properties would make it a valuable addition to poultices, lotions, baths, &c., all which would be rendered more emollient and soothing. These results followed the addition of an eighth, and even a sixteenth part of glycerine. Possessing the property of absorbing moisture from the air, it prevents the parts to which the applications are made from becoming too dry. Mr. S. says it is *stimulant*, *antiseptic*, *demulcent*, and may be a good substitute for sugar to sweeten food or drinks for invalids whose stomachs are injured by sugar. He has employed it in some *skin diseases* with decided benefit, such as *pityriasis* or *dandriff*, *lepra*, *psoriasis*, *lichen*, *impetigo inveterata*, and *prurigo*. He has found it useful in *herpes exedens*, and some *syphilitic* and *strumous eruptions*. A sixteenth of a grain added to a few grains of borax and rose-water furnish one of the most elegant and efficacious washes for chapped hands, face, or nipples.*

Glycerine applied to incipient *boils* seldom fails to effect their resolution. When pus is escaping freely, this article will facilitate the healing process. Dr. Brinton had under his care an inveterate cracked tongue, which had baffled all attempts at alleviation for many years. It could not be referred to any syphilitic poison, and rendered eating, and especially speaking, very painful. Dr. B. made use of a favorite remedy of his in such cases, viz., borax dissolved in a lotion of glycerine (Price's Patent Candle Company's) and water—two scruples, one ounce, and four ounces respectively. It at once gave marked relief; and after a few days, during which it was the only remedial agent, the improvement seemed increased by iodide of potassium and bark taken internally. The patient has now considered himself well, and discontinued the lotion for some weeks, and the cracks are only visible as depressions in the mucous membrane.—*London Lancet*, 1857.

Some eight years ago Mr. Yearsley published his first account of the benefit arising from the use of glycerine in *deafness*, and others have called the attention of the profession to the remedy. That there is danger of the perpetration of a good deal of quackery as the result none can doubt. But as the article seems to be quite harmless, I see not why all deaf persons, whose organ of hearing is not absolutely destroyed by ulceration and exfoliation, may not give it a trial.

The plan is to moisten wool with the glycerine, pure or diluted with water. The glycerine, having the power of absorbing mois-

* ℞.—Pulv. bi-bor. sodæ, grs. x;
Glycerin. gr. i;
Aquæ rosar. ℥i. Mix.

ture, keeps the wool sufficiently moist to render frequent changes unnecessary. In some instances a few drops of the pure article have been let fall into the ear: from five to fifteen will suffice. Sometimes a solution of equal quantities of glycerine and water has been poured in, the patient laying the head down so as to favor the introduction of the mixture.

The case of a barrister is reported who was very much relieved by this remedy, who had derived temporary relief before from the introduction of saliva by means of a quill. Others, who had tried oil of almonds with slight benefit, were signally relieved by the glycerine. As the glycerine has the power of dissolving gums and resins, it may be useful to remove hardened wax, and so relieve some cases of deafness. It is said to act very happily where there is a deficiency of ceruminous discharge, by protecting the tympanum. And it seems to be a settled opinion that it is capable of affording relief in all cases where the patient is able to hear a watch pretty distinctly when it is pressed on the temporal bones.

In the *London Lancet* for June 23, 1849, Mr. Wakley asserts that in several cases of deafness of very long standing, and in which the aural passage and tympanum exhibited a white, polished appearance, and the external meatus had become inelastic, hard, and horny, and wholly deprived of the natural functions, the glycerine, patiently applied every day, had proved of the utmost advantage by restoring the parts to their natural condition and reproducing the ceruminous secretion of the organ.

The same writer has a long article in the *Lancet* for Jan. 18, 1851, in which many cases are detailed to set forth the value of this remedy. The subjects varied in age from six to seventy years.

Our own experience, limited to be sure, has not been very favorable. Still, we say, give it a trial.

The *nutrient* powers of glycerine have been tested by Dr. Lindsay, as we learn by the *British and Foreign Medical and Chirurgical Review* for January, 1857. He took two or three teaspoonfuls daily for several weeks, and gained two pounds in weight at the end of four weeks. After discontinuing its use, the weight gradually fell. The most palatable mode of taking it is with coffee. It serves to sweeten in place of sugar, and if the taste be unpleasant a little sugar may be added. It may be added to tea, and it sweetens milk and cream very pleasantly. Its mixture with water is also palatable, and this is the readiest and cheapest mode.

Dr. Lindsay further regards glycerine as a valuable basis for expectorant and demulcent mixtures. He thinks that all our tonics and alteratives might be administered most agreeably in this article.

The *endermic* use of the iodide of glycerine has been highly praised by Dr. Szukits, who has often employed it, as we learn from the journal referred to above.

Gossypium Herbaceum. (See *Cotton.*)

Grocer's Alum. (See *Potash.*)

Gruel.—This is usually regarded as a watery solution of oatmeal, and we spoke of it under the head *Avenæ Farina*, which the reader can consult. But in some parts of our country oatmeal is seldom seen, and in place of a gruel made of it, there is what the people call *corn* gruel, or a gruel made of ground Indian-corn. It is prepared very much after the manner pointed out for the other kind of gruel, and is an agreeable, simple, unoffending sort of diet, rarely acting unpleasantly unless eaten to excess. It can be made very tasteful by the addition of lemon or ginger syrup.

Guaiacum Officinalis. *Lignum Vitæ. Wood of Life.*—The *raspings* or *turnings* of the wood and the *resinous* matter usually called *guaiacum* are employed in practice. Decoctions of the wood and other vegetable matters are occasionally resorted to, and when long administered are held to possess *alterative* properties.

The resinous matter is usually called a body, *sui generis*, the precise nature of which is not well understood. The name *gum guaiacum* is not correctly applied, and yet it is perhaps better known by that title than by any other. It is seen in masses, easily broken, and presenting a greenish-brown aspect. It has very little smell or taste, and the fine powder is of a pale-green, which becomes dingy by exposure to the air.

Formerly guaiacum was held to be a valuable medicine in the treatment of secondary syphilis, and the decoction of the wood was employed in this relation as well as the resinous matter.

More extensive use has been made of this article in the treatment of *rheumatism* than for any other purpose, so that in many places it has become a domestic remedy. The adult dose of the powder is from fifteen to thirty grains three times a day, with or without diaphoretics. The powder is sometimes taken in milk, but the color of the mixture is objectionable, and to avoid this, syrup should be selected as the vehicle. A mixture of fifteen grains of the powder and ten of Dover's powder, taken at bedtime, has been a popular mode of administration. In addition to the internal use, some persons think they have been much benefited by the alcoholic solution applied as a lotion to painful parts.

M. Pereyra, of Bordeaux, speaks very favorably of the following prescription for *rheumatism*:—

Take of guaiacum, in powder, a drachm;
Orange leaves, in powder, half a drachm;
Acetate of morphia, three-quarters of a grain.

Mix well, and divide into sixteen powders, one of which to be given every two hours. (See *London Lancet*, August, 1843.)

The simple and the volatile tinctures of guaiacum have been also employed in rheumatic affections, but I have never regarded them as sufficiently important to give them a trial. The simple tincture may be made by adding from one to three ounces to a quart of brandy. The ammoniated or volatile tincture is made by adding four ounces of the powder of guaiacum to a pint and a half of the aromatic spirit of ammonia, digesting for fourteen days and filtering. The dose is from half a drachm to two drachms three times a day. The late Professor Dewees regarded the volatile tincture as a good medicine in *amenorrhœa*.

The most novel use of guaiacum was reported in the *New York Journal of Medicine* for November, 1848, by Dr. Sterling, of the Marine Hospital, at Staten Island. He gave it in *acute dysentery;* first in ten-grain doses three times a day, with some mucilaginous liquid, and afterward according to the following formula:—

℞.—Pulv. guaiac. ʒv;
Muc. gum Arab.
Syrup simp. āā ʒiij;
Aquæ, ʒviii.
Mix.

The dose of the mixture was two ounces three times a day or every six hours, carefully shaking the bottle before using it. The diet of the patients was farinaceous. In four or five days the disease generally disappeared.

A still more novel use (at least to us) has been reported in the *London Lancet* of April 4, 1857, by Dr. Brinton. He has treated *cynanche tonsillaris* with this remedy at the Royal Free Hospital, and says he has employed it for many years. He regards the tonsils as an offshoot of the intestinal canal, and thinks that constipation is a frequent accompaniment. He gives the powder of guaiacum, in doses of a scruple and from that to a drachm, every four hours, sometimes mixed with aloes, jalap, and opium, the whole being blended together by mucilage. The design of the guaiacum dose is to effect purgation freely. Dr. B. asserts that if this treatment be adopted early, the recovery will be rapid and the exemption from another attack more certain than it is under the ordinary mode of treatment.—*London Lancet*, April, 1857.

GUNPOWDER.—Dr. Dick, of Glasgow, has called the special attention of medical men to this new remedy for *dyspepsia*. He found it very useful as a corrective of morbid secretions of the

gastro-mucous membrane, dependent on subacute inflammation or accompanied by it. He gave it in ten-grain doses several times a day, and gradually increased, occasionally interposing a mild laxative. Spirituous liquors and pungent condiments were forbidden during its exhibition.

Dr. Dick thought that the good effects of the medicine depended on the detergent properties of the charcoal and nitre that enter the composition of gunpowder; and he affirms that it is a perfectly safe medicine. It is one of the articles which chlorotic girls eat with avidity, and unless eaten to excess might not be injurious. (For further hints, see Dick *On Digestion.*)

GUTTA PERCHA.—This article has elicited so much of the attention of medical men that it would not be right to omit a notice of it in this work.

It is the native name of the exuded juice of a tree, so-called, indigenous to Singapore and its vicinity, and gathered like caoutchouc, to which it has some resemblance. It is imported in lumps or masses, and at the ordinary temperature feels quite hard, but becomes soft and pliant when plunged into boiling water. When soft it can be rolled out and moulded into any shape, which it retains when it becomes cold.

Besides its adaptation to a hundred domestic and mechanical uses it is also susceptible of extensive application to the purposes of surgery and obstetrics. Splints, bougies, injection-pipes, and catheters have been formed out of it, and more recently it has been employed in the manufacture of pessaries, nipple-shields, artificial teats, handles of forceps, &c. Dr. Simpson, of Edinburgh, had a very neat speculum uteri made of this material; and it is not improbable that almost every sort of instrument, excepting those with sharp edges, will ere long be obtained from the same source.

Mr. Beardsley, a surgeon in Derbyshire, England, has prepared an article for the arrest of hemorrhages supervening the extraction of teeth, which is made as follows:—

Take of gutta percha, an ounce;
Best tar, an ounce and a half;
Creosote, a drachm;
Shell-lac, an ounce.

These are to be boiled in a crucible, well stirred or beaten till blended into a stiff, homogeneous mass. The compound is readily softened between the fingers, and is easily introduced into the bleeding socket. The hemorrhage is speedily checked. (See *London Lancet*, May, 1850.)

The common *paste* of gutta percha, such as shoemakers use, has been applied very happily in the treatment of *erysipelas*. It acts by excluding the air from the inflamed surface, as it would

also in burns, wounds, ulcers, &c. The paste is applied by the finger, being first heated, and then the common gutta percha tissue is laid over the whole.—*Edinburgh Medical Journal*, December, 1855.

A solution of gutta percha has been employed in *swelled testicle* and *fresh wounds*, on account of its adhesiveness and making an air-tight covering. The gutta percha is dissolved in bisulphuret of carbon and the solution spread over the affected part. It becomes dry speedily, forming a thin, tight, and adhesive coat, which loosens at the edge after three or four days, when it should be repeated.

It is stated that seven grains of gutta percha dissolved in one drachm of chloroform will give a more adhesive dressing than a solution in collodion, which some persons employ.

M. Robiquet has prepared a useful caustic by mixing together equal parts of softened gutta percha and melted hydrate of potash or chloride of zinc. The mass may be moulded into any desired shape so as to be applicable to wounds, fistulas, &c. &c.

One drachm of gutta percha, softened with hot water, worked up with catechu powder and tannic acid, each half a drachm, adding a drop of some essential oil, will make a good cement for filling cavities in teeth. A morsel is to be softened over the flame of a spirit-lamp, and properly fixed in the cavity while warm. The mass becomes very hard in a short space, and after the lapse of months is not decomposed.—*Revue Médicale*, 1857.

Hæmatoxylon Campeachianum. *Logwood.*—The well-known astringency of this article entitles it to a place in Materia Medica. The decoction when properly prepared is a palatable and useful medicine, that has been much employed in *diarrhœa* and in the last stage of *dysentery*. In the diarrhœa of hospitals there can hardly be a better remedy. We find great relaxation and debility of the bowels, frequent and copious discharges that are quite exhausting. To meet such cases, prepare a decoction by boiling two ounces of rasped logwood in a quart of water for fifteen minutes, and add to the clear liquor sufficient nutmeg and white sugar to make the whole pleasant. A wineglassful may be given from four to eight times a day. The *extract*, which can be had in the shops, is also a good article, and may be given for the same purpose, in the dose of ten to twenty grains in syrup three times a day.

Patients should be informed that the medicine always gives a blood-red color to the stools, otherwise they may be needlessly alarmed.

Logwood is incompatible with chalk and lime-water, and therefore mixture with either should be avoided.

Hæmospastic Medication.—Anything capable of drawing

blood to a part may be said to act hæmospastically. Dry cupping does so unquestionably, and thus proves a valuable remedy. It not only draws blood from internal parts to the surface, but it attracts morbid action in the same way, and so affords relief. I have known dry cups to give signal relief to persons laboring under great gastric and intestinal suffering that did not warrant depletion. Common half-pint tumblers will answer for adults very well, in lieu of ordinary cupping-glasses. A piece of paper rolled up and fired, and dropped into the tumbler and allowed to burn a minute or two, fits the tumbler for application to the spot. One, two, or more may be applied, and repeated as often as may be desirable. They should remain until ready to fall off.

The importance of this practice is happily illustrated by M. Condret, in an article published in the *Encyclograph Médicale*, 1848, on the use of cupping-glasses to the spine in intermittent fever. The following is his method, and which he declares never failed to cure. He applies eight or ten middle-sized cupping-glasses on each side of the spinal column from the neck downward, allowing them to remain for about thirty or forty minutes without scarification. He applies the cups at the beginning of the cold stage, or a very short time before its accession. This not only keeps off the chill, but prevents the hot and sweating stages also. Generally, one application of the cups suffices, but in old cases they must be applied three or four times.

He declares that in his own private practice during the last twenty-seven years he has not met with a case of intermittent fever which did not yield to this treatment. The vacuum produced along the vertebral column is supposed to operate as a salutary derivative, and thus to accelerate the cure.

I have known the same practice to give relief to persons laboring under difficulty of respiration induced by congestion of the lungs or the mucous membrane of the bronchi; while the cups were on, and afterward, the embarrassment of the chest was very much abated. The practice is too little in use. It is essentially a variety of revulsive treatment.

HÆMOSTATIC.—This term comes from two words meaning *to stop the flow of blood*. The word *styptic* is often used in its stead.

All active astringents are more or less hæmostatic or styptic, and this has been noticed repeatedly elsewhere in this volume.

Pagliari's hæmostatic has excited so much interest abroad that we give it a place here. It is made thus:—Eight ounces of tincture of benzoin, one pound of alum, and ten pounds of water are boiled together for six hours in a glazed earthen vessel, constantly adding water to supply the waste by evaporation; and the whole should be well stirred frequently. Filter the fluid, and keep it in stoppered bottles. It is limpid, styptic in taste, aro-

matic, and of the color of champagne. Its potency is undoubted. *Bull. de Therap.*, vol. xii. p. 491.

HAMAMELIS VIRGINIANA. *Witch-hazel. Spotted Alder. Winter Bloom. Snapping Hazelnut*, &c.—A very bold effort has been made to force into public notice an article called Pond's *vegetable pain extractor*, said to be prepared from the *witch-hazel.* We shall refer to this hereafter.*

While residing in the western country I became acquainted with the use of this plant by the steam-doctors, some of whom are exceedingly partial to it. In Howard's *Improved Botanical Medicine* it is named with commendation, as an astringent tonic and styptic. The writer says, "It may be employed as a tea for bowel complaints, bleeding at the stomach, lungs, and all internal hemorrhages. As a styptic to check internal bleeding the witch-hazel is among the best articles known. Poultices of the bark are also applied to painful tumors and external inflammations."

The above is quite as much as should have been affirmed by any one touching this plant; and very probably it has some claims to notice in the above relations. But the *vegetable pain extractor* takes a much wider range. It cures *burns and scalds, wounds, old sores, bruises, broken limbs, weak or lame back, sore or inflamed eyes, all internal inflammations, quinsy or sore throat, local pains, all internal bleedings, piles, colic, cholera morbus, all bowel complaints, headache, rheumatism, ague in the face*, and it *quiets the nerves.* Such is the statement on the label placed on each bottle of the medicine, which would seem to be a double distilled extract of the whole Materia Medica. What need of more articles for the practice of physic than Pond's *vegetable pain extractor?* and why need any one die when such a panacea can be had for twenty-five cents?

The witch-hazel is a very common plant in this country, growing from ten to twenty feet high, with large, smooth, alternate, oval leaves. The flowers appear after the leaves fall, and the fruit ripens in the autumn. It grows on hills, mountains, stony banks, and near to streams.

HELLEBORE. (See *Veratrum.*)

HELONIAS DIŒCA. *Unicorn Plant. Blazing Star. Star-root. Devil's Bit.*—Of this plant I know nothing personally. Dr. Braman, in the *Boston Medical and Surgical Journal*, has noticed it as being an invaluable remedy for *leucorrhœa*, and having no equal in the Materia Medica. He holds it to be especially suited to such affections as have their origin in atony of the generative organs of both sexes, but particularly those

* Pond's *Pain* Extractor prepared the way for the popular Pain *Killers* of the day, which belong to the same humbug family.

of the female. Under its influence the patient whose life has been a burden soon revives. Her uncomfortable sensations vanish, and ultimately entire recovery is realized. Such is the commendation of this plant. Dr. B. regards the syrup as the most eligible mode of exhibition, but names also the powder and tincture. The doses are as follows:—Of the powder, a drachm and a half; of the tincture, a drachm; of the syrup, three drachms. These are to be taken three times a day, half an hour before the ordinary meals. The doses may be increased according to circumstances. In irritable stomachs the medicine is apt to induce nausea, and when that effect is realized the dose must be reduced.

In Dr. Bigelow's recent pamphlet on the *Medical Botany of Ohio*, I find a very brief notice of this plant. It is there called an acrid medicinal, an anthelmintic and tonic, and that is all. In *Howard's Botanic Medicine*, page 285, where it is called *Unicorn*, *Star-root*, *Blazing Star*, and fully described, it is said to be a remedy for colic, strangury, rheumatism, jaundice, coughs, consumption, &c. &c. The author notices its power to prevent abortion and restore suppressed menstruation. The two effects last named agree with the suggestions of Dr. Braman. The dose named by Howard is half a teaspoonful of the powdered root three times a day, in a gill of warm water. The constant use of it makes the mouth sore.

Homœopathy. (See *Infinitesimal Practice.*)

Humulus Lupulus. The *Hop.*—This article is so well known to all Americans that it would be a waste of time to attempt a description. The vine called *hop vine* is seen in almost every garden, and is held to be an essential part of domestic economy in many places. The peculiar odor, the aromatic and bitter taste, are known to all. The hops contain a large quantity of *lupuline*, which is not, properly speaking, a proximate principle. This, as well as the hops, yields its active properties to water, and better still to alcohol or proof spirit. The latter is generally employed for making the tincture of hops, though some prefer old wine. Five or six ounces of hops and a quart of proof spirit or wine make a good tincture. They should be digested for two weeks, and then strained or filtered. The infusion of hops is made by adding half an ounce to a pint of boiling water; maceration for two hours in a covered vessel and straining fit it for use. The extract can be prepared from the strongest infusion by slow evaporation of the filtered liquor. The usual adult *doses* are as follows:—From one to two fluidrachms of the tincture, from one to four ounces of the infusion, and from three to fifteen grains of the extract.

Hops and the preparations above named were formerly much

in use, but of late they are rarely administered. A hop pillow is a very old expedient for procuring sleep, and is certainly a safe prescription. For nervous persons it often answers very well, because it satisfies them that something is done; and if they desire it, never refuse.

The therapeutic uses were formerly various. I have employed hops as a substitute for opiates in persons to whom the latter were not well suited by reason of existing disease or constitutional peculiarity. But now that we have the pleasant salts of morphia, we can well dispense with the preparation of hops.

From fifteen to thirty grains of lupuline, triturated with white sugar, make a dose for the treatment of *chordee*, *priapism*, and *spermatorrhœa*. It is called an *anaphrodisiac* in consequence of this application. M. Ricord and others have increased the dose to two or three drachms without any inconvenience.—*London Lancet*, July, 1853.

HYDRARGYRUM. *Quicksilver. Mercury.*—The word hydrargyrum comes from two Greek words which mean *water* and *silver*, indicating the fluidity and silvery appearance of the metal. It was called *quicksilver* because of its great mobility, and *mercury* in honor of a heathen deity. It is found in the fluid state, blended with some impurities, and also in various forms of chemical combination. At 39° below zero it becomes solid, and hence the mercurial thermometers belonging to Capt. Ross, in the northern regions, were destroyed, as his work informs us. At 600° Fahr. it is converted into vapor, or sublimed. And yet something like evaporation occurs in the holds of ships when mercury bottles leak and the metal escapes largely. Whole crews have been profusely salivated by such accidents, and even the rats have felt its influence, being destroyed in large numbers. This circumstance led Mr. Faraday to institute a series of experiments, of which the following is a sample:—He took a salt-mouth bottle and suspended at the end of the stopper a slip of gold-leaf two or three inches long, the bottom of the bottle being covered with mercury. The bottle, with its stopper well adjusted by means of a little grease, was placed in a secure position, and remained undisturbed for some weeks. On being examined, it was found that the gold-leaf was perfectly amalgamated at the ordinary temperature. Here was something not unlike the fact mentioned in respect of mercury in a ship-hold, no matter whether we call it evaporation or by some other name. It may throw additional light on this point to state, on the authority of Dr. Christison, that mercury is slightly oxidizable at 60° Fahr.

The sad effects of mercury on those artisans who gain a livelihood by silvering mirrors deserves a passing notice; and to

make the subject practically interesting, we quote the following remarks from the excellent work of Thackrah *On Arts, Trades,* &c., page 112:—

"Peter Cataneo, an Italian, had worked for five years at the business of silvering mirrors, and was frequently compelled to desist from the employment until the effects of the mercury subsided. At length his tremors became general: gums sore, spirits depressed, bitter taste in the mouth, tongue white, pulse quick and small, but difficult to be felt on account of the constant tremor; cough and tightness of the chest, heat of skin above the natural standard, &c. He took sulphur, as practiced at the mercurial mines, with some little benefit; a grain of opium at bedtime; and for diet, milk, gruel, fish, and porter. For his sore mouth, an acid gargle was employed. The ptyalism abated, the tremors subsided, and in the course of a fortnight nearly disappeared, leaving, however, a sad feeling of weakness, which was successfully managed by generous diet and bark. He was enjoined never to resume the occupation of silvering again, but he did not take advice until compelled by the necessity of the case to do so.

"Another case is detailed in which the speech was greatly impeded, the limbs tottered, and the man, though young, moved like one far advanced in years. He could not convey any liquid to his mouth in consequence of the severity and constancy of the tremors. His appetite fell off, his sleep was greatly disturbed, his body wasted, and the lungs dreadfully oppressed. So great was the violence of the trembling of his whole frame that he was nearly thrown out of a bath by it. Much of the water was driven over the sides of the tub, and it required the force of two men to prevent him from being actually ejected.

"This distressing disease, though most frequently seen by the French, is sometimes met with in this country. The French call it *mercurial trembling*. It is, in fact, a kind of palsy, and absolutely incurable, except by abandoning the trade, and not always even then."

Mr. Mitchel, of London, who furnished the cases from which the above remarks are extracted, observes that in twelve looking-glass manufactories he visited, "It clearly appeared that the metal became oxidized by combining with part of the oxygen of the atmosphere, and the more quickly so from the friction necessary in the application of the mercury to the plate of glass." And to show how this heavy metal can be affected by causes that some would deem inadequate to the result, it is stated by a superintendent of a silvering factory, "That from the sweepings of the chimneys, on one occasion, he collected twenty pounds of good quicksilver."

It is proper to notice a supposed mode of poisoning in which quicksilver is implicated. It is effected by the administration of the scrapings of an old or broken looking-glass; and in many places it is believed that true poisoning is thus accomplished. Now the article in question is an amalgam of tin and mercury, and, unless some more deleterious agent be present, we do not regard the compound as a true poison. If given in large quantity it may sicken and vomit, and such are the effects as commonly reported. We never heard of a death from this alleged agency.

Mercury as such, uncombined and unchanged, has been occasionally employed as a remedy. Pound doses were formerly exhibited to overcome *obstinate constipation*, and although sometimes successful, death not unfrequently resulted in consequence of rupture of the bowel and peritoneal inflammation ensuing. The practice was justly laid aside, because it is not possible to know certainly whether there is or is not a tender spot in the alimentary canal that may be forced, by the weight of the metal, so as to induce perforation. The Germans were partial to the *water of mercury*, as some call it, as an *anthelmintic*. They boil the metal in pure water, and filter, believing, of course, that ebullition enables the water to take something from the mercury that is truly medicinal. But, as the metal weighs precisely what it did prior to ebullition, it is manifest that the idea of remedial qualities in the water is purely a German affair.

The *alterative* action of metallic or fluid mercury has long been entertained by those who resort to various internal means to improve the complexion. In fact no such result could be had from any internal agent, apart from this alterative action. It is related that the beauties of the Court of Charles the Second were in the practice of employing mercury for this end. They took a teaspoonful night and morning, for some time previous to a splendid *fête*, when they would have a fine opportunity for display. After a reiterated dancing exercise in the great saloon, lit up resplendently with a thousand burners, it was observed that a million or more of mercurial gems were sparkling on the floor in every direction, having dropped from the bowels of the fair ones during the agitation of their persons. One of the first duties of the servants on the next day was to gather up these fragments, and, after careful washing, the mass was preserved for future use on like occasions.

Mercury, as imported and sold, contains some impurities which may be separated by a sort of filter made of a paper cone and punctured at the apex with a pin; the pure mercury passes through this small aperture, and the foreign matter is retained on the paper. It is also obtained in the fluid form by decomposi-

tion of the native sulphuret by the agency of iron filings. The heat required volatilizes the mercury, whose vapors are condensed in a receiver kept cold.

Fluid mercury is found in the human economy so often that a careless observer might infer the source to be a natural one. Whenever so discovered, it is in consequence of the previous use of some mercurial medicine as a remedial agent. In the bones, the liver, the saliva, the pus of buboes, and in many other locations, globules of mercury have been frequently detected. The *London Medical Gazette* for 1847 informs us that a man who had a bubo was directed to rub in several ounces of strong mercurial ointment, as had often been done before. On opening the tumor, the pus was collected and analyzed, and quicksilver was found in it. It is not said whether the man took mercury internally, although it is probable he did. In all cases where this metal has been found in the body after death, excepting in those in which the metal was exhibited as such, it is fair to conclude that the mercurial medicine was decomposed by the vital forces and the metal thus separated. This is the only philosophical conclusion we can reach.

We propose to consider the *oxides of mercury* first, and to notice their practical uses. And it is well to notice here the declaration of Christison in his *Dispensatory*, that mercury is susceptible of oxidation at the *ordinary temperature*. This has not generally been believed, and it would seem that some mistake may have been blended in the announcement, or that the oxidation is exceedingly imperfect. It is known that many regarded the *Ethiops per se* of Boerhaave as a true oxide of mercury, although nobody holds that view of the case now. It was formed by long agitation of mercury in a bottle partly full. A fine black matter was thus obtained, supposed to be mercurial oxide, but now regarded as an impure oxide of other metalic matter, accidentally present.

The recognized *oxides* are the *protoxide* and *peroxide*, both having important therapeutic relations. These differ in the relative proportions of oxygen, and in nothing else. The equivalent of mercury being called 200, there is 1 equivalent, or 8 of oxygen in the protoxide, and 2 or 16 in the peroxide.

The red oxide of mercury has been used for the last twenty years by Mr. Lloyd, of St. Bartholomew's Hospital, for the cure of *hydrocele*. One grain is injected through a canula, passing it in by means of a probe. It has never failed to cure in a single instance.—*Lon. Lancet*, Feb. 14, 1857. It would have been well to have been a little more explicit about the introduction of the oxide.

Of these oxides the protoxide is, medicinally, more valuable

than the other. It may be made by adding the chloride of mercury or calomel to a solution of potash or lime in water. Muriate of potash or lime is formed, and protoxide of mercury falls. The precipitate should be repeatedly washed in pure water, well dried, and kept in vessels excluded from air and light. The product is commonly called the *black oxide* or *ash-gray oxide*, and may vary in this respect, from unforeseen contingencies. Carpenter's *black* oxide was prepared substantially in this way, and from it the well-known *blue mass* and mercurial ointment have often been made. A fourth of a grain of good black, or protoxide, is equal to a whole grain of *blue mass* made after the old plan. There can be no doubt in regard to this preparation that the mercury is *chemically* changed, and not *mechanically* divided, as it is alleged to be in the old-fashioned blue mass. If the latter be properly made, as it may be, there is more than mere mechanical division; for you cannot easily detach any mercurial globules by rubbing it with boiling water. But, as it is often made, there is not even a good mechanical separation of particles, because the trituration is brief and imperfect. In the use of the *protoxide* of Carpenter, we can form the *mass* and the *ointment* much more speedily than by the old methods; and this is an obvious advantage and clear gain. To make the one or the other as it was always made forty years ago, demanded at least an hour's labor for a single pound. By the use of the protoxide a pound can be had in ten minutes, and of a decidedly better quality.

To make *blue mass* after the way of the olden time, two drachms of fluid mercury, three of conserve of roses, or honey, and one of powdered liquorice root were directed to be thoroughly incorporated, the liquorice being added last. Even for so small a quantity an hour's rubbing will not be too much, as I know by experience, for I have performed the task more than once. But if you take a grain of the protoxide and rub it with three of conserve of roses, you have an equivalent of four grains of common mass in three minutes. The protoxide rubbed with lard, gives you *at once* a good ointment; but formerly, a long trituration of two pounds of mercury, twenty-three ounces of lard, and one of suet yielded an article certainly no better, and frequently quite inferior.*

* The following direction, furnished by Mr. Stoddart, for the easy and rapid preparation of blue mass, merits attention. A pound may be obtained in an hour so perfect that not a metallic globule can be seen with a Coddington lens. "Rub the mercury with powdered liquorice (adding a little pure water or rose-water occasionally) till all the globules disappear. Then add the usual quantity of confection of roses, and mix the whole thoroughly. The rapidity with which the liquorice 'kills' the mercury will astonish any one who has been used to the old plan of rubbing the metal with the conserve of roses."—*Dublin Hosp. Gaz.*, February, 1855.

The medicinal uses of *blue mass* and blue ointment, as it has been called, are numerous and valuable. The alterative action of the blue mass, so forcibly inculcated by Abernethy, is everywhere appreciated, and probably will ever continue to be. It is an excellent medicine, and could not well be dispensed with. An obvious advantage it has over other mercurials is, that it seldom disagrees with the alimentary canal, and can therefore be administered long enough in nearly all cases to secure its complete alterative operation. In this regard the dose need not be over one or two grains every night; but if desired to act on the bowels, from three to five grains may be taken and repeated. The blue mass with ipecacuanha (one grain of the former and three of the latter) will be found an excellent medicine in many cases of *derangement of the bowels*. The dose should be given every four hours.

The black oxide, not in shape of mass, has been successfully administered to check *vomiting of pregnant females*, by Dr. Stackler, of the Lower Rhine. The dose was a grain daily, and continued until relief was obtained. It is stated that salivation did not ensue. (See *Gazette Médicale*, of Strasburg.)

In all these uses of blue mass or black oxide the liver is generally at fault, being in a torpid state. The stools are soon made much darker colored, and this is a signal of manifest improvement.

The *ointment* is now employed only as an external remedy, though formerly it was given *internally* in large bolus, to cure *syphilis*. (See *London Medical and Physical Journal*, vol. ix. page 487.) In the act of rubbing mercurial ointment into the surface the operator usually guards his hands by means of a glove or bladder; and even with all his care salivation occasionally follows, most probably from inhalation of the vapors. This inunction is made commonly as an aid to the internal exhibition, so as to put the system under the mercurial influence as soon as possible. A case of *hydrocephalus acutus*, supposed to be hopeless, was treated with this anointing process over the entire body, which was then wrapped in a blanket. The child recovered, and the result was attributed to this heroic treatment. Not a trace of salivation followed, nor is this necessary at all to a true mercurial impression. The gold watch and gold coin in the pockets of persons long under the use of mercury have been coated over with an amalgam, although the mouth was not touched. Facts like this prove that the old practice of profuse salivation was wholly unnecessary, as the constitutional effect can be secured independently of the slightest flow of saliva beyond what nature demands. This is an instructive lesson. Heed it.

A very happy use of mercurial ointment is in the treatment of *paronychia*, or *whitlow*, as stated in the *Medico-Chirurgical Review*, July, 1845. Rub on the part affected every other five minutes, for two hours, night and morning, a portion of strong ointment. Over this lay a soft poultice of bread and milk, or mush. Suppuration is prevented and very sensible relief soon realized.

The theory of inunction of mercurial ointment is often discussed, and yet it is not very important. Some contend for direct absorption, and others for inhalation of the vapors. That it may act by its impression on the nervous system is undoubted, and the inhalation of the vapors is sustained by the well-known practice of salivating venereal patients in hospitals by means of the fumes of cinnabar. This was done in the Pennsylvania Hospital when I was a pupil.

But we have to name another mode of using the protoxide of mercury, viz., in the shape of the *hydrargyrum cum creta*, or mercury with chalk. This is an excellent preparation, and often preferable to calomel. It may be made by triturating three ounces of mercury with five of prepared chalk until the globules wholly disappear. The metal, in whole or part, is changed into protoxide in the act of preparation, if well done. The medicine is well suited to *infantile diarrhœa* and *cholera*, and I have used it satisfactorily as an *alterative*, for the cure of skin diseases, and especially *crusta lactea* or milk blotch. This very distressing and sometimes obstinate disease is treated best with very few applications to the surface, and with special attention to the digestive organs. Tepid milk and water, or Castile soapsuds, or a very weak solution of chloride of lime, or chloride of soda, will prove far better than all the ointments in the land. From a half to two grains of the hyd. cum creta three times a day, for children between one and three years old, should be given for one, two, or three weeks, according to the circumstances of each case. Signs of improvement are soon apparent under this treatment.

The *peroxide* or *red oxide* of mercury is less frequently employed than the protoxide. Two varieties of this oxide have been named, differing obviously in the shade of color, and also in their therapeutic relations. The *red precipitate*, as it is called, and the *precipitate per se* are the articles referred to. They are the products alike of mercury, but the former is made by the aid of an acid also; the latter without such help.

To get the red precipitate dissolve three parts of pure mercury in four of dilute nitric acid, (equal weight of acid and water;) evaporate to dryness, reduce to a fine powder, and expose to a stronger heat till a red color appears. A yellow nitrate is

first obtained, with copious evolution of nitrous gas, and a higher temperature decomposes this nitrate, expelling its nitric acid and leaving a *red* oxide or *peroxide*. Owing perhaps to the retention of some acid this article has never, except by some Germans, been employed internally, being regarded a poisonous agent. As an *escharotic* it is well known even to non-professional persons, who employ the fine powder and the ointment, as best suits them, to *take down proud flesh;* that is, to remove profuse granulations on ulcerated parts. A drachm of the powder rubbed with an ounce of lard or cerate will give a pretty efficient ointment of red precipitate.

The *precipitate per se* is made by long exposure of mercury to heat and air. A matras with a tube two or three feet long is employed for this purpose. The mercury having been placed in the vessel, is submitted to a furnace heat, in a sand-bath, equal to 600° F., for about two weeks. The tube being all the while open allows the vapors of the mercury to be constantly acted on by the oxygen of the air, and the comparative coldness of the upper extremity insures condensation and falling to the bottom during the entire process. Thus every particle of mercury is subjected to chemical change, and the whole mass assumes a brownish-red color. Reduction of this to fine powder by due trituration fits it for use.

This precipitate *per se* was a favorite medicine with John Hunter, who believed it better suited to *syphilis* than any other mercurial. He thought he could effect ptyalism with it more speedily than by the common mercurials; and then the dose was very small. For an adult, a sixteenth of a grain is a full dose, to be repeated every night, or twice a day, according to the urgency of the case. It should be borne in mind that patients who are taking this medicine or blue mass should not be put on the use of nitric acid at the same time. This acid is held by some to be a powerful anti-syphilitic medicine, but it is wholly incompatible with the mercurials.

The *chlorides of mercury* next claim our notice, and will occupy a large space. These, like the oxides, iodides, sulphurets, &c. &c., are two in number, the equivalent of mercury being always two hundred. The one *chloride* is called *proto*-chloride, or simply *chloride;* the other is designated as *bi*, or *deuto*, or *per* chloride, and this diversity grows out of the fact that one contains twice as much chlorine as the other. (200 merc. 36 chl. = 236; 200 merc. 72 chl. = 272.)

And first, of the *simple chloride*, or *proto-chloride*. This is the well-known CALOMEL, or *submuriate*, or *mild muriate*, or *sweet muriate*, or *sweet mercury*, or *panacea of mercury*, as it has been called by different writers. The literal import of

calomel is *fair*, *black*, and was based, as some think, on the change of color in the process of manufacture. Others supposed the word was intended to convey the idea of a *good* or *fair* remedy for *black* bile. These are matters of conjecture, however, and do not in any sense affect the merits of the article.

As a thing of mere expediency, not to say safety, I hold the word calomel to be preferable in our written prescriptions to any other term; and the same remark is of equal force touching *corrosive sublimate*. By these common names all persons, boys or men, engaged in dispensing medicines, know the one and the other. But all do not comprehend the more correct *technicals*, which are oftener employed to display the imaginary knowledge of the doctor than because they are really to be preferred. Fewer blunders would occur if we invariably used the old terms. To illustrate the importance of discrimination between these two leading mercurials, we need only cite the fact that an apothecary and his pupil were fined severely in France for dealing out corrosive sublimate in place of calomel, and so killing three children. The pupil was imprisoned a month, and both were fined two thousand francs for the benefit of the parents.

Calomel has been generally prepared from corrosive sublimate, though it can also be made from the sulphate or nitrate of mercury. If the first be selected, each equivalent of the sublimate must be thoroughly rubbed with one equivalent of fluid mercury. The trituration should not only obliterate all the globules, but it should give to the mass a blackish or ash-gray color. The mixture thus made is then sublimed in a proper vessel by means of a suitable degree of heat. The calomel is collected on the upper part of the vessel in form of a cake. In the process the fluid mercury robs the corrosive sublimate of one equivalent of chlorine, and as a consequence the whole is reduced to calomel. If there be carelessness in weighing, or mixing, or in any part of the process, it may happen that there will be a slight excess of corrosive sublimate, and then the product will be vitiated more or less. This may serve to explain the gripings and spasmodic pains that almost always follow the exhibition of calomel as complained of by medical men. It is well for such persons to remember that the difficulty may be obviated by washing their calomel several times with boiling water, which will dissolve all the corrosive sublimate, though it cannot take up a grain of calomel. To be certain that corrosive sublimate is present, let the collected waters be tested by adding to an ounce or two a little lime-water. This will give a yellow tinge instantly if corrosive sublimate be in solution. If calomel were dropped into lime-water the color would be an ash-gray or almost black, and you would have the *black mercurial wash*, formerly applied to

old and indolent ulcers. The yellow solution is the *aqua phagedenica*, employed for a similar purpose.

Howard's calomel, *hydro-sublimed* calomel, and *steam calomel* are terms given to calomel made by passing the sublimed mercurial vapors into a vessel into which steam is constantly jetting. The powder is thus made much more impalpable, and every trace of corrosive sublimate is dissolved by the hot water. It is esteemed the *purest* kind of calomel.

When calomel is made from the nitrate or sulphate of mercury it is done by precipitation and double decomposition, muriate of soda or chloride of sodium being employed for the purpose. It is essential in all these cases that the oxide of the salt of mercury be in a state of protoxide; if it were a peroxide, corrosive sublimate and not calomel would be the product.

In noticing the uses of calomel in practice I shall speak of it as an *antiphlogistic* or *anti-inflammatory* and *reparatory* remedy; as a *cathartic*, an *anti-cathartic*, and *anti-emetic;* as a *sialagogue*, an *alterative*, and finally as a *poison*.

The first exhibition of calomel as an antiphlogistic or anti-inflammatory medicine was in America, in 1736, and by Dr. Douglass, of Boston, as may be seen by reference to the *Edinburgh Medical and Surgical Journal* for Oct. 1842. The testimony being from a foreign source is the more conclusive. It has been employed a long while in this country in the management of *pneumonia;* sometimes alone, but oftener with ipecacuanha or tartar emetic. I have succeeded most happily in *pneumonic* inflammation with blisters to the chest and the internal use of calomel and ipecacuanha, two grains of the former and three of the latter being given every three hours. I have not known it to excite salivation in those cases, and suppose the force of the medicine was spent on existing inflammation.

Within a few years past calomel and blue mass have been employed in the treatment of *rheumatic* and *heart* disease, partly on account of its *anti-inflammatory* and partly for its *reparatory* action. Its known repulsion to fibrin has given it the name of *anti-fibrinous* and *anti-plastic;* and this power is displayed not only in preventing and arresting inflammation, but also in removing lymph deposits and restoring organs to their original condition. These effects are manifest in *endocarditis* and *pericarditis*, and hence the value of the mercurial practice. Dr. Latham, in his work on diseases of the heart, has shown conclusively the importance of mercurials in inflammation, and its results or effects. It is well ascertained that calomel and blue mass are best suited to constitutions free from any special taint or diathesis, and wholly unfit for those who give any indications of scofulous disease.

The anti-inflammatory and reparatory action are incompatible with the cathartic action. The latter, if at all considerable, prevents entirely the proper effects of the remedy in respect of inflammation. Nor is it necessary or even proper to salivate profusely, nor to do more than barely secure a constitutional impression, which can be gained by small doses exhibited for a short period.

We are not able to decide whether calomel acted as an antiphlogistic or anti-inflammatory remedy, when Dr. James Clark gave it so successfully in *yellow fever*. His own words are—"When I was called on the first day I seldom lost a patient." He says he gave of calomel and jalap each ten grains, as a cathartic, repeated every three hours. If the medicine acted soon or much as a cathartic, it could not work by its anti-inflammatory power as obviously as if it did not purge. The fact, however, is valuable, and is recorded in *Medical Facts*, vols. vii. and viii., a very old work, published before Dr. Rush was so successful with the same remedies.

The *cathartic* action of calomel is doubtless a part of its antiphlogistic operation, and it has been employed, for its effects on the alimentary canal, in all parts of the world. The *ten* and *ten* of Rush, viz., ten grains of calomel and ten of jalap, excited a good deal of apprehension in Philadelphia, in 1793; yet Dr. Friend tells us, in his *Emmenalogia*, written many years before, that he gave to girls of fifteen, laboring under retention of the menses, fifteen grains of calomel with five of scammony for a cathartic dose. In very many parts of this country, thirty, forty, fifty, sixty grains have been regarded as a fair dose to act on the bowels. Teaspoonful and even tablespoon doses have been given sometimes as a cathartic, and sometimes for no very definite purpose.

When I removed to Cincinnati, in 1831, and became an attending physician of the Ohio Hospital, I was informed that I would be obliged to enlarge my Philadelphia doses of calomel. But the time never came when I found it necessary to do so; and even in Kentucky, where the mammoth powders had been fashionable, I rarely exceeded my old dose of ten or twelve grains. It was sufficient.

I said that it was not quite certain for what end the tablespoon doses were given, but it is probable that some administered calomel thus as an *anti-cathartic*. That this was true during the prevalence of epidemic cholera in Lexington, in 1833, would seem to be probable. And here it is well to name the vast change in that city touching the use of calomel in the same disease, in the summer of 1849. The most successful practitioners rarely gave more than six or ten grains of calomel, with one of

opium. The results were far better from six-grain doses than from those of four hundred and eighty grains, which were actually exhibited in 1833.

In my published lecture on *Asiatic cholera* it is stated that "Dr. Scudder, who has been a missionary in India for about thirty years, rarely gave more than ten grains of calomel at a dose. Now and then fifteen grains were given with from one to three of opium, and this kind of dose was very successful." The statements of other gentlemen residing in that country, where the disease is endemic, is to the same point. And whether it be given as a cathartic or as an anti-cathartic, or to correct the hepatic secretion, the facts are important. We know certainly that small doses will meet the difficulty better than very large ones.

A missionary writing from Bankok, in India, June 29, 1849, where cholera destroyed twenty thousand persons in twelve days, states that the most successful practice was twenty grains of calomel and eight of opium, administered every hour, and in some instances more frequently.

In an excellent paper by Dr. Ayre, of Hull, in England, it is most confidently declared, as the result of large experience in the treatment of *Asiatic cholera*, that no remedy was so frequently successful as very small doses of calomel. He gave two grains every fifteen or twenty or thirty minutes, and when two or three hundred grains had been reached there was only a gentle ptyalism. He rarely gave an opiate further than a few drops of laudanum to secure the retention of the calomel. This is the same gentleman who long ago urged fractional doses of calomel in *cholera infantum*.

Mr. Bishop confirms the practice of Dr. Ayre, and gives the details of several cases. He gave sometimes a grain of calomel every five minutes, and two drops of laudanum every hour, with occasional effervescing draughts. In some cases a grain of calomel was given every fifteen minutes, and effervescing mixtures every hour, with ten drops of laudanum in each dose. The vomiting and purging gave way as if by a charm.—*London Lancet*, January, 1850.

In Roger's *Reports on Asiatic Cholera in the Madras Army*, published in London in 1848, it is stated that large doses of calomel were generally laid aside, and small ones employed, by most of the Indian practitioners. It is also said that a mixture of four grains of calomel, six of sulphate of quinine, and two of opium, taken in a glass of brandy at the onset of attack, was usually successful.

In the *London Lancet* for June, 1850, we find a paper by Mr. Cox, surgeon of Swansea, in which is a statistical table of *cholera practice* that claims a passing notice. The large-dose

calomel practice and the minute doses of Ayre are put in contrast, not omitting, however, the facts touching the stimulant plan of treatment. It is proper to say that the large doses of calomel here alluded to are ten grains, and rarely exceed twelve or fifteen. The results were as follows:—

	Patients.	Deaths.
Calomel in large doses	10	1
Ayre's small doses, modified by ice, sulphuric acid, and sponging with nitric acid	54	13
Stimulants and opium	17	12
Stimulants alone	5	3
Tartar emetic	4	3

Many southern practitioners formerly contended for large doses of calomel on the ground of the severity of the diseases there,—as, for instance, the southern *congestive fevers*. But this objection is now fully met by the well-known fact that many of the objectors have laid calomel aside, to a good extent at least, and have substituted sulphate of quinine, which is now their grand heroic medicine. Dr. Monette, the author of a valuable book on the history of the far South, published his views on this point in the *New Orleans Medical and Surgical Journal* for October, 1844; and avers that the only case of fever he lost in a given season was a man to whom a pupil gave a dose of calomel without his knowledge. He cures the fevers there without calomel, and others do the same thing, alleging that bilious evacuations can be secured independently of the action of that drug.

Given expressly as a cathartic, calomel has often been highly injurious. This is especially true of *remitting bilious fever* in the South and West, where practitioners look for *intermission* instead of *remission*, and will not give sulphate of quinine, because the time has not come, because the tongue is not right and the bowels are not right. Under this delusion, they repeat their cathartic doses of calomel, rhubarb, aloes, scammony, and the like, even at the end of the first week and into the second.

This repetitious depletion and irritation not only exhausts and prostrates the whole system, but in a special manner irritates the mucous membrane of the bowels, establishes lesions there, and secures all the fatal concomitants of typhoid fever. And, after lingering for weeks, death is sure to take place, unless the powers of a vigorous constitution be able to offer effectual resistance.

The same unwise use of calomel has been seen also in *dysentery*, where, in place of relieving, it has displayed the effects of a positive irritant and thus augmented the mischiefs of the case.

The *anti-cathartic* and *anti-emetic* action of calomel are displayed in *cholera infantum*, *infantile diarrhœa*, and in the *gas-*

tric irritability so often seen in *bilious fevers*. The efficacy of the medicine in the first-named disease in very small doses has been displayed times without number in all large cities. In the late Dr. Edward Miller's essay, in Eberle *On the Diseases of Children*, in Bell's *Notes to Underwood on Children*, in Forbes and Connolly's *Medical Review*, vol. vii., in the *Medico-Chirurgical Review* for 1839, in Professor Henderson's paper in the *American Journal of Medical Sciences* for 1841, and in many other volumes, the paramount value of minute doses of calomel in cholera infantum is clearly made out. I have been so long in the practice of treating the disease in children of twelve or fifteen months old with the twelfth of a grain four, six, or ten times a day, and with such constant success, that I cannot but commend to the profession what I regard as the best kind of practice in that very fatal disease of children.

The small size of the dose makes it easy of administration. The finger moistened takes up the little powder readily and lodges it far back on the child's tongue. The breast milk or a little water will speedily wash it into the stomach. I have known high irritability of the stomach, as well as of the bowels, checked by two or three powders. When that is the result, longer intervals between the doses will be proper; and the stools being greatly reduced in quantity and altered in color, once or twice a day will suffice for a day or two, after which the powders may be discontinued.

I generally combine the calomel with gum Arabic, and occasionally with prepared chalk; but I have tried the calomel alone with great success. I never had the misfortune to see anything like a sore mouth as the consequence of this practice, in my own experience.

It will occur to all readers that *infantile diarrhœa* can be arrested on the same principle and by the same treatment; and those who have never tried the remedy under such a state of things will find much satisfaction in putting it to the test.

I am aware that some theoretical practitioners have objected that very small doses always irritate and that large doses are safer and better. But in an old work before quoted, viz., *Medical Facts*, it is expressly stated that two-grain doses of calomel, given every two hours, proved very efficacious in allaying the high gastric irritation of *bilious remitting* fevers of *adults*. The very small-dose calomel practice may be regarded, therefore, as being well suited to irritable states of the stomach and bowels as they occur in the diseases before named.

In Yeates's and McLean's *Science of Life* an able attempt is made to show that calomel is not necessarily a cathartic at all. They say you may give calomel for any length of time, at regu-

lar intervals, gradually increasing the dose, and get no stool. They affirm that the medicine acts only as a *stimulant*, and that if you suspend this stimulation by omitting the dose, the bowels then unload themselves, simply because the stimulant has been withheld. To what extent this doctrine may be true I am not prepared to say, though I do believe that the action of calomel on the stomach and bowels is purely relative, and depends entirely on the condition of the mucous membrane. If there be subacute inflammation, it may act as a counter-irritant, and so prove ultimately sedative; or if there be mere irritation, it may operate simply to allay that irritation, and even then it would show something like a sedative property.

Touching the successful action of large doses of calomel, as from thirty to sixty grains, in *typhoid* or *typhus* fever, especially in connection with cold bathing, I am rather at a loss for a therapeutic solution. A writer in the *London Lancet* for 1843 speaks very positively of the usefulness of the practice.

Dr. Schonlein, Professor of Clinical Medicine at Berlin, reports decided success in the use of calomel in the treatment of typhoid fever, carried so far as to induce slight ptyalism. He found it to check the diarrhœa very promptly. (See *London Lancet*, June, 1850.)

To *work off* a full dose of calomel is sometimes an important matter, and a thing that must be done seasonably if we would save the patient from a sore mouth. To accomplish this end an injection will sometimes be quite adequate. The infusion of senna alone, or, still better, with the addition of Epsom salt, will almost always answer the end: a wineglassful should be given to an adult every two hours. Some, who are not easily salivated by calomel pills given for the purpose, may have their gums touched by a non-cathartic dose of the same medicine, or a dose large enough to purge ordinarily, but prevented from doing so by some unforeseen circumstance. Hence the need of *working off* such a dose, to prevent the undesirable consequence.

To make a dose of calomel act quite promptly we may add, besides an equal portion of jalap, a grain of tartar emetic or three to five grains of ipecacuanha. The emetic addition, while it will not nauseate, will exert such a relaxing influence as to accelerate the purgation by several hours in some instances.

Touching the *quality* of *stools* induced by calomel there can be no unvarying rule. As hinted before, the change is generally from a light to a dark color, and sometimes they may be almost black. But the smallest as well as large doses will thus alter the stools, and occasionally they will not give rise to any very marked changes. Hence the folly of waiting in bilious fevers,

after the third day, in order to get a certain kind of stools by calomel before you give the sulphate of quinine. There may be something in the bowels, retained for weeks, whose presence may control the action of calomel on the color very materially. And if the cathartic of calomel, and other purgatives added, be repeated after the third or fourth day in bilious remittents, the whole mucous coat of the bowels suffers from excessive irritation, and the consequences are often fatal.

The *sialagogue* or *salivant* action of calomel is not often desired by physicians at the present day. If they can be assured of a mercurial breath, some tenderness of the gums, with a coppery taste in the mouth, they feel assured that such a ptyalism is secured as may be beneficial, and they withhold the mercurial medicine, or reduce its dose and abate the frequency of repetition. This is wise. It secures not only a constitutional impression, but is kept within due bounds; it makes the *alterative* effect equally certain, and this can be continued for a great length of time by renewing the dose once in two or three days.

This moderate sialagogue or alterative use of calomel is well adapted to many chronic diseases, and must be continued for weeks or months.

In former times a much bolder sialagogue use of mercury obtained, as we learn from the seventh volume of Haller's *Dissertations*, which contains an interesting paper on the use of calomel in various diseases, by Michael Alberti, in which he presents a learned history of this medicine, from the Arabian physicians down to Paracelsus, and thence to 1745. It will be seen that one physician gave doses of five scruples, also of seventy-two grains, which affected the mouth for a fortnight. Another physician gave his patient fifteen, then twenty, then thirty, and then sixty grains, which latter dose was continued till ptyalism followed. (See *Medico-Chirurgical Review*, July, 1836.)

In mercurial salivation the mercury may be detected in the salivary secretion, both by the galvanic test and by dry distillation of the residue of the saliva.—*Lehmann.*

The mercurial *pulse* and *fever* do not usually attend the use of mercury, excepting in those cases in which its specific effects are desired in a short space of time. The calomel or other medicine is pushed with vigor to the extreme point of supposed safety, and, as a consequence, the arterial system is shocked and mercurial fever ensues. A much safer plan is to attempt to secure the constitutional impression by moderate doses, aided by nitrate of potash and tartar emetic. Such was the plan of the late Dr. Rush, and it proved signally successful. His prescription was as follows:—

℞.—Nit. pot. ʒi;
Cal. twelve grains;
Tart. emet. one grain.

Mix well, and divide into twelve powders, one to be given every two hours in a tablespoonful of water.

The nitre and tartar emetic reduce arterial excitement, and thus prepare for the action of the calomel. The mercurial pulse and fever do not attend the use of these antimonial, mercurial powders; or, if present, they are very faintly developed.

Dr. Fleming has reported, in an English monthly journal, the high success of calomel in doses as small as the twenty-fourth part of a grain for the purpose of inducing ptyalism. The advantages are the speedy action and easy control of the remedy. The dose above named was given every three hours, and ptyalism ensued at the end of thirty-six or forty-eight hours. The effect was milder than by the common practice, and the bowels were not disturbed.

The *modes* of giving calomel are not numerous. Its tasteless quality renders it more agreeable to children than many other medicines, and this, with its small bulk, gives it great popularity as an infantile medicine. We have pointed out the manner of exhibiting it in cholera infantum, and the same plan applies to all young children. When deemed advisable for the insane, it can be placed on bread and then covered with butter. The pill form answers very well for those who do not object to pills. Its great weight and small bulk adapt it well for this method.

Two or three *external* applications of calomel call for notice. Dusted on the external organs of generation it often relieves distressing *pruritus* very speedily. The effect will depend somewhat on the state of the stomach and bowels. For want of due attention to this point, the external application often fails. The calomel should be placed in a fine gauze bag, and applied morning and night. The same plan is often successfully resorted to for the relief of *excoriation* or chafing behind the *ears* and in the *groins*. *Tinea capitis* is sometimes much relieved by an ointment of calomel applied to the head, after removal of the scabs by a soft poultice. Here, too, it is highly important to correct the state of the digestive organs. A drachm of calomel, rubbed with an ounce of lard or cerate, fits it for the purpose named.

M. Tournie has proposed the use of calomel ointment and a powder of camphor and starch for the relief of *prurigo* of the genital organs, anal region, and axilla. These parts sometimes are covered with scabs, and then tepid baths and emollient applications must be used first. These being removed, rub the calomel ointment in twice a day, (one or two drachms of calomel

to an ounce of axunge,) and after each application dust over the parts the mixture of starch and camphor. Four parts of starch to one of camphor constitute the powder.—*London Lancet*, December, 1851.

An ointment is in constant use at St. Mark's Hospital, for small fissures about the arms, consisting of five grains of calomel to one drachm of lard, or elder-flower ointment, which is said to be preferable. The parts are to be well cleansed with warm water, and then the ointment is to be smeared gently over the surface. No dressing whatever is permitted to be worn.—*Medical Times and Gazette*, Feb. 28, 1857.

The *purulent ophthalmia* of children and *gonorrhœal ophthalmia* of adults are frequently cured by the application of calomel. In the former the application is made with a fine hair pencil charged with the finest calomel, brought close to the open eye and struck so as to dust the powder over the whole external organ. (See *Edinburgh Medical and Surgical Journal*, January, 1844.) Dupuytren treated *gonorrhœal ophthalmia* by blowing English calomel through a quill so as to lodge it on the eye. In this way the calomel is brought in contact with every inflamed spot. Parker, in his *Exploring Tour beyond the Rocky Mountains*, speaks of success in the same way in the ophthalmia that is so prevalent among the Indians.

There are two prescriptions containing calomel that I deem of sufficient value to introduce here. These are *Rush's pills* and *Belleville's cerate*. The first is a very good cathartic, and often useful for the correction of the digestive organs. It is made thus:—

Take of calomel,
Powder of aloes, each two drachms;
Powder of gamboge, half a drachm;
Oil of mint, five drops;
Water enough to make the whole into sixty pills.

The dose is from two to four at bedtime. They seldom disturb the bowels before the following morning, and then operate pleasantly.

Belleville's cerate is as follows:—

Take of acetate of lead, an ounce;
Red precipitate, half an ounce;
Calomel, two ounces;
White wax, four ounces;
Sweet oil, six ounces.

Melt the two last and add the others in fine powder, and mix the whole intimately. The cerate has been long applied with great advantage for the cure of *tinea capitis* and other *cutaneous affections*.

It is proper to say that calomel and sal ammoniac are decidedly incompatible, and that on account of the hydrochloric acid of the latter. The mixture, accidentally or intentionally made, gives rise to corrosive sublimate.

A few words on the *poisonous* action of calomel will be proper at the close of this history of its uses. In a paper which I published in the *New Orleans Journal*, No. 1, it was shown that this article is often a source of poisoning. I may say here that it is not possible to name a definite quantity that will always or generally develop poisonous results. The same quantity may act very differently on the same person at different times. Hundreds of persons were poisoned during the prevalence of Asiatic cholera in 1833, '34, and '35, in the West, by mammoth doses of calomel. I had proof enough of this in Palmyra, Mo., on my arrival there in July, 1835. Even in other diseases of far less severity this medicine has been administered with decidedly ruinous or poisonous consequences.

In the *American Journal of Medical Sciences*, vol. ii. p. 42, Dr. Heustis, then of Cahawba, Alabama, thus wrote:—"The horrid spectacles frequently to be seen as the consequences of the mercurial treatment are shocking to humanity and disgraceful to the profession. Even were mercury the only alternative, that life is dearly purchased which is bought at the sacrifice of everything that renders life desirable, the constitution broken and destroyed, the person maimed and disfigured, so that it is scarcely recognized by the unfortunate sufferer himself, who is an object of pity and horror to his friends. Deprived of their teeth, perhaps of their jaws, we sometimes see those pitiable objects with distorted features, the cheeks and palate partly destroyed by mortification, and the remaining portion cicatrized into an unsightly knot, with the mouth twisted from its natural position, drawn obliquely to the ear, and the lips and cheeks consolidated with the gums."

The same writer, when residing at Mobile, furnished another paper for the same journal, vol. xix., in which he says, "I have known an artificial disease produced and kept up by the daily exhibition of calomel; and because a flow of saliva was not excited it was concluded that the medicine had not exerted its specific effect, or not been given in sufficient quantity. It was therefore pushed further, and sloughing and mortification of the gums, cheeks, and fauces, and death itself following in the train."

The distinguished surgeon Liston avowed his belief that no man ever lost the bones of his head or face by syphilis alone, and that the result was caused chiefly by mercury.

We are furnished with additional evidence of the deleterious action of calomel by Mr. Annesley, in *Sketches of the Diseases*

of India. He performed a series of experiments for the express purpose of ascertaining the true operation of calomel, "and these experiments presented uniform results, viz., that while the stomach and duodenum of dogs that had taken large doses of this preparation were much paler and less vascular than in ordinary circumstances, the colon and rectum, from the cæcum to the verge of the anus, were most acutely inflamed, thereby explaining the results of clinical observation, namely, that although large doses of calomel calm those symptoms usually caused by increased vascular action, or inflammation of the mucous surface of the stomach and duodenum, they lower the vital energy of these important organs, and occasion tenesmus, griping pains in the course of the colon, mucous or bloody stools, hemorrhoids; and if persisted in, many more of the symptoms of dysentery, or even structural change of the colon and rectum. I am confident that dysentery becomes chronic; that an occasional indigestion lapses into a constant dyspepsia; and that habitual constipation often passes into strictures of the rectum, and hemorrhoids into fistulæ, from the frequent exhibition of large doses of this medicine. Ingenuity cannot possibly devise a more successful method of converting a healthy person into a confirmed invalid, of destroying many of the comforts of existence, and of occasioning hypochondriasis and melancholy than the practice of prescribing large doses of calomel on every trifling occasion, or when the bowels require gentle assistance; or because the patient erroneously supposes himself to be *bilious*, or is told so by those who should know better. The unfortunate word '*bilious*' is the scapegoat of the ignorant."

Does the *infinitesimal* practice ever induce *salivation?* If so, the disciples of Hahnemann had as well be silent about our *calomel* practice. I know a very respectable gentleman, a devotee to the invisible doses, one of whose children happened to get his hand into the little box of physic, and was so charmed with the diminutive white pills that he emptied the contents of the vial into his stomach. He swallowed, probably, ten or a dozen of the *harmless little things*, but in a few hours after, the favorite homœopathic doctor was sent for, when lo! the gentleman decided the case to be *mercurial salivation.* The parents knew that the vial was labelled *mercurius*, but never dreamt that *calomel*, that hideous article, was there.

The facts proving the *poisonous* action of calomel are almost innumerable, but enough has been said on that point.

Much diversity of opinion has obtained touching the poisonous action of calomel on children who are seized with *gangrene of the mouth and face*, sometimes called *cancrum oris.* A case has been reported in the *Boston Medical and Surgical Journal*,

July, 1845, of a child ten years old who died of extensive mortification, induced by twenty-grain doses of calomel. A case is also reported in the *Western Lancet* for August, 1845, and many others could be referred to. The facts seem to show that under certain circumstances calomel may develop the poisonous phenomena above named. But it is equally certain that the disease in question may be set up wholly apart from the action or even the use of calomel. Thus it is sometimes seen in hospitals for children in the nature of charity establishments. The bad ventilation, want of cleanliness, &c. may give rise to a single case, and presently several will be found, until at length the disease assumes the epidemic form. The exposure of all to the same deteriorating agency creates a common predisposition, and hence the general prevalence. Thus it was many years ago in the Children's Asylum of Philadelphia. This form of gangrenous ulceration is best managed by the free use of chlorate of potash in watery solution, so as to give a child five years old from one to three drachms in twelve hours. It is supposed by some to act by oxygenating the blood.

I am inclined to think that the same medicine will prove very useful in cases of poisoning by mercury, in the shape of profuse salivation and some ulceration of the mouth. When the patient is greatly enfeebled, a strong acidulated solution of the sulphate of quinine should be liberally administered.

As a means for arresting *profuse mercurial salivation*, tincture of iodine may be painted on the mucous lining of the mouth and on the gums. A strong infusion of green tea, a solution of tannic acid, or infusion of galls may be employed as a mouth-wash. Velpeau applied hydrochloric acid to the gums with a hair pencil, and promptly arrested the flow.

Corrosive sublimate next claims attention. It is the *bi*, or *deuto*, or *per* chloride, and was formerly known as *oxymuriate*, *hyperoxymuriate*, &c. It is made by subliming a mixture of the sulphate of peroxide of mercury and chloride of sodium or muriate of soda. The resulting compounds are bichloride of mercury and sulphate of soda. Corrosive sublimate is soluble in hot water, and very slightly so in cold water; while calomel is not soluble in either. Both compounds are white, but calomel shows occasionally a tinge of yellow or blue not seen in corrosive sublimate. The taste of corrosive sublimate is very acrid, while calomel is tasteless. The specific gravity of the latter is 7.2, that of the former 5.2. Both are slightly altered by long exposure to light, and hence should be kept in opake or covered bottles. A solution of corrosive sublimate in water is changed to yellow by the addition of lime-water; the same addition to calomel gives an ash-gray or nearly black color. The former

constituted the *aqua phagedènica*, and the latter the *blach wash*, of the old authors. Such are the points of dissimilarity which every medical man should remember.

Corrosive sublimate is a term given to the article because of its acrid action on the mucous coat of the stomach and on other parts. Its energetic nature is plainly manifested by this appellation, and everybody is aware of it. The pătent medicines for the cure of venereal diseases, and the doses of quack doctors very generally contain this acrid preparation. It was detected by Professor Hare in *Swaim's* panacea, although its presence in that popular compound was for a long time denied. Venereal quacks, sailor-doctors on board of steamboats on the Ohio River, give corrosive sublimate in whisky or gin or diluted alcohol, because the dose is more agreeable to their patients. In very minute portions, the German physicians have long been partial to it as an *alterative* in the treatment of *secondary syphilis*. Ten grains rubbed intimately with mucilage of gum Arabic, and divided into one hundred and twenty pills, one of which to be taken morning and evening, constitutes the mercurial treatment. Each pill contains precisely a twelfth of a grain, which may be regarded as the proper adult dose. Even that quantity has proved a decided irritant, calling for the modifying agency of an opiate. Sometimes the Germans have combined it with blue mass, two grains of the latter being rubbed with a twelfth of a grain of the former. This combination, as we are assured, will more speedily set up a slight ptyalism than any other mercurial prescription. Another formula to which the same people are very partial, is as follows:—

> Take of corrosive sublimate, one grain;
> Sal ammoniac, in fine powder, five grains;
> Water, an ounce.
>
> Mix.

Of the solution so made the dose for an adult is a fluidrachm added to an ounce of cinnamon-water or ginger tea, and repeated twice a day. If gastric pains ensue, add to each dose an eighth of a grain of sulphate of morphia.

Mercurial cigars have been made and employed as a means of introducing very minute portions of corrosive sublimate into the system. The proposition was first made to the *French Academy of Medicine*, as we learn from the *London Lancet* for May, 1843. The plan was to impregnate tobacco leaf with a weak solution of corrosive sublimate, having previously washed the leaf carefully in hot water to free it of its nicotine. The leaf was then rolled into the form of cigars and smoked in the usual way.

A writer in the *Edinburgh Medical and Surgical Journal*, vol. xv., gives a new mode of effecting ptyalism by corrosive

sublimate, which I regard as wholly improper, while it is certainly uncalled for. He directs the skin to be slightly scarified with a fine lancet in various spots, and to sprinkle over the surface a small quantity of very finely-powdered sublimate. It is stated that salivation can be induced in this way in twenty-four hours. I cannot imagine a case that could justify this plan, unless perhaps one of the terribly fatal maladies that almost invariably destroy life. A German physician, Dr. Wedekund, employs a bath of corrosive sublimate as the best expedient for inducing pytalism. He adds a drachm of corrosive sublimate to a pint of water at ninety, and employs the bath chiefly in the management of *cutaneous affections.*

The *external* uses of corrosive sublimate have been quite numerous, sometimes salutary and often injurious. I have employed a solution of three grains in six ounces of rose-water very efficaciously, in the *eruption* resulting from the *poison of sumach*, taking care at the same time to act freely on the bowels with cathartic medicine.

Old and *ill-conditioned ulcers* are often improved by a solution of two grains of the sublimate in two ounces of lime-water, constituting in fact the *aqua phagedenica.* The same solution has been employed by a German physician in Maryland, Dr. Huitze, as a remedy for *burns* and *scalds;* but it cannot be a safe application, and we have, moreover, others that are of less doubtful expediency and equally salutary.

The celebrated *Gowland's lotion* is a solution of corrosive sublimate in an emulsion of bitter almonds, in the proportion of a grain to the ounce. M. Bally recommends a solution of four grains in four ounces of water as a collyrium, to be used in acute and chronic *ophthalmia* at least ten or twelve times a day.

I have no doubt that preparations such as have been already named may frequently be serviceable, and indeed my own experience is in their favor, under suitable restrictions. Yet it is very certain that serious evils have followed the indiscriminate and injudicious application of solutions that were by no means concentrated. Cases have been reported (and I have known some of them by credible information) of the ordinary symptoms of poisoning, as the consequence of washing a sore on the face with solution of this article. Dr. Miguel furnishes the case of a gentleman who long suffered from *psora*, and who was cured at last by lotions of corrosive sublimate. The disappearance of the skin-disease, however, was followed by severe monomania, which could not be controlled until high irritation of the skin was reproduced. The reporter adduces the fact to show the great danger of suppressing an old disease of the surface without, at the same time, acting smartly and for days on the

alimentary canal. Another case, equally striking, is given substantially as follows:—A robust man, aged forty, suffered from an eruption on both hands for the space of two years. He employed the lotion of corrosive sublimate and was cured, as he fondly hoped. But very soon a cough assailed him, attended with severe pain in the breast, and he sank in less than four months under tubercular consumption. These and many like facts serve to show the danger of corrosive sublimate as a wash, where there exists even a slight predisposition to disease of vital organs. An old cutaneous disease should never be attacked by such an agent, nor by any other, apart from repeated cathartic action, or the establishment of a drain in the nature of seton, issue, or perpetual blister, to compensate for the discharge to be arrested or the skin-disease to be cured.

Ranking (vol. i. p. 324) has the cases of two children who were killed by a lotion of corrosive sublimate to the head to cure *ringworm*. All the usual poisonous symptoms occurred, and in one of the cases profuse salivation with sloughing of the gums and tongue.

It is impossible to fix the *poisonous* dose of corrosive sublimate, because the effect is necessarily relative. In Paris and Fontainbleau's *Medical Jurisprudence*, vol. ii., the story is told of a Turk who took daily a drachm of corrosive sublimate, and was known by the name of the *corrosive sublimate-eater*. On one occasion he visited a Jew's shop which was partly an apothecary concern, and called for a drachm of his daily luxury. No sooner was it handed out than swallowed, to the great consternation of the poor salesman, who, dreading the result and his implication in the affair, instantly closed the windows, locked the door, and remained for the rest of the day invisible. A mere accident, in due season, relieved his embarrassment.

In such a case as the one just stated there is much to interest and yet to perplex us. How did the Turk acquire the power of endurance so as to be unhurt by sixty grains of this very poisonous article? Probably it was the result of a very slow increase in quantity from day to day for months; or the stomach might have been rendered insensible to its ordinary impression by the long-repeated use of other articles, as opium, brandy, and the like.

The following case of poisoning by corrosive sublimate is taken from the *Edinburgh Medical and Surgical Journal* for the year 1839, and is peculiarly interesting not only in regard to the symptoms and morbid appearances, but also because the poison was supposed to have been taken in mistake for a dose of calomel.

On the 26th of August, 1838, a man, aged forty-seven, applied at

an apothecary's shop for a dose of calomel, to relieve him of a slight indisposition. The wife of the apothecary gave him about a teaspoonful of a heavy white powder, half of which he took in a glass of whisky, about ten o'clock in the forenoon. In the act of swallowing the dose he felt an acute, burning sensation in his throat, and immediately after was seized with stiffness of the jaws, vomiting, great pain in the bowels, bloody discharges from the bowels, and severe cramps. In the evening, pytalism was manifest, the pain in the mouth and throat continued, and occasionally the pains in the bowels were very severe. On the third day of September, just nine days after the accident, he was admitted into the *Royal Infirmary*, previous to which no suitable means had been tried for counteracting the poison. When admitted, weakness rather than pain was the subject of complaint, but the jaws were stiff and swollen. The gums were also swollen and spongy; there was considerable pytalism, and a strong mercurial fetor in the breath; there was no pain in the bowels, nor uneasiness on pressure. He had three stools in the last twenty-four hours, of ordinary consistence, but of a light color. There was no sign of irritation in the urinary organs. The pulse was 96, rather weak, and the countenance indicating exhaustion.

Notwithstanding active treatment (which is not, however, specified) the patient's strength declined. Fluid blood escaped from his mouth without any effort at vomiting; but this was thought to depend on the severity of the salivation. The pulse continued small and weak, and the entire appearance very much resembled that of a person in the last stage of typhus fever. He did not complain at all of pain in the bowels. On the fourteenth day from the accident he died, immediately after having passed by stool about six pounds of blood.

Dissection revealed the following condition of the body. The mucous membrane of the mouth of a dingy green in spots, and in a state of slough. An ulcer on one of the tonsils. Two irregular brown spots on the surface of the pharynx. At three inches from the lower end of the œsophagus it had an appearance like the spots in the pharynx. In the stomach were six ounces of partly coagulated blood. Just below the entrance of the œsophagus the mucous membrane was green and gangrenous. The other portions were of an uniformly red color. The lining membrane of the intestines was very much reddened here and there, greenish and softened. The lungs were spongy throughout. Considerable effusion had taken place into the sub-arachnoid cellular tissue of the brain. The salivary apparatus natural. The urinary organs not altered in any important respect.

The absence of pain or tenderness on pressure of the abdomen

in this case deserves attention. Some writers of high standing have affirmed, (Dr. Stokes, for instance,) "That, as the result of swallowing an acrid poison, there is, generally, great tenderness of the epigastrium, so that the slightest touch, even the weight of the bed-clothes, will produce severe distress." But it is certain that in many of the reported cases this effect is not named, or, if at all, only as a circumstance of minor importance, because the abdominal uneasiness was comparatively a trifling affair. Mackintosh, in his *Practice of Physic*, vol. i., has the case of a soldier who died in eight or ten days after swallowing two drachms of corrosive sublimate; and he notices particularly the absence of all local symptoms, while at the same time serious organic lesions were present, as the stomach was found to be actually ulcerated. The great intestines were studded with large, black, gangrenous ulcers, not unlike those seen after death from acute dysentery in tropical climates; and a great part of the lining membrane was hanging loose in shreds.

A case is recorded in the *Edinburgh Medical and Surgical Journal* for October, 1842, of an old man who took a drachm of the sublimate in a ripe, soft pear, and was not killed. The usual symptoms of poisoning came on, but were promptly met by the liberal exhibition of whites of eggs. It will be borne in mind that the poisonous dose was undissolved. In almost all cases the patient suffers severely from gastro-enteritis, bloody stools and vomitings, burning heat of the stomach, styptic taste, and tightness in the fauces and throat. The best antidote is the albumen abounding in the whites of eggs, which should be suspended in water and given without measure. The gluten of wheat flour is also useful; and the readiest way to employ it is to throw a handful of flour into a half-gallon of water and to administer it constantly by the mouth and per anum.

It was first announced by Orfila, and since affirmed by others, that an excess of albumen or gluten, employed as antidotes, would redissolve the poison, or convert the calomel, previously precipitated, into corrosive sublimate; but in actual practice this accident is rarely, if ever, realized. And it remains as true as ever that gluten and albumen are antidotal.

Bouchardet asserts that a mixture of iron and zinc filings, or the fine iron powder made by the reduction power of hydrogen gas, or the moist persulphuret of the hydrated peroxide of iron, will effectually nullify the poisonous quality of corrosive sublimate. From half a drachm to two drachms of the zinc and iron filings, followed by draughts of warm water, will suffice. (See *Braithwaite's Retrospect*, part viii.)

It may be very important to detect the actual presence of the poison; and this kind of information is often indispensable in

medico-legal investigations. It is well to recollect that it may be absolutely impracticable to trace it in any part of the system. In the *Edinburgh Medical and Surgical Journal* for July, 1844, we have a case of this kind. The man took two drachms of the poison and died after four days of severe suffering. All the ordinary appearances were disclosed by the knife, but it was not possible to find a trace of the poison in any part of the body, although the best tests were applied.

It is easy to conceive of a case in which early and continued vomiting and purging would eject from the system every particle of any poison. But then it would not be difficult to detect it in the matters thrown out of the stomach or in the fœcal discharges, and there it should be sought.

Various methods are in use for the detection of corrosive sublimate. The best tests for it in the solid state are the action of an alkaline carbonate aided by heat, and that of a caustic alkaline solution. For the solution, the best tests are solution of potash, iodide of potassium, protochloride of tin, and sulphureted hydrogen. Galvanism has been employed to detect its presence in connection with gold; the mercury of the sublimate is reduced to the metallic state and forms an amalgam with the gold. By dropping the solution of the sublimate on a piece of polished gold, on a sovereign or an eagle, and touching the moistened spot with the point of a penknife, or by applying a key so that it may touch simultaneously the gold and the solution, the bichloride will be decomposed and a mercurial stain like silver will be left on the gold.

Turpith mineral, written also *turpeth* and *turbith*, is the sulphate of the peroxide of mercury, and frequently called subsulphate of mercury. It is made by pouring five or six pounds of boiling water on a half-ounce of bi-persulphate of mercury, in a large flask or basin. The latter-named salt is formed by boiling two parts of fluid mercury in two and a half parts of sulphuric acid to dryness, the mixture being exposed to heat in a glass vessel over a common fire.

The brilliant yellow salt produced in the manner named above was the favorite *emetic* of the French, and continues to be so. It is too little known and appreciated in this country. Dr. Hubbard, of New England, has attempted to bring it favorably before the profession of this country, but it does not bid fair to rise very high in their estimation. It is an excellent emetic in doses of from two to five grains, and well suited to *croup* after general or local bleeding. In smaller doses, as a quarter or a half-grain, it is a good *alterative;* and has also been employed as an *errhine* mixed with common snuff.

In the fourth volume of *Medical Facts*, page 128, is a notice

of *gutta serena* cured by the use of snuff composed of thirty-five grains of pulv. asari and five grains of turpith mineral. A pinch was taken every night for three weeks. For several days the snuff induced bleeding from the nose.

Ricord has employed an ointment of the turpith mineral with very good effect in what he calls *squamous diseases of the skin*, meaning probably a sort of herpetic affection. Thus:—

℞.—Ung. sulphur. ℥i;
Turp. min. grs. xv;
Pix liquid. ℥i.
Mix.

A small portion of this unguent is to be smeared over the diseased spots night and morning. (See *London Lancet*, July, 1843.)

Turpith mineral, in common with other mercurials, is capable of inducing fatal poisoning. A case is reported in the *American Journal of Medical Sciences* for October, 1847, of death as the consequence of the severe irritant action of a drachm of this salt. The case is a rare one. We suppose the best treatment, after dislodging the poison by an emetic or by the stomach-pump, would be to administer freely all sorts of emollient and mucilaginous articles, as sweet oil, slippery elm infusion, gum Arabic water, and the like.

Nitrate of mercury, as such, is not often employed medicinally. It is the basis of the well-known *citrin* or *citron* ointment. The salt is usually prepared by dissolving an ounce of mercury in eleven drachms of nitric acid. This is usually accomplished without heat, and should be if practicable. If the action fail, then apply a very moderate heat to start it, and instantly withdraw it. The object of this case is to secure a *proto*-nitrate. If heat were employed during the entire process, a *per*-nitrate would probably result, or a mixture of the two.

While the solution of the *proto* salt is yet hot six ounces of lard and four of sweet oil should be added, the whole being stirred frequently with a smooth *wooden* spatula, and never with a metallic instrument. The latter would discolor and disfigure the product. When the mixture is quite cold, you have a pretty lemon or citron-colored ointment. If it be too energetic for use, it can readily be reduced by admixture with lard or cerate.

A Philadelphia apothecary, the late Peter Lehman, proposed a formula somewhat different from the above, which may be seen in the *Journal of Pharmacy* for July, 1842. He gave it as the fruit of much attention to the subject, and held it in great estimation. He called it *camphorated citrine ointment*, says it retains its color and consistence for any reasonable length of time. The formula is as follows:—

Take of unsalted fresh butter a pound, put it in an open stone jar and soften it so as to be able to stir it. To a part of the butter so prepared add four drachms of pulverized camphor, and mix intimately. Then dissolve two ounces of quicksilver in two ounces of pure nitric acid, and when dissolved stir the solution into the butter gradually. At first it has a whitish appearance, but in a short time it acquires an orange-reddish and finally a beautiful gold color.

The soft citrin ointment has long been in use as an application to *ulcers of the eyelids*, and small sore spots on the tarsi, associated with marks of inflammatory action. A camel's-hair pencil is the best instrument for making the application. In *herpetic diseases* of the skin, in *crusta lactea*, &c. &c., the ointment has also been a popular remedy. Some practitioners esteem it highly as a remedy for *scald head.*

The watery solution of nitrate of mercury has been found a very useful lotion for the *ulcerated sore mouth of young children.* The spots are to be touched with it as you would apply lunar caustic, and the effect is very much the same. Bennet speaks favorably of the caustic action of the same solution, when applied to the os uteri laboring under ulceration, with more or less inflammation and induration.

The *white precipitate of mercury* was formerly much in use in the shape of powder and *ointment.* It is made by the mutual decomposition of corrosive sublimate, sal ammoniac, and carbonate of potash. A *white* precipitate falls, and hence the common name. The technical term is the *ammoniaco-chloride of mercury.* It is a compound of two hundred and sixteen peroxide of mercury, and fifty-four muriate of ammonia, in two hundred and seventy parts. The fine powder has been employed to dust on *excoriated parts.* A drachm rubbed with an ounce of cerate or lard makes an ointment sometimes resorted to for *cutaneous diseases.* Many persons use it for the cure of common *itch.*

J. Giles, Esq., reports a case of poisoning by white precipitate of mercury, in the *London Lancet* for September, 1857. The quantity swallowed was thought to be a half-drachm, at least.

The patient was a young female, who took the dose in a cup of tea at half-past five P.M. She became very sick, and had severe gastric pains. Not before ten P.M. did the mother find the cup from which the girl had taken the dose, and as some of the white powder remained, it was examined, and proved to be ammoniaco-chloride of mercury, or white precipitate. The pain continued, followed by free purging. An emetic of sulphate of zinc was given, and plenty of milk. In about ten days she was well enough to go about her usual business.

Acetate of mercury is the basis of a medicine that for a long

time enjoyed a large share of popular regard, and known as Keyser's pill.

The *sulphurets of mercury* merit some attention. There are two sulphurets, differing in the relative quantity of sulphur and in color. The *proto*-sulphuret, called often by the name *sulphuret*, is composed of one equivalent of sulphur and one of mercury; the *bi* or *deuto*-sulphuret, containing the same quantity of mercury, but twice as much sulphur. The first is *black*, and thence called *black* sulphuret; the other is *red*, and therefore known by that distinction.

The *Æthiops mineral* of the old writers is the black or proto-sulphuret, and was once highly valued as a remedy for worms, and consequently called *anthelmintic*. I have taken it in childhood in this relation, as it was a favorite with the late Dr. Samuel P. Griffiths, who prescribed it in my case. The dose varies from five to thirty grains, according to age, and is readily taken with any kind of syrup.

This medicine is quickly prepared by triturating in a glass mortar equal weights of mercury and flowers of sulphur until all the globules disappear. In a few minutes a black powder is formed and ready for use. A distinguished French practitioner, Serrès, administered, as he thought with success, this Æthiops in *typhoid fever*. He gave it in fifteen-grain doses, daily, and at the same time covered the entire abdomen with mercurial ointment, which remained until signs of improvement were visible.

The *red* or *deuto*-sulphuret, called also *cinnabar*, has seldom been administered internally. Dr. Pitschaft, of Germany, exhibited it to children having some tokens of *scrofula*, as follows:

Take of cinnabar, a scruple;
Cicuta leaf, two grains;
Red precipitate, one grain;
White sugar, half a drachm.

Rub the whole well together, and divide into twenty powders, one of which to be given morning and evening.

The following ointment has been employed by Biett, in obstinate *prurigo* of the hands, with success:—

℞.—Cinnabar,
Tinct. opii, āā ℥ij;
Sulph. Subl. ℥ss;
Adip. suillæ, ℥v.
Mix intimately.

The *bi-cyanide of mercury*, called also *cyanide*, *cyanuret*, *prussiate*, &c., is not much known to the profession in America, though often employed in Europe with success in *syphilis* and *suppression of urine*. It is entitled to some notice, therefore, in this place. It is made by boiling eleven parts of the red oxide

of mercury with eight of Prussian blue in a suitable quantity of water. Double decomposition ensues, and the product is colorless, although both ingredients are of bright colors; it is also inodorous, styptic, and disagreeable to the taste. It is quite soluble in hot water, and less so in cold water.

This medicine is given in watery solution and in the form of pill. Twelve to twenty-four grains dissolved in a quart of pure water make a mixture of which from one to four tablespoonfuls may be taken twice a day in a little gum-water. Pills, made by incorporating with conserve of roses, should contain from an eighth to a sixteenth of a grain. In any form it calls for great caution, because of its highly poisonous nature. It is not probable the bi-cyanide will ever come into general use, nor is it necessary. We have safer and better articles, and it is wise to give them our preference.

The *iodides of mercury*, or *iodurets*, are the *proto* and *deuto*-iodide, called also *iodide* and *biniodide*. These compounds have been ascertained to be specially adapted to syphilis engrafted on scrofulous constitutions, or, in other words, to *scrofulus syphilis*. It has long been known that the worst kinds of venereal cases were found in persons of a scrofulous habit, and that mercurials not only did not improve them but actually made them worse. The combination of iodine with mercury was found to meet the difficulty, and the complication alluded to most happily met by the new expedient. The iodine promotes the natural and salutary action of the glandular and absorbent system, while the mercury is thus allowed to display its peculiar agency in subduing the venereal affection. On this principle some of the most appalling cases of syphilis were completely cured, after having for a series of years resisted all ordinary mercurials and being actually made worse by their agency.

The protiodide is prepared by adding one hundred parts of proto-nitrate of mercury to four hundred parts of pure water and filtering the solution, after which a strong aqueous solution of hydriodate of potash is added till a precipitate no longer falls. This must be collected on a filter, well washed with pure water, dried, and kept in opake bottles. It is a greenish-yellow, or yellowish-green powder, and is employed in form of pill and ointment. Thus:—

> Take of extract of juniper, twelve grains;
> Protiodide of mercury, one grain;
> Mix, and divide into eight pills.

The dose is one pill night and morning for a few days, then laid aside a day or two and resumed.

The ointment is made by rubbing twenty grains of the protiodide with an ounce and half of lard. It is applied to venereal

ulcers and rubbed into indolent tumors, causing healthy action and promoting cicatrization. The following prescription is reported as having been very successful in *engorgement of the mammary glands*. The account is furnished by Pelletier.

Take of Protiodide of mercury, six grains;
Acetate of morphia, eight grains;
Lard, an ounce;
Mix.

A piece as large as an ordinary nutmeg must be gently rubbed on the surface night and morning.

The *red*, or *deutiodide*, or *biniodide*, is made by adding a solution of hydriodate of potash to a solution of corrosive sublimate in water, both solutions being pretty strong. A red precipitate falls to the bottom, which is to be collected on a filter and washed with pure water till the fluid passes tasteless. Dry the precipitate, pulverize, and keep in close bottles to guard against the light. This red powder is soluble in hydriodate of potash and mercurial salts, as well as in acid and alcohol. Pills and ointment of the deutiodide are made pretty much as those of the protiodide. The deutiodide is much more energetic than the other iodide, and less frequently employed.

The *iodo-hydrargyrate of potassium* is a comparatively new mercurial medicine, first introduced by Dr. Channing, of New York, in 1834. The ingredients for making it are three and a half grains of hydriodate of potash, four and a half grains of deutiodide of mercury, and one ounce of water. The hydriodate of potash must be dissolved in the water first, and the deutiodide added. Of the solution, from two to five drops may be given three times a day. Each dose contains from one-thirtieth to one-twelfth of a grain of the iodo-hydrargyrate of potassium. Dr. Channing regarded it as a kind of panacea. Dr. Charles C. Hildreth, of Ohio, published a good paper on it in the *American Journal of Medical Sciences*, vol. xxvi. He regards it as the very best combination of iodine and mercury for the purposes of an *alterative*, and as a corrector of depraved secretions of the mucous membrane of the stomach and bowels; and, therefore, an excellent medicine in *dyspepsia*.

The last mercurial medicine to be named is the *liquor of the hydriodate of arsenic and mercury*. This has been highly praised in *cutaneous and uterine affections*. It is made as follows:—Triturate 6.08 grains of the powder of metallic arsenic, 15.38 of mercury, and fifty grains of iodine, with one drachm of alcohol, until the mass is dry and of a pale red. Add eight ounces of distilled water, and, after a few moments' trituration, transfer the whole to a flask. Add a half-drachm of hydriodic acid, made by acidifying two grains of iodine, and boil for a few moments.

When the solution is cold, if there be any deficiency of the original eight ounces, add enough pure water to make it up. Each drachm measure of this mixture contains an eighth of a grain of protoxide of arsenic, a quarter-grain of protoxide of mercury, and four-fifths of a grain of iodine, as hydriodic acid. The solution has a yellow color, with a pale tinge of green. It has rather a styptic taste. Opiates are incompatible. The medicine may be taken in ginger tea, or tincture of ginger. Donavan prescribed it thus:—

> Take of liq. hydr. ars. and merc. two drachms;
> Pure water, three and a half ounces;
> Syrup of ginger, half an ounce.
>
> Mix, and divide into four doses, one of which to be taken every night.

Each dose contains one-sixteenth of a grain of protoxide of arsenic, a quarter of a grain of protoxide of mercury, and two-fifths of a grain of iodine. The action of the medicine would appear to be *alterative*. (See *American Journal of Medical Sciences* for April, 1843.)

To insure success in the process given above, all the ingredients must be perfectly pure and be thoroughly triturated together. Souberain calls the solution the *iodo-hydrargyrate of arsenic*, and proposes to form it by boiling one part of iodide of arsenic, one part of biniodide of mercury, and ninety-eight parts, by weight, of pure water, together. By this means, he affirms, we get a perfect solution with far less trouble than by the method of Donovan.

The solution has been successfully applied to the cure of all kinds of *scaly cutaneous eruptions*, *constitutional syphilis*, *lupus*, &c. Its use is sometimes external as well as internal. The constitutional effects of arsenic rarely attend its exhibition, but now and then slight ptyalism supervenes. The usual adult dose is from five to twenty drops two or three times daily, and is best given in a little water, as other vehicles would probably decompose it. The *London Lancet* for September, 1857, page 247, has an article showing the happy effects of the medicine in a very extensive *psoriasis guttata*, running into *lepra*. The patient, a lad eight years of age, was what is called a *coal-whipper*, and was kept on poor fare. The Fowler's solution of arsenic did no good whatever; and Mr. Curling determined to try Donovan's solution, three drops three times a day, aided by alkaline baths every other day. The success of the remedy was soon most apparent, the eruption entirely disappearing and dying out.

As mercury has been held to be indispensable in the treatment of syphilitic affections, the following testimony is important:—"On a recent visit to the syphilitic ward of the Royal Free Hospital, where a number and variety of syphilitic disease are to be

met with, especially of the secondary eruptions, we find they are treated by the administration of stomachic and tonic remedies and good diet, conjoined with the following formula, viz.: Sulphur, one drachm; sulphuret of antimony and nitrate of potass., of each five grains; mixed into a powder, half of which is given night and morning, and persevered in till the eruption disappears, the health is improved, and a cure established. Dr. Marsden has employed this mode of treatment for twenty-seven years, in thousands of cases, and he observed that not one in a hundred instances has he known to return with constitutional symptoms. In the primary forms of syphilis he trusts to stomachics solely, with good diet. This is a very interesting and highly important fact in the treatment of syphilis. The cases of secondary eruptions under this plan of treatment, which we saw on the first of June, fairly spoke for themselves, as they were gradually dying away."—*Lancet*, June 27, 1857.

We hope to find this medicine more in use in this country.

Hydropathy. (See *Water Cure.*)

Hyosciamus Niger. *Henbane. Black Henbane.*—A very ancient medicine, known to the Greeks and Arabs. The leaves and seeds of the plant are employed. The leaf has a peculiar narcotic odor and a bitter taste, which are a good deal weakened by drying, especially if artificial heat be employed in the process. In 1775, Dr. Boorde published a *Breviary of Health*, in which he advised, as a remedy for *toothache*, a candle made of wax and henbane seeds, the smoke of which was to be directed into the hollow tooth. The roots of henbane were formerly cut into slices and made into necklaces, to be worn on the necks of young children, to accelerate the process of dentition and to make it less painful. From time immemorial, poultices of the leaves have been in use as anodyne applications to painful tumors.

Henbane fell into long disuse, and was revived by Dr. Stoerck, of Vienna; regained its former popularity; was again neglected, and then recovered a little of its lost reputation. Stoerck employed it in a number of cases in which opium seemed to be forbidden, and with happy results. He found it to allay irritation, obviate pain, and tranquilize the nervous system, without inducing constipation; and such is its character at this time. In his day it was exhibited in *rheumatic disease*, and applied externally to glandular swellings and tumors regarded as cancerous. As a topical remedy, the leaves were preferred to the seeds; and, having been well bruised, they were mixed with soft crumb of bread and made into poultices. In some instances a cerate cloth was dusted well with the fine powder of the leaves and then laid on the affected part.

The *extract* of henbane is now in more general use than the

leaves. A very efficient extract can be made by rubbing the fresh leaves in a glass or stone mortar, adding a very little water. The juice so obtained is next evaporated slowly to a due consistence. The dose is from two to six grains, gradually increased. I regard it as fully equal to the alcoholic extract, excepting the mere circumstance of the latter resisting change from the heat of summer best. This extract is readily made by acting on the leaves with alcohol, to procure a very concentrated tincture, which, on evaporation, gives the article in question.

To relieve habitual costiveness, we sometimes combine the extract with ordinary cathartics, and thus avoid griping. For this end, six grains may be joined to the usual cathartic dose.

A very good combination is found in blue mass, Dover's powder, and extract of henbane, for *rheumatic affections* attended with hepatic derangement. Five grains of each may be mixed and divided into three pills, to be taken at bedtime. If the opium of the Dover's powder be disagreeable, omit it, and augment the quantity of extract, not forgetting to add from three to five grains of ipecacuanha.

In some cases of cough and pulmonary irritation not perhaps clearly defined, the union of henbane with cicuta will be beneficial, especially after depletion, if that be called for. The following mixture, called a pectoral, may be given in such cases:—

Take of ext. cicuta,
Ext. of henbane, āā five grains;
Powder of gum Arabic, two drachms;
Spirit of mindererus,
Water, āā half an ounce;
Syrup of squills, two drachms.

Mix these together for a single dose, to be taken at bedtime.

We can also very advantageously combine tartar emetic with extract of henbane, a grain of the former and two scruples of the latter divided into ten pills. One of these should be taken at bedtime, and one every four hours through the day, for the relief of *irritative cough*.

After free action of the bowels of females laboring under *puerperal mania*, no medicine is more soothing and safe than the extract of henbane, in doses of from five to ten grains, with or without blue mass. The latter is an important addition, when it is known that the liver is in a very torpid state.

In excessive doses, henbane displays all the tokens of narcotic poisoning, and should be ejected from the stomach promptly. Mucilaginous drinks and diluted vinegar may then be given liberally.

Many facts could be stated to show that this, like other vegetable narcotics, is materially affected by culture, locality, &c. &c. This fact aids in solving many statements touching the delete-

rious action of small portions and the inertia of very large doses.

Hyosciamin, the proximate principle of henbane, has been found useful as a sedative in cases of *irritative cough*. Professor Schroff says that, unlike morphia, this article promotes the action of the bowels. He gave it in doses varying from one-sixtieth to one-twentieth of a grain, mixed with sugar. One-tenth of a grain is quite too large a dose. It has greater power over the *iris* than any other agent in the Materia Medica, inducing more prompt and long-continued dilatation of the pupil. The formula of Schroff for a solution is to add one part to ten of alcohol and one thousand parts of water. Twenty drops would be a dose.—*American Druggists' Gazette*, July, 1857.

HYPNOTIC.—An article that induces sleep. The same with narcotic, as applied to opium.

JALAPA CONVOLVULUS. *Jalap.*—So called after Xalapa, a town in Mexico, near to which the root was procured in 1610. The root is the only part of this plant employed in medical practice. When fresh, its juice is milky, a little acrid, and decidedly cathartic. As imported, we find the root much smaller than the drawings of the recent root, which is several times larger than the dried article. This difference is accounted for by reference to the spongy quality of the fresh root and the consequent shrinkage by the drying process. The imported root has rather a globular form, with some irregularity of surface. It has a resinous appearance when fractured, and is of a brownish-gray within. The powder has a peculiar, offensive odor, a nauseous taste, blended with a mixture of bitter and sweet. The very light, spongy, pale, worm-eaten, and inodorous roots are worthless.

Jalap ranks among our best drastric cathartics, and is always most efficient in the state of powder. The tincture and extract are of no value to the profession, and never were. The ordinary adult dose of the powder is ten grains, though some take fifteen or twenty grains; sweetened water or syrup will be found a convenient vehicle. It is not often administered as a cathartic alone, but very frequently with ten or twelve grains of calomel. The mixture is a very efficient medicine.

We also combine jalap with cremor tartar, and thus obtain what is called a *hydragogue* cathartic, or a medicine fitted to give copious, watery stools. It sometimes operates also as a *diuretic*. A drachm of jalap and two of cremor tartar, well rubbed together, make the mixture, which is to be divided into six powders, so that each will contain ten of jalap and twenty of cremor tartar.

For the accommodation of persons who dislike the taste of jalap it has been incorporated with flour and made into biscuit;

hence the term *purgative* biscuit, as found in De Foy's *Materia Medica*, 1843. Five drachms of jalap, thirty of sugar, and four ounces of flour are made into fifteen biscuits, after the usual mode. One of these given in the morning is a sufficient dose.

Jalap is not necessarily a drastic cathartic. And even those persons who are griped and sickened by it can avoid these inconveniences by combining with the dose a grain or two of camphor or three grains of cloves.

I knew a physician who administered jalap not as a cathartic but rather as a *nauseant*. When he desired to prevent his patient from eating too freely, and doubted the promises of abstinence, he directed three grains of jalap to be taken one hour before each meal. The dose was just enough to take away desire for food, and thus the end was gained.

The nauseous taste and smell of jalap can be wholly removed by digestion in sulphuric ether, and that too without lessening the cathartic power.

In a publication made in the city of New York, it was announced that eleven thousand pounds of jalap were condemned by the inspector of medicines in the course of six months in that city alone. The article came from Tampico, Vera Cruz, and Havana.

Ice. (See *Aqua*.)

Ictodes Fœtida. *Dracontium Fœtidum. Skunk Cabbage. Polecat Weed.*—A common and well-known plant, found in wet meadows in many parts of the United States. The odor of the whole plant, and particularly of its large leaf, is offensive, the smell residing in a highly volatile matter that is dissipated by heat or by drying in the sun. The green leaves wilted in very hot water are employed in some parts of the country as a dressing to surfaces whence fly-blisters have been removed.

The medicinal properties ascribed to the plant are various. It is called *stimulant*, *antispasmodic*, *expectorant*. Several good inaugural theses have been written on it in the western country, and these properties are strongly advocated. A half-drachm of the recent root in powder induces vertigo, sickness of stomach, and occasionally vomiting. It affords obvious relief to asthmatic and catarrhal affections. The best mode of administration is in powder added to syrup at the time of exhibition. Some have advised to make a syrup of the plant in the usual way, but the process impairs the medicinal power. Ten grains of the powdered root, repeated every half hour or hour, will soon nauseate an adult, and thus secure its proper action. A very large dose will develop narcotic symptoms, as vertigo and temporary blindness.

Ilex. *Holly.*—There are several species of this tree. The *Ilex opaca* is abundant in various parts of this country, more

especially in New Jersey, Kentucky, Alabama, and Tennessee. It is very much like the European holly. It is introduced here because of its high repute some years ago as a substitute for Peruvian bark and sulphate of quinine, and because it can be had in any quantity in this country.

Durant says that *intermittent fevers* yielded to a drachm of the powdered leaves given a half hour before the expected paroxysm. Dr. Rousseau has since spoken more fully on the subject in the *Transactions of the Medico-Botanical Society* of London for 1832–3, and a silver medal was awarded for his labors. A very good description and drawing of the tree is furnished in the *English Flora Medica* of Barton and Castle, vol. ii. p. 3. Dr. R. employed the article ten years before he wrote on it, and regards it a valuable medicine, especially for the poor who cannot pay for the salt of quinine. He detected in the leaves a bitter, neutral, uncrystallizable substance, soluble in alcohol and not decomposed by acids or alkalies. To this he gave the name of *ilicene*. He obtained it by the following process:—A strong alcoholic extract was made of the holly leaves and diluted with water. To this he added sugar of lead, then sulphuric acid, and finally carbonate of lime. The ilicene being thus separated, was taken up by the action of alcohol. Two pounds of the dried leaves yielded more than two ounces of the active principle. It is not soluble in ether, and partially dissolves in warm water.

Dr. R. thinks that ilicene, as well as the holly leaves, exerts a sedative influence on the spleen, liver, and pancreas, that favors its curative operation in intermittents. He relates sixty-five cases treated successfully by the ilicene, in some of which the quinine salt had failed.

A half-ounce of the leaves boiled in eight or ten ounces of water to one-half constituted a dose to be given two hours before the occurrence of the paroxysm, and repeated for eight or ten days if the disease did not sooner yield. The powder of the leaves was given in wine also. An extract was employed in pill form in half-drachm doses. The usual adult dose of the ilicene was twelve grains, gradually increased to eighteen or twenty-four, and given in the form of pill.

Dr. Constatin found the mode of injection useful. A half-ounce of the leaves boiled a quarter of an hour in a little more than a pint of water, made a proper quantity, which induced free evacuations without griping. Long ago, Haller praised the juice of the leaves as a remedy for *jaundice*, but said nothing of its relation to intermittents. Reil confirms the testimony of Rousseau, and a good deal of interest has been excited in France touching the therapeutic value of the medicine.

INDIGO.—Product of the *indigofera tinctoria.*

This article is of recent introduction, comparatively, and of limited use. Dr. Grosheim, of Prussia, first pointed out its value as a remedy for *epilepsy.* Dr. Ideler, a German physician, gave it to twenty-six epileptics, six of whom recovered, eleven were relieved, and six were not benefited at all. At first it vomited and purged smartly, but did not much impair the appetite. The paroxysms became less frequent and violent. The dose to begin with is a scruple, enlarged slowly to a drachm, and sometimes carried to a half-ounce. It should be combined with some aromatic, and be given in syrup. The *modus operandi* is not stated, but its ultimate action would seem to be *alterative* and *tonic.*

I gave this article a fair trial in an old case of epilepsy in the Louisville Marine Hospital in the winter of 1852–3. The patient was willing to take anything, so anxious was he to be relieved. Ten-grain doses, three times a day, were gradually increased to twenty, with no permanently good results. For awhile the fits were less frequent and less severe, but they resumed their former character.

INFINITESIMAL PRACTICE.—We prefer this to the term *homœopathy*, which means *similar affection*, and does not set forth the reality of the system, if such it can be called. The true secret of this system resolves itself into the exceedingly minute bulk of the doses employed, to which may be added their accommodation to the taste. We know it is pretended that the *pathogenetic or disease-producing power* of remedies lies at the foundation of homœopathy; but the real basis, practically, as an affair of naked popularity, is to be sought for only in the taste and size of the dose. Everybody who has read of the dilution of medicines understands well enough what is meant by infinitesimal doses and infinitesimal practice. Rub a grain of opium with a hundred grains of white sugar, and the longer you rub the stronger, medicinally, is the product. Take a grain of the mixture, add a hundred grains of sugar, and rub again. Of the mixture so made, take a grain and rub with it another hundred grains of sugar, and repeat the same process twenty times, and then determine, if you can, how much opium is in the final product of the mixture and trituration; and some faint idea may be formed of the actual inherent power of *infinitesimal* doses and of *infinitesimal* practice. We cannot waste more time on the subject. To make the effort would require a vast deal more patience than good old Job ever manifested or possessed. The man who can coolly swallow such a system is ripe for the credence of any absurdity no matter how impossible. In our view of the subject, it is really necessary for one to stultify himself, to become actually demented, or intentionally to play the

knave, ere he can deliberately attempt to reconcile such a system with common sense and the acknowledged laws of the animal economy. We may be mistaken, but cannot reach any other conclusion.

The attempt to justify these almost invisible doses on the assumption that disease is *intangible*, *spiritual*, *ethereal*, and that the remedy must be kindred in its nature, is absolutely insane. Oh! it would be well for many an aching heart if the *croup* and *laryngitis* and *pneumonia* that have smitten their loved ones to the earth could be made to appear as intangible, spiritual, ethereal. Then might they find consolation in the fact that infinitesimal and intangible doses were heaven's only method of cure; and that they failed because failure was inevitable. But the knife tells another story, when it discloses the frightful disorganization of parts most essential to life aggravated and made positively incurable by the mad devotion to a moon-stricken philosophy.

That infinitesimal doses may serve a good purpose where they are sure to come in contact with an imaginary disease or with no disease at all is just as palpable as the efficacy of bread pills. Nay, they may even do some good when the morbid action is so slight, though real, that nature unaided would do her own work in a vigorous constitution. But if there be real organic lesion, or the presence of a process that must end in disorganization, if not arrested, give me the steam-doctor, or the Dutch root-doctor, or any one else who approximates the adaptation of means to ends, but save me from the infinitesimal practice.

The following extract from Bell's *Bulletin of Medical Science*, vol. iv., is a fair summary of this topic:—

"The trials of homœopathy at Berlin, authorized by the government, and conducted by two of Hahnemann's disciples in succession, were entire failures. Of twenty-five patients, selected by the first of the homœopathic physicians himself out of several hundreds who were inmates of the hospital, not one was cured. In Russia a comparison of the two modes of practice—the rational or allopathic, and the empirical or homœopathic—was made, a distinguished follower of Hahnemann conducting the treatment on his side with a result eminently to the disadvantage of the latter. In another trial, in which patients in equal numbers were subjected to the homœopathic practice on one part and to low diet and appropriate regimen (without any medicine) on the other, the result was the same in both cases. Whatever curative change was brought about was an effort of nature. The Medical Council, in reporting on those experiments, was of opinion that the homœopathic practice should be prohibited in

sanitary establishments dependent on government, for the following reasons:—

"'1. Acute diseases require energetic means of treatment, which are not to be expected from homœopathy.

"'2. The homœopathic treatment of external lesions and surgical diseases is altogether out of the question.

"'3. Some slight affections get well while under homœopathic treatment, but similar affections disappear without any medical treatment by the adoption of an appropriate regimen, good air, and cleanliness.'

"There are three sets of practitioners who profess homœopathy,—one consistent, acting out their belief; another, who, under the pretence of giving homœopathic doses, give common but small ones, and those of active and sometimes poisonous articles; and the third set, who are ready to practice either way —allopathically or homœopathically—thrifty knaves, who care not how they earn the silver provided it comes into their pockets: they pay the profession and their own judgment and science the odd compliment of asking their patients how they wish to be treated, and, according to the reply, will either bleed them or give them a Hahnemann vial to smell. Can we wonder that so many ignorant persons in the general community prate about systems of medicine, when they see such conduct in some of the professors of the art?"

Infusions.—These differ from decoctions in being prepared with cold or hot water, but without ebullition. If a pint of boiling water be added to an ounce of vegetable matter and be allowed to remain in this state until cool enough to be taken, we call the remedy an infusion. But some articles are better prepared with cold water. For persons of delicate stomach we direct a cold infusion of quassia rather than an infusion made with hot water, because it suits the stomach better. A few pieces of calumbo-root placed in a pint of cold water will impart its bitterness sufficiently in eight or ten hours to make it a useful tonic drink. Hot water dissolves extractive and other matters not soluble in cold water, and hence the preference given to the cold infusion. It is needful to make but a small quantity of infusion at a time in warm weather, as the vegetable matter tends rapidly to decomposition.

Infusions are made with hot or cold water as circumstances may require. The quantity should be small in warm weather, for fear of fermentation, unless the vessel can be kept in a cold place. Some patients can take infusions more readily than any other preparations, and they are often very efficient. We give a few specimens:—

Compound Infusion of Horseradish.

Take of bruised mustard-seed,
Scraped horseradish, āā ℥ss;
Boiling water, Oi.

Macerate for one hour, and strain; then add

Aromat. spt. ammon. ʒij;

Mix. Dose, a tablespoonful three times a day.

Compound Infusion of Cloves.

Take of bruised cloves, ʒi;
Orange peel, ʒij;
Coriander and
Caraway seeds, āā ʒss;
Boiling water, lbi.

Macerate for half an hour, and strain.

Infusion of Bark and Sulph. Quinine.

Take of best cinchona, in powder, ʒvi;
Boiling water, Oi.

Digest for two hours in a close vessel, and strain; then add

Sulph. quinine, grs. viij;
Elix. vitriol, ♏ xxiv.

Mix. Dose, two tablespoonfuls three or four times a day.

Infusion of Juniper.

Take of juniper-berries, bruised, ℥ij;
Boiling water, Oi.

Macerate in a close vessel for two hours, and strain; then add

Oil of juniper, ʒi;
Cremor tartar, ʒij.

Mix. The dose is from two to four ounces four or five times a day.

Compound Infusion of Horehound.

Take of horehound, ℥ss;
Boiling water, ℥viii.

Macerate for an hour, and strain; then add

Paregoric elixir, ʒi;
Extract of liquorice, ℈i.

Mix, and take for a dose several times a day for chronic bronchitis.

Compound Infusion of Mint.

Take of horsemint, ℥iss;
Rose leaves, ʒi;
Boiling water, Oi;
Elixir of vitriol, ʒij;
White sugar, ℥iss.

Digest the mint and rose leaves in the water, and strain, adding the other articles afterward. The dose is a fluid-ounce or two, three times a day.

Pectoral Infusion.

Take of marshmallows,
Balm,
Spearmint,
Elder-flowers,
Arnica-flowers, āā ℥i;
Anise-seed, ℥ss;
Boiling water, a quart.

Digest an hour, and use as a common drink.

Infusion of Rhubarb.

Take of rhubarb-root, bruised, ʒiss;
Boiling water, ℥viij.

Macerate for two hours in a close vessel, and strain; then add

White sugar, ℥ij;
Ol. menth. p. gtt. x.

Mix. Dose, a tablespoonful three times a day.

Compound Infusion of Rhubarb.

Take of rhubarb-root, bruised, ℥ss;
Chamomile-flowers,
Orange peel, āā ʒiij;
Fennel-seed,
Coriander-seed, āā ʒi;
Boiling water, ℥xij.

Macerate for two hours, strain, and add

Carbonate of potash, ʒij;
Aq. cinnam. ℥i.

Mix. Dose, a tablespoonful or two, several times a day.

Compound Infusion of Senna.

Take of senna leaves, ℥iss;
Manna, ℥ij;
Cremor tartar,
Bruised anise-seeds, āā ʒijss;
Bruised coriander, ʒi;
Boiling water, Oij.

Macerate for four hours, and strain. Dose, a wineglassful twice or thrice a day.

Compound Infusion of Spigelia.

Take of pink-root, ℥ss;
Senna, ʒij;
Orange peel, worm-seed, and
Fennel-seed, āā ʒi;
Boiling water, ℥xij.

Macerate for two hours in a close vessel, and strain. Dose, a wineglass half-full three to six times a day, as a vermifuge.

INHALATIONS.—The introduction of remedies into the system by inhalation is very ancient, and is entitled to much more regard than it now receives from the profession. Scudamore did a good deal, and deservedly, to revive this practice. Tar, hemlock, vinegar, sulphuric ether, warm water, and some other articles were so employed more than a hundred years ago. Mudge's *inhaler* was, and perhaps is yet, in some places, regarded a valuable instrument for this purpose. But as it is comparatively expensive, and not within the reach of all, it is well to recollect that a common funnel and a bowl will answer the end very well. The articles for inhalation are placed in a bowl so as nearly to fill it. A funnel is adapted to the bowl, and a towel passed round its edge so as to prevent escape of the vapors in that direction. The small aperture of the funnel is then placed in the patient's mouth, and thus inhalation is readily carried on. The contents of the bowl being hot, vapors necessarily pass off, and are easily received into the lungs and stomach.

Dr. Mackay, and some others in Europe, believing that the cholera poison enters the system by the lungs, have resorted to inhalations of ethers, chloroform, and the like, in the hope of meeting the evil most promptly and efficaciously. In India as well as in England this practice has been very successful. As the articles just named evaporate spontaneously at the ordinary temperature, we are not obliged to resort to any inhaling apparatus for their use. Placed on a sponge or a handkerchief, they are speedily introduced into the system by applying the one or the other to the nostrils.

The success attending the inhalation of sulphuric ether and chloroform in tetanus and hydrophobia, as reported in the foreign journals, should lead to trials of the same expedient in this country. The diseases named are so generally fatal that any means would seem to be justifiable that offer even a probability of success.

INJECTIONS. (See *Clysters.*)

IODINE.—This is a simple, elementary, non-metallic, solid, bluish-black substance, having something of a metallic lustre. It is evaporated by gentle heat and passes off in the form of violet vapors. This can be effected by placing a portion in the palm of the hand, which is thereby stained of a brownish color, very much as it would be by nitric acid or bromine. The taste of iodine is decidedly acrid.

The medicinal powers of several articles probably depend on iodine in some form of combination. The burnt sponge, formerly employed in the treatment of bronchocele, is known to contain iodine. Mineral waters, so highly praised for the cure of chronic diseases, accomplish their good results sometimes in virtue of the

same ingredient; and the far-famed cod-liver oil that is now so extensively popular is ascertained by careful analysis to contain a small quantity of iodine and bromine.

Iodine was discovered in 1812. It was detected in preparing carbonate of soda from the ashes of sea-weeds. The metallic vessels employed in the process were found to be corroded by it at the bottom. On dropping a little sulphuric acid, dark-colored matter was thrown down which soon changed into a violet vapor. Further research proved this vaporized matter to be iodine, so called because of the purple or violet hue of its vapors.

Since the date of its discovery, its value as a medicine has been so highly appreciated that vast quantities are annually manufactured; and a good deal is sold that is spurious and consequently worthless. From September, 1848, to February, 1849, nearly five thousand ounces imported into the city of New York were rejected by the United States medical inspector.

Shortly after the discovery of iodine an accident pointed out the proper test of its presence. If starch prepared with boiling water and then cooled be added to a solution suspected of containing iodine, a blue color will be struck and ioduret of starch formed. One part of iodine can thus be detected in 450,000 parts of water.

Iodine is known to exert a decided influence on the glandular and absorbent system, and to be a very valuable medicine for all kinds of scrofulous disease. Its earliest use was in the form of *tincture*, probably because it was ascertained that water could not dissolve it, or only in a very minute degree.

An ounce of strong alcohol will dissolve from thirty-six to forty grains of iodine; and of the tincture so made the adult dose is ten drops three times a day, increased if need be to ten drachms at a dose. It is readily taken in simple water, or in gum Arabic water. This tincture should never be made of weak alcohol, or if prepared thus it should be only as it is needed. The presence of water favors a change of the iodine into iodic and hydriodic acids.

I employed the tincture of iodine many years ago to remove small *scrofulous tumors* of the neck; and I have good reason to believe that in dispersing them I succeeded also in annulling the diathesis that gave them birth.

The dose employed was from three to five drops three times a day for a child eight years old, the tumors being rubbed gently with the same tincture. I hold the tincture therefore in high estimation.

It is asserted by M. Lasegue, in the *Revue Therap.*, that large doses of iodine may be safely given at meal time only. The uneasy sensation, amounting to gastralgia, is thus avoided. The

dose was increased from eight or ten drops to four scruples, and even a drachm and a half, during the meal. The medicine was given with Spanish wine or sweetened water. No iodism followed this practice.—*N. Amer. Med.-Chirurg Rev.*, May, 1857.

Dr. Eulenberg, of Coblentz, tells us, in the *Gazette Med. Etrangère*, that he arrests the *vomiting of pregnant women* promptly with small doses of tincture of iodine. One part of the common tincture is added to four and a half parts of rectified alcohol, and of this diluted tincture he gives three drops for a dose in a little water. Besides the anti-emetic effect, the remedy also calms the attendant cardialgia and gastralgia. The iodide of potassium has not answered so well.

Dr. Headland, in his book on the *Action of Medicines*, page 213, says he once met a medical man who denied the power of iodine altogether, because he had frequently taken a scruple, and even a drachm occasionally, without any effect. But many are soon affected by it in small portions, and evince the symptoms of iodism. In the one case, most likely, the medicine is fast eliminated by the kidneys; in the other, it remains in the system for a longer time.

The *external* uses of tincture of iodine have been and yet are quite numerous and important. The first to be named is in the treatment of a very common and annoying companion usually called *corns*. Four drachms of the tincture, twelve grains of iodide of iron, and four drachms of chloride of antimony are to be mixed in a common vial, and a portion applied night and morning, having first carefully pared away the horny surface of the excrescence.

M. Ricord reports favorably of the application of the tincture to *phagedenic ulcers*. The ulcerative process is soon modified, and the cure greatly accelerated. The application is made three or four times a day with a hair pencil.

The birth or strawberry marks, called *nævi materni*, are easily obliterated by the use of *iodine paint*. The surface is coated every day, or every other day, with the paint or tincture, omitting it for three or four days if the skin becomes very irritable and rough. Sometimes two or three months' use will be necessary, for a complete removal; and where the knife is objected to this will be a safe substitute.

Dr. John Davies published an excellent volume on the external use of iodine, in 1839, that ought to be in the hands of the profession generally. He employed the strongest tincture, and only *externally*, excepting in the single case of *bronchocele*. He added forty grains of iodine to an ounce of the purest alcohol; occasionally he diluted this by a further alcoholic addition.

This strong tincture was applied in *erysipelas*, especially of the

face and scalp; in *phlegmonous inflammation* of the *joints;* in *mammary* inflammation; in *swellings of the joints*, gouty or otherwise; in *carbuncle, whitlow, chilblains, burns and scalds.* A small, soft paint-brush was the instrument selected to make the application; and frequently a single use of it was sufficient. The pain was relieved, the swelling abated, and the skin separated in a day or two by desquamation. From being very tense, the parts became flaccid. It was quite plain that the absorbents were stimulated to unwonted action. Now and then, after an application had been made of the strong tincture, the brush was laid on containing alcohol only. This dissolved the matter deposited on the surface, and the solution was really a weakened tincture whose agency was often beneficial. Rarely was it necessary to apply the brush more than two or three times in any case. The operation, though occasionally a little painful, seldom excited complaint, and its good effects proved an abundant compensation. I have employed this plan with decided benefit, and think it worthy of notice.

Injections of iodine have been employed with advantage in *leucorrhœa*, as follows:—

Take of iodine, four scruples;
Alcohol, sixty scruples;
Water, one hundred and twenty-five scruples.
Mix these until solution is complete, and throw thirty scruples into the vagina every night.

A few injections have sufficed to arrest the disease. The remedy excites some heat in the parts, and slight temporary irritation. It would seem to be well suited to scrofulous habits.—*American Journal of Medical Sciences*, July, 1843. *Chronic abscesses of the joints* in scrofulous subjects have been treated in the same manner and by a solution of the same strength. The *London Lancet* for March, 1843, reports favorably of the tincture of iodine thus employed. My son, Dr. B. Rush Mitchell, of the U. S. Navy, treated a case of chronic abscess of the elbow joint very successfully on this plan, some years ago. *Buboes* in persons decidedly scrofulous, and therefore very obstinate, have been healed in a week by injecting the strong tincture of iodine into the cavity. (See *American Journal of Medical Sciences*, January, 1847.) *Fistula in ano*, long the subject of other treatment, has yielded speedily to the same kind of injection.

The *Edinburgh Medical and Surgical Journal*, and some other periodicals, report cases of *ascites* cured by the tincture of iodine injected into the cavity of the peritoneum. But it strikes us that the expedient is one of considerable hazard. Doubtless it had its origin in the successful use of the tincture for the radical cure of *hydrocele;* but the circumstances are dissimilar,

To excite inflammation and adhesion of the tunica vaginalis so as to obliterate the cavity is a small affair, contrasted with the risk of setting up peritoneal inflammation, which would seem to be unavoidable when such an agent as the tincture of iodine is forced into contact with it.

The *London Lancet* for June, 1850, quotes several very interesting cases from *L' Union Médicale*, to show the safety and success of iodine injections in the treatment of *ascites*. The case of a girl, aged seventeen, is cited, whose abdomen measured thirty-eight inches in circumference. After tapping her, the following injection was thrown in:—

Tinct. iodin. ℥i;
Iod. potass. ℥i;
Aquæ, ℥viij.

The patient experienced no pain: the abdomen was well kneaded, and about four ounces were thus forced out. The case did well. A more remarkable instance is furnished, with the same result.

Obvious improvement in a case of *internal chronic hydrocephalus* followed the use of iodine injections, and recovery would have ensued, says the writer, but for the very unhealthy locality in which the family resided. After drawing off the water, an injection of two ounces (made by adding fourteen drops of tinct. iodine to two ounces water) was slowly passed in by means of an ordinary hydrocele trocar. The child was evidently improved, and continued better during several days. The expedient is worth repetition.

Several cases are reported in the *Med. Times* and *Lancet* for 1857, of the use of iodine injections for the cure of *ovarian dropsy*, but they are far from being satisfactory. Prof. Simpson, of Edinburgh, has lately detailed some thirty cases treated with iodine injections. In some of these the good effects were most palpable, while in others there was more or less relief. In a few, no good result was gained, none at least of a permanent character.

Dr. Churchill speaks very favorably of the application of iodine to the *os uteri* laboring under *congestion* and *ulceration*. The ulcers are touched once or twice a day with some other caustic first, after which the iodine is applied alone. The following is his formula:—

℞.—Iodin. ℥i;
Potass. hydr. ℥ij;
Aquæ,
Alcohol, āā ℥ij.
Mix.

(See *Ranking's Abstract*, No. 10, page 267.)

The tincture of iodine has been employed as an *emmenagague*,

externally, to the os uteri, with success, by Dr. Mikschik. Cases which had long resisted other means have yielded to this after the third day.—*Med. Times and Gaz.*, Oct. 1855.

Nævi materni gradually disappear under the action of a tincture of iodine made by dissolving a scruple in half an ounce of alcohol. Apply it freely once a day until the spot vanishes. The part scales off once in two or three days, and the system is not at all affected.—*London Medical Gazette*, August, 1849.

Dr. Whitmire names the tincture of iodine as an excellent article for the *bites of the rattlesnake*, viper, and copperheads. He uses the strong tincture, applying it twice daily over all the swollen parts. The swelling is often promptly arrested by the time the third application is made.—*Braithwaite's Retrospect*, part xx.

In addition to the above external applications of this medicine, it has also been employed with success to an old *ununited fracture of the leg*, to *ulcers of the throat and fauces*, to the outside of the eyelids in *scrofulous inflammation of the conjunctiva*, to prevent *pitting* and *scarring* by *small-pox*, &c.

Iodine is sometimes employed in the shape of *ointment*, a drachm being well rubbed with an ounce of simple cerate for this purpose. A piece as large as a medium nutmeg well rubbed into the throat excites high irritation of the skin, and thus gives relief when the throat and fauces are inflamed and when incipient *quinsy* is present. It proves *stimulant*, *rubefacient*, *discutient*, and thus effects the removal of *tumors*. Friction always gives increased activity to the ointment, and should be made when it can conveniently be done. Dr. Leigh has strongly recommended this ointment in cases of *phthisis pulmonalis*, and especially in the early period of tubercular development. He directs a portion to be placed in the axilla close to the skin, the patient being in bed, with his head covered, in order to confine the iodine vapors. The animal temperature softens the ointment, the tender axilla is smartly irritated, and the iodine is eliminated in the form of vapor, which is necessarily inhaled. The ointment should be thus applied every night for weeks. It allays cough, and arrests the development of tubercle.

Iodine is much in use in the form of the *hydriodate of potash*, or, as it is often called, the *iodide of potassium*. When these terms are employed in medical works they are to be understood as precisely synonymous. The article can be made by evaporating to dryness a saturated solution of iodine and potash. The residue is to be fused in a platina crucible, so as to exclude the external air. The absolutely dry article is properly iodide of potassium, which moisture changes to hydriodate of potash. The salt is very deliquescent, and should be kept in well-stop-

pered bottles. When perfectly pure it is white, but frequently has a slight tinge of yellow. It is very soluble in water, and is generally exhibited in aqueous solution. Forty-eight grains to the ounce of water give a mixture the adult dose of which is from ten to thirty drops three times a day. Much stronger solutions are frequently administered with safety and success.

Lehmann says if iodide of potassium (in pill) in moderate or large dose be administered, iodine may be detected in the saliva in ten minutes.—*Headland's Action of Medicines*, p. 317.

The actual therapeutic properties of the iodide or hydriodate have not been well defined, nor is it easy to state what those properties are, in a brief definition. I think the facts connected with its exhibition as a remedy, together with the results, prove it to be better entitled to the appellation of *universal alterative* than any other medicine. Its successful exhibition in long-continued *rheumatism*, almost hopeless from the failure of all other means, seems to make this title just. I have never known a medicine, nor any combination of medicines, to effect such signal changes in chronic rheumatism as this article has accomplished in a few weeks. The most obvious effect in those cases was the great increase of urinary discharge, and thus a large portion of the *materies morbi* was probably eliminated. In the case particularly referred to, three-grain doses were given at first, and increased daily until thirty or forty grains made the dose.

In the *Gazette Médicale*, 1843, Dr. Aubrun says he has employed the iodide of potassium for years, both in *acute* and *chronic rheumatism*, with success. He gave his adult patients from one to five scruples in twenty-four hours. If the medicine disagreed with the stomach, the accident was ascribed to some free iodine. In some instances, salivation ensued, and appeared to depend on the action of the medicine. Dr. A. thinks it more generally successful in acute than in chronic rheumatism, and affirms that no bad consequences followed.

Dr. Pickett, of Louisiana, reports success in the management of *rheumatism* in the far South, with sixteen grains of the iodide. (See *New Orleans Med. and Surg. Journ.* for Oct. 1844.)

This medicine proved successful in the last stage of *acute hydrocephalus* in a child two and a half years old. A drachm was dissolved in half an ounce of water, and thirty drops of the mixture were given every hour in a glass of water. This treatment was persisted in for weeks, and then half the dose was administered for a short time. (See *American Journ. Med. Sciences*, Jan. 1842.)

A practice somewhat similar was reported by Dr. Seyffer, a German practitioner, in 1843. From eight to twelve grains of the iodide were dissolved in three ounces of water, and a dessert-

spoonful administered to a child two years old every two hours. If the patient was lymphatic and puffy he gave the following additional mixture:—

Take iodine, one grain, and dissolve it in
Alcohol, two drops; rub the mixture with
Calomel, seven grains;
Sugar, two and a half drachms.
Mix well together, and divide into thirty-two parts.

One of these powders was given three times a day. At the same time the forehead and temples were rubbed with an ointment made of eight grains of protiodide of mercury and half an ounce of lard.

The essentially scrofulous origin and nature of hydrocephalus internus may serve to explain the success of the iodine preparation, and in this relation it merits special notice.

Baudelocque was in the habit of treating all sorts of *scrofulous disease* in children with this medicine. An eighth of a grain was dissolved in an ounce of gum-water, or in syrup, for a dose; and three, four, five, or even ten doses, were given daily, according to the age of the child, and in some cases larger doses. The solution keeps very well in close vessels. (See *Repertoire Clinique de Villard*, vol. iv.)

A writer in the *Medico-Chirurgical Review* for April, 1837, speaks of the emmenagogue powers of the hydriodate of potash. This medicine was given in ten-grain doses daily, for about two months, to a female laboring under secondary syphilis. She had been without her catamenia for four years, and now the discharge returned, and continued to recur at the proper periods. We suppose the action of the medicine depended on its high alterative operation.

Ricord announces that he has found the iodide of potassium decidedly valuable in allaying gastric irritation, as the effect of distant local disease. He gave it in the infusion of quassia. Two drachms are dissolved in two pounds of the infusion, and half a wineglassful is given three times a day. (See *London Lancet*, April, 1850.)

Hydriodate of potash has also been eminently useful in cases of *suppressed measles* and *scarlatina*. Every well-instructed physician is aware of the dangers attending a sudden recession of those eruptive diseases, and also the importance of a speedy return to the surface. The reporter declares that the medicine under consideration induces healthful reaction under the most untoward circumstances. For a child between eight and twelve years old he gives a solution of three grains in a few ounces of sugared water, so as to have the whole consumed in twenty-four hours or less. The mixture determines to the skin very promptly

and efficiently. The throat is washed at the same time with tincture of iodine, so as to irritate the skin. (See *Braithwaite's Retrospect*, part vii.)

A valuable paper by M. Melsens, translated by Dr. William Budd, and published in the *Brit. and For. Med. Rev.* originally, may be seen in part xxvii. of *Braithwaite*, at page 239 and onward, treating of the use of iodide of potassium as a remedy for the *affections caused by lead and mercury*, by which the author meant *lead and mercurial poisoning*, no doubt. His theory is, that "The metallic poison is located in the blood; that the iodide mingles with it, forming a *new* and *soluble* salt; liberates the poison from its union with the system, dissolves it out, so to speak, from the damaged fibre, and sets it afloat, to be carried out of the body." The double iodide of mercury, or lead and potassium, he thinks, is the new product, which is eliminated by the kidneys. An adult may begin with ten or fifteen grains three times a day, gradually rising to a drachm in twenty-four hours.

Mr. Sankey, of Sussex, England, has treated cases of *ague*, which resisted sulph. quinine, with iodide of potassium, with decided benefit. The disease had been of long standing and the patients were feeble. The prescription was thus:—

℞.—Potass. iodid. ʒiss;
Aq. menth. pip. ℥xij.

Mix. Take two large tablespoonfuls four times a day, adding, sometimes, one grain of sulph. quinine to each dose.—*Assoc. Med. Journal*, March, 1856.

Dr. Dean read a paper before the Virginia Med. Society, to show the success of the iodide of potassium in three cases of *asthma*. A clergyman of Illinois, who had been cured by using the remedy, gave him the information. The dose was eight grains every four hours.

The hydriodate of potash and mercury, in form of syrup, has been successfully employed in *secondary syphilis* in scrofulous subjects. It is made by adding one part of deutiodide of mercury and fifty of hydriodate of potash to fifty of pure water. Filter the solution through paper, and add of clear syrup two thousand four hundred parts. The dose is a tablespoonful three times a day. It is not an unpleasant medicine, and may be kept a long while unchanged.

The tenesmus of dysentery has been happily met by an injection of iodine one and a half grains, iodide of potassium fifteen grains, in a convenient vehicle, as flaxseed tea or barley-water. The injection was repeated, sometimes twice a day, for three days, and was followed by feelings of great comfort. M. Eimer first called attention to this use of iodine.—*N. Amer. Medico-Chirurg. Rev.*, May, 1857.

An ointment of the hydriodate is occasionally used, and the following will be found a good formula:—Dissolve the requisite quantity of hydriodate in distilled or aromatic water, and then mix it well with the proper amount of lard. This is far better than the old plan of mixing the salt and the lard at once. The ointment will remain good a longer time. A drachm to an ounce of lard is the customary proportion. This ointment has proved a useful application to ulcers in persons of a scrofulous habit.

Dr. Ogier Ward has treated *itch* with a solution of iodide of potassium, and sometimes found a single washing to suffice. He occasionally employed sulphur ointment in the night, and the wash during the day. Rarely did it require longer than a week to cure. The lotion was made of a drachm of the iodide to eight or sixteen ounces of water, according to the delicacy of the cutaneous surface. (See *London Lancet*, July, 1846.)

The following preparation of hydriodate of potash forms a sort of *liniment* not unlike Steer's opodeldoc, and is often an admirable substitute for the ointment spoken of above. Dissolve an ounce of the hydriodate in four ounces of strong alcohol, and in another vessel dissolve an ounce and a half of animal soap in four ounces of alcohol. Mix these solutions and aromatise with any of the essential oils. Pour it, while fluid, into wide-mouthed bottles, and keep them well stoppered. A solution in water of iodine and hydriodate of potash constitutes *Lugol's solution*. If we dissolve from thirty to fifty grains of the salt in water, the solution will readily take up from five to ten grains of iodine, making a reddish-brown solution, first introduced by Lugol, and presenting one of the best methods for using iodine. The adult dose of this solution is ten drops three times a day, in syrup, and gradually increased. A solution twice as strong is often employed at the same time, externally, as a lotion to the eyes affected with *scrofulous ophthalmia*, *cutaneous diseases*, &c. The internal and external operation of the remedy are combined in such cases with signal benefit. In 1832, I treated a very obstinate case of *lepra nigricans*, that had been under treatment in several southern hospitals to no good purpose, with this combination most successfully. A case of *scrofulous ophthalmia*, of like obstinacy, was cured by the same treatment in a few weeks. These patients were in the Cincinnati Hospital, and under my charge, as one of the attending physicians.

Lugol's solution, called also the *iodureted hydriodate of potash*, is sometimes made of much greater strength for internal use than the preparation above named, and it may be made a good deal weaker, if desired.

The following formula has been tried with good effect in the *dropsy* consequent on *scarlatina*, whether in children or adults;

and it is probable the cases were essentially scrofulous, although it is not so stated in the *London Medical Gazette* for 1842, whence this is extracted:—

℞.—Iodine, ℈i;
Iod. potass. ℈ij;
Aquæ, ℥vij;
Mix.

The dose for young children is from five to ten drops three times a day; for adults, from ten to twenty-five drops, taken in sweetened water. The medicine is said to abate inflammation and to promote absorption.

Herpetic prurigo of the perineum has been promptly relieved by the following compound, which is only another variety of Lugol's solution:—

℞.—Iodine, thirteen grains;
Hyd. pot. forty grains;
Alcohol, one ounce;
Water, five ounces.

Mix carefully, and use as a lotion morning and night. (*London Lancet*, 1843.)

The iodureted solution has also been efficacious in the treatment of *hydrarthrosis* and kindred affections of the joints, and especially of the knee. One part of iodine and two of the hydriodate are dissolved in fifteen parts of water and employed as an injection. In the cases named blisters were first applied repeatedly, and an opening into the joint prepared the way for the injection. (See *Bulletin Med. Sciences*, Aug. 1843.)

Inhalations of iodine have been tried, with encouraging results. The observations and experiments of Ganal on the inhalation of chlorine led the way for the use of iodine in the same manner. The mode of impregnating a room is very simple. A watch-crystal containing iodine may be floated on warm water in a saucer, or by any other easy contrivance, and the vapors will soon escape and mingle with the air of the apartment. These vapors are sometimes beneficial to persons laboring under *irritative cough*. Even in *pulmonary consumption* they may prove a palliative.

Iodide, or Ioduret of Starch, has been named already. It has been employed as a remedy in the *Glasgow Infirmary* by Dr. Buchanan. (See *Lond. Med. Gazette*, 1836.) He rubbed twenty-four grains of iodine with an ounce of starch and enough water to mix thoroughly. The mixture was slowly dried, so as to avoid the separation of the iodine. To preserve it for use it must be kept in tight bottles. The dose to begin with is three grains three times a day, but seventy-two grains were given at one dose without injury. The starch evidently modifies the quality of the iodine, and hence it is the best antidote for an

over-dose. This blue compound was found very useful in *scrofulous diseases*, and appeared to suit some persons better than any other preparation of iodine.

Iodide of arsenic is made in the dry or wet method, as may be preferred. Boil three parts of pulverized metallic arsenic and ten of iodine in one hundred of water till the smell of iodine is gone, and then evaporate rapidly to complete dryness. The iodide is a bright, brick-red, crystalline substance, volatile, and readily fusible by a gentle heat into a deep blood-red fluid, which on cooling concretes into a deep-red crystalline mass of metallic lustre. It has no smell, and a faint metallic taste. The ordinary dose is from a sixteenth to a tenth of a grain two or three times daily, and may be given in pill or in watery solution. It has been found useful in intermittents in scrofulous subjects.

An old case of *psoriasis inveterata* in a baker, and affecting his arms and legs and scalp, was cured in less than three months by the use of the iodide of arsenic. He had been treated on various plans by distinguished practitioners, without benefit. After the use of a warm bath and some purgative medicine he was put on the twelfth of a grain of the iodide made into a pill with liquorice powder, and repeated three times a day. The dose was gradually increased to a sixth of a grain three times a day until the 3d of May, when he was discharged cured. Occasionally the medicine was omitted for a few days, and a cathartic administered. The diet of the patient was milk all the while. (See *Braithwaite*, part xx.)

Iodide of sulphur has acquired popularity as a remedy for *scrofulous itch*, or for itch in persons of a scrofulous habit. It is very readily made by incorporating the ingredients, and is employed as an ointment.

Iodide of quinine was introduced as an article specially suited to scrofulous constitutions that could not well bear the ordinary salt of quinine. It may no doubt be a valuable medicine in such cases.

The term *iodized oil* is to be seen in some of the journals; and it is proposed as a more efficient agent than cod-liver oil. Iodine is incorporated with sweet oil or with cod-liver oil, so as to make a solution possessing augmented iodine power. It has been in use for some years in England, and has been employed occasionally in this country.

The term *iodism* requires an explanation. We mean by it any unpleasant gastric or intestinal derangement attending the use of any iodine medicine. These effects are now and then perceptible, and call for treatment. One of the best plans is to lay the remedy aside for two or three days, and then renew it.

Another is to give at intervals an acidulated solution of sulphate of quinine. Sometimes mere attention to the diet and the bowels will suffice. I have never experienced any difficulty so serious as to prevent the necessary perseverance in the use of the medicine.

Allusion has been made to *adulterations of iodine*. The one that I have noticed particularly is effected by addition of fine particles of stone coal, which have been added to the extent of a third of the mass. Take a portion of such iodine, say a teaspoonful, and heat gently in a saucer. All the iodine will escape in form of violet vapors, and the coal, being unaffected by such a temperature, will remain.

The *iodide of potassium* is also frequently adulterated. Other salts are added that augment its deliquescence and enfeeble its powers. I have judged of the comparative purity of this article chiefly by its *iodine* strength, thus ascertained:—I placed in an oil flask a tablespoonful of sulphuric acid exposed to the heat of a spirit-lamp a few minutes. A piece of the iodide was then dropped into the flask, about the size of a medium nutmeg, and instantly a dense volume of iodine vapors rushed out. The denser the volume the purer was the salt supposed to be. I am aware that this test is not strictly accurate, and yet it will be found pretty satisfactory.

Iodognosis.—M. Dorvault has used this term to denote all that is understood by the therapeutical and medical properties of iodine.—*London Medical Gazette*, January 10, 1851.

IPECACUANHA. *Callicocca Ipecacuanha. Cephælis Ipecacuanha.*—The title *ipecacuan* has been given to several other plants, which need not be named here. The origin of the word is *ipe*, root, and *cacuanha*, the name of the district where it was first found.

Decandolle supposed that ipecacuanha properly meant the *vomiting* root. Piso first noticed its peculiar qualities in 1618; in 1672 it was brought to Europe, and in 1686 it was examined carefully by Helvetius, in Paris. It is stated that Louis XIVth assisted Helvetius in bringing the plant into notice as a remedy for *dysentery*, that being the first regular remedial use to which it was applied. For his faithful and assiduous labors in these investigations the government awarded to Helvetius the sum of one thousand pounds. From that time it became one of the most popular medicines in England and Germany. It is one of the articles of Materia Medica that has never lost much of its original and well-deserved popularity in any part of the civilized world, and at this day, in this country, it is in very high estimation.

The name *Callicocca* was given to it by a botanical professor in Portugal, in the year 1800, and an accurate description and

drawing were then exhibited, and afterward published in the *Transactions of the London Linnæan Society*.

Ipecacuanha is a perennial plant, growing in shady places, in forests, in moist spots in *Brazil* and various parts of South America. The roots are creeping and horizontal, like threads or twines of variable size, having small tubercular eminences or rings. It has been called *annulated*, because of the ring-like formation. The root is often of the thickness of a goose-quill, smaller or larger according to circumstances. It is irregularly knotted and branched, being covered with a brown epidermis. It consists of two portions, viz., the ligneous or woody, which is *inert*, and the cortical, or *active* part. When the root is broken by a sudden snap it presents a kind of resinous fracture, and yet it contains no resin. It has a bitterish, acrid, nauseous taste. The odor is faint and herbaceous, and is easily separated, as is also the taste, by digestion in sulphuric ether. The proximate principle on which the energy of ipecacuanha depends was discovered in 1817, by Pelletier, and called *emetin*. He found it to exist in the best roots to the quantity of sixteen per cent. The entire residue of the root is destitute of medicinal properties.

Infusion of nut-galls, or anything that contains tannin, will throw down a precipitate when added to a solution of ipecacuanha. The precipitate is tannate of emetin, and is inert. Iodine causes a red precipitate, which is iodide of emetin. Acetate of lead also throws down a precipitate. Salts of iron blacken the solutions of ipecacuanha. We infer the *incompatibility*, thence, of tannin, sugar of lead, iodine, &c., with the solutions of ipecacuanha.

Ipecacuanha is sometimes adulterated by admixture with the powder of other roots, and the fraud cannot well be exposed. But if tartar emetic be added, as it has been to make the ipecacuanha appear to be very potent, that may be detected pretty readily. Dissolve the preparation in water slightly heated, filter, and add to the clear solution a little hydrosulphuret of ammonia. If tartar emetic be present, an orange-red precipitate (red sulphuret of antimony) will be produced.—*Adulteration of Medicines*, page 101.

Before we notice the therapeutic applications of the powder of ipecacuanha, it is proper to advert to some interesting facts involving the doctrine of *idiosyncrasy*, and which all physicians should bear in mind. It is not known to all medical men that the bare smell of the smallest fragment of this article will induce distressing *asthma* in certain persons, and this not accidentally but invariably. Those who desire full information on this interesting point are referred to a paper by Dr. Felix Robertson, one of the oldest and most respectable graduates of the Uni-

versity of Pennsylvania, residing in Tennessee. (See *American Journal of Medical Sciences*, January, 1844.) This paper was issued also in form of pamphlet, and was largely circulated in the West.

But the case of Dr. Robertson is not alone; many other persons of high respectability, both male and female, having been the subjects of precisely the same peculiarity. And the lesson taught is, simply, to be governed by this and any other medicinal idiosyncrasy, in the administration of remedies.

As early as 1759, violent asthmatic fits were induced by proximity to ipecacuanha, as we learn from a paper by Dr. Scott, published in the *Medical Commentaries*, vol. ii. page 317. In addition to the case therein named, others are referred to of a like nature.

The mere inhalation of the dust of ipecacuanha has been found so to act on the lungs as to induce *bronchitis;* and yet this medicine has been very much trusted by some as a remedy for that disease.

As an *emetic*, ipecacuanha is more extensively employed than any other article of Materia Medica. The powder is generally preferred. It is of a bright, light-gray color, and possesses the qualities already ascribed to the root. The adult dose for full vomiting varies from a scruple to a drachm, and should be given in warm water, the quantity varying from two to four ounces. A good plan is to add a drachm to six ounces of boiling water, and allow it to stand until the temperature is sufficiently reduced to enable the patient to swallow it. One-third of this may be given every half hour or twenty minutes until the desired effect is obtained. A single portion will sometimes suffice.

The article made as above is sometimes called *ipecacuanha tea*, and is a good medicine for young children laboring under colds of greater or less severity. Kept on a stove or elsewhere, so as to be a little warm, it may be administered in tea or tablespoonful doses through the day, so as to vomit or nauseate, as may be most desirable. I have often prescribed it in this way with happy results.

Now and then the physician will be perplexed by failing to get an emetic action, both in adults and young children. The fault lies in neglecting to deplete the patient before exhibiting the ipecacuanha. This is certainly true of inflammatory croup, and is really so in some affections of adults. I was called at midnight to see a man laboring under something like severe colic. Not having a lancet with me, and supposing I could relieve him by an emetic, I gave ipecacuanha. His supper had been of very indigestible articles, and in larger quantity than usual. The propriety of emetic treatment seemed quite obvious. Fomentations

and sinapisms were freely employed. Dose after dose of the ipecacuanha was given, and no vomiting nor purging. Injections were resorted to, and evacuations per anum obtained. The man fell asleep after two or three hours, and I did the same, and my patient awoke nearly as well as usual; but he had not been vomited, nor scarcely nauseated by the emetic doses, amounting, in all, to nearly two drachms. He was sufficiently vigorous to have borne the loss of fifteen ounces of blood, and I have no doubt if the detraction had been made when I first saw him, the first dose of ipecacuanha would have emptied his stomach.

Some physicians employ the *wine of ipecacuanha* in preference to the powder in the cases of children, who take it more readily. I have never found it necessary to resort to it, and think it can well be dispensed with. Those who desire to use it can readily prepare it by digesting for two weeks two ounces of the powder of ipecacuanha, moderately fine, in a quart of old sherry wine. Filter and bottle for use. From ten to thirty drops prove expectorant and diaphoretic. From two drachms to half an ounce will vomit an adult.

The *London Medical Gazette* for 1847 says that the wine of ipecacuanha is the best application to parts bitten by venomous insects. It arrests the pain instantly.

It is probable, when ipecacuanha is given as an emetic in the usual way, that the first effect is that of local irritation of the mucous membrane of the stomach. But as the emetic action is generally delayed about half an hour, it is probable that the emetin is separated in that lapse of time by the agency of the gastric juice, and absorbed into the circulation. Through that medium, and also through the medium of the nervous system, an impression reaches the parts more directly involved in the act of vomiting, and the result is finally manifest. Among the advantages sometimes assigned to ipecacuanha over other emetics a prominent one is its failure to teaze the patient by repeated efforts to vomit. One or two evacuations of the stomach take place, and then the excess passes off by stool. As a consequence of this, the vital forces are far less depressed than when tartar emetic is exhibited, which not unfrequently operates by vomiting and stool in close succession. Another valuable feature is that its action is unattended by painful spasms of the stomach or bowels. As it does not impair the tone of the stomach, even by repetitious use, to any appreciable degree, it is preferable to tartar emetic, especially in the diseases of children, to whom we have very frequently to administer emetics of some kind or other.

When it is desirable to augment and to protract emetic action in adults, it is well to add a grain of tartar emetic to the usual

dose of ipecacuanha. This is especially proper when we apprehend a slight amount of inflammatory action in the system, and for which we would not choose to bleed.

Combined with opium and a little neutral salt, ipecacuanha plays a happy part in the well-known *Dover's powder*, which usually contains, in every ten grains, one of opium, one of ipecacuanha, and eight of sulphate of potash. This mixture is sometimes called the *compound powder of ipecacuanha*, and is given most advantageously at bedtime to tranquilize the system and set up a gentle perspiration. The ordinary dose for an adult is ten or twelve grains, followed by an occasional draught of warm tea or barley-water. After depletion, this medicine is very often employed in ordinary rheumatism, acute or chronic, and not unfrequently with good results.

The *Dover's powder* of the present day is not the same thing with the original preparation, as we learn from *The Ancient Physician's Legacy to his Country*, published by Dover. That work directs opium, an ounce; saltpetre and vitriolated tartar, each four ounces; ipecacuanha, an ounce; liquorice, an ounce; to be well triturated after exposure of the salts to heat. The dose was from forty to seventy grains in warm drink, taken at bedtime, and it contained from four to nine grains of opium.

A valuable use of ipecacuanha is to accelerate the operation of cathartic medicine. Three grains added to fifteen of jalap and five of calomel will hasten the action of the latter considerably, and prevent or lessen the drastic tendency. The mixture not only purges actively, but generally induces sweating.

We said that the earliest use of ipecacuanha was in *dysentery*. It is yet and ever will be regarded with favor in the treatment of that disease. The plan of Sir John Pringle has always appeared to me to be the best. He gave five grains of calomel with five grains of ipecacuanha every hour or half hour until four or five doses were taken. The effect was free vomiting and purging, with a complete checking of bloody discharges in many instances. Sometimes the lancet was employed prior to this mixture, and should be if the state of the system made it necessary.

Very frequently have I put this practice to the test, and I prefer it decidedly to any other treatment. In addition to the vomiting and purging, a free perspiration is induced. If the bowel evacuations were not sufficiently copious, a dose of castor oil with ten drops of laudanum, given on the next day, accomplished the object. As a local application, I know of nothing equal to a very large and soft bread and milk, or mush poultice, applied hot, and large enough to cover the whole abdomen. It should be renewed every four hours.

The diet should be gruel, arrow-root, sago, boiled milk, milk and mutton suet boiled together, and the like. Injections of milk and mutton suet are often very good adjuvants. It was a very common practice many years ago to cure dysentery with a drachm of ipecacuanha and sixty drops of laudanum, preceded by a full dose of Glauber's salt. The ipecacuanha followed the purgation, and, last of all, the laudanum was given. (See *Memoirs of Lond. Med. Soc.*, vol. v. p. 212.)

Ipecacuanha will also be found a good medicine in *diarrhœa*. It acts in that disease very much as in dysentery, by correcting the action of the mucous membrane of the stomach and bowels. This I hold to be the secret of its success. At first it may be given in doses large enough to vomit; after which, very small portions, say two or three grains every four hours, will suffice, adding occasionally an eighth of a grain of sulphate of morphia.

In *spasmodic asthma*, *common catarrh*, and *stricture of the chest*, so common in pulmonary consumption, ipecacuanha is often promptly beneficial in doses of three to five grains, given every two or three hours. *Menorrhagia* of high as well as low morbid action has been treated successfully with ipecacuanha by Dr. Osborne, of Dublin. He gives a scruple at bedtime, followed next morning by a saline cathartic. The discharge was promptly checked, and if it happened to return, the same treatment was repeated. M. Caffin first noticed this practice in vol. lxix. of the *Journal Générale de Médecine*. He remarks that the discharge ceases almost immediately after the emetic action of the ipecacuanha. The principle involved is probably the same as that which associates syncope with arrest of hemorrhage from ordinary causes.

A saccharized extract of ipecacuanha has been highly commended by a writer in the *New York Journal of Medical Sciences* for 1854, because preferable to the usual preparations of ipecacuanha. It is made thus:—

Take of ipecac root four ounces, bruise to a coarse powder, and macerate for thirty days in sixteen ounces of diluted alcohol, shaking occasionally. Then filter and express. Evaporate the tincture so obtained to twelve ounces, with which mix eight ounces of white sugar, and rub the whole in a mortar until quite dry. The product is of a brownish-yellow color, and quite soluble in almost all the usual menstrua. The dose is twice that of the powdered root. Its sweet taste renders it agreeable to children.

Ipecacuanha liniment has been introduced into practice rather recently in the treatment of *chronic hydrocephalus*, *incipient phthisis pulmonalis*, *infantile convulsions*, *chronic inflammation*

of the synovial membrane of the knee, and in certain *rheumatic affections.*

An infant eight months old had convulsions, squinting, vomiting, &c. &c. Nitrate of potash and ipecacuanha were given internally, and the following liniment was applied to the scalp:—

Take of ipecac.
Sweet oil, āā ʒij;
Lard, ℥ss.
Mix.

This was rubbed into the scalp, during fifteen or twenty minutes, three or four times a day, and the head covered with flannels. In thirty-six hours, or sooner, numerous small papulæ and vesicles appeared, and these assumed a true pustular character, ran together and became confluent. This state of the scalp continued for several days. The child recovered. (See *Edinburgh Medical and Surgical Journal*, Oct. 1843.)

In the same journal is an account of the good effects of the same liniment frequently rubbed on the chest of a person who had *incipient phthisis.* The cough ceased on the appearance of the eruption.

We named *emetin* as the active principle in ipecacuanha. There are two kinds mentioned by writers, viz., the *colored* and the *colorless.* The latter is more pure and energetic than the former; indeed, it has quite too much potency for ordinary use. The only advantage possessed by either over ipecacuanha, is the absence of unpleasant taste or smell. Four grains of colored emetin, in divided doses, will act as an emetic. This quantity should be dissolved in a half-ounce of lemon syrup and two ounces of water, and given in tablespoon doses every half hour. Two grains of pure emetin will kill a large dog. A sixteenth part of a grain vomited an old man severely. One grain in a little acetic acid and water, taken at a dose, will vomit a man of thirty with considerable severity. It is therefore not a very safe article, and not at all equal, as a general emetic, to ipecacuanha.

Juglans Cathartica. *White Walnut. Butternut.*—This tree has been known as possessed of medicinal properties ever since the first settlement of America, and long before. It furnishes one of the very best native cathartics, and is so appreciated where it is most employed. The surgeons in the army of the American revolution were compelled to rely on it almost exclusively, from necessity, as it was not possible to procure foreign articles during a part of that eventful struggle.

The white walnut has an advantage over most cathartics in its more favorable action on the mucous coat of the bowels, whereby it leaves the canal less liable to costiveness than any

other purgative. Hence in part its great popularity as a family medicine.

The inner bark of the roots furnishes the best extract. Many persons are not select in this respect, and hence they get an inferior article. The best time for collecting the bark is in June. It should be cut into very small pieces, and boiled in pure water. A pound of the root and a gallon of water should be boiled to four pints. Strain while hot, and evaporate slowly and carefully to avoid burning, until the whole is of the consistence of soft extract. When quite pure and unburnt, it has a sweetish odor, a rather bitter astringent taste, and is nearly black. The dose may be twenty to thirty grains if active purgation be desired, and a smaller portion if a mere aperient effect is sought for. It is sometimes combined with calomel, with good effect.

The decoction is occasionally taken as a cathartic, but the extract is more pleasant, and also more certain.

A *cordial* of the bark has long been in use in country locations as a remedy for the bowel complaints of children. The bark is to be well broken and beaten so as to make a soft, stringy mass, which is to be placed in an earthen vessel, closely packed down. Boiling water is then poured in, sufficient to cover the whole; and the vessel is to be plaeed on bright coals for about two hours, the vessel being closely covered. The whole must then be strained, and sugar enough added to the clear liquid to make a syrup. This is to be bottled, a little alcohol or brandy being added to each bottle in order to preserve it. The dose for a child a year old is a tablespoonful, repeated till it acts smartly on the bowels.

JUNIPER BERRIES. *Baccæ Juniperi.*—As we often get these berries, they are generally of little value. When fresh and sound, and properly managed, their *diuretic* property is important. They contain an essential oil, and on this their activity depends. Old berries have lost all their oil, and are worthless. The round, plump, bright-black and sound berries are the best.

To make the berries available they should be so bruised with a hammer as to break the seeds, for in them the oil resides. An ounce of berries so prepared should be added to a pint of boiling water with a very little cinnamon, taking care to cover the vessel tight. When cold, this infusion may be taken in wineglass doses frequently. It is used in dropsical affections.

Linnæus says the Laplanders drink the infusion as we drink common green or black tea. The *Swedes* make beer out of the berries, which they hold to be *diuretic* and *antiscorbutic*.

Dr. Sully reports very favorably of the oil of juniper as an application for the relief of *scald head*. His formula is as follows:—Oil of juniper, an ounce and a half; lard, two ounces;

essence of aniseed, six drops; to be rubbed well together. The ointment is to be applied to all the parts affected, and has proved equally useful in scrofulous ophthalmia, scabies, and eczema. I would repeat here the advice several times given, to act on the stomach and bowels by calomel and ipecacuanha at the same time. (See *Journal de Médécine et de Chirurgie.*, Nov. 1846.)

Dr. Reuth called the attention of the profession, in 1853, to two preparations, regarded by him as important in the treatment of *eczema*. The one is the oily product of the destructive distillation of juniper wood, called *huile de cade;* the other is juniper-tar ointment, prepared from the oil named in proportion of half an ounce to one ounce and a half of lard. The ointment is applied locally, as other salves, with no other treatment save a due regulation of the bowels. *This last is of the utmost consequence in all skin affections, and no permanent cure can take place if it be neglected.—Braithwaite*, p. xxix. p. 250.

Kino.—This has been called a gum, but is probably neither a gum nor a resin. Some parcels may have shown slight evidence of gum and resin, but when quite pure both of these fail. The plant it comes from has always been matter of dispute, and it is yet as doubtful as ever, nor is it at all important to have it settled. We could do without the article altogether, inasmuch as we have numerous astringents that are preferable. The *Nauclea Gambir* is named as one of the sources, and is believed to furnish the India kino. Whatever be the source, the predominant principles in the product are tannin and extractive. Brandy, or diluted alcohol, is a good solvent, and furnishes a tincture that has a large amount of astringency. As a proof that this is not resinous, the addition of water does not make it milky.

By some kino is regarded as a valuable astringent. Fothergill first brought it into notice as a remedy in *diarrhœa* caused and kept up by general relaxation of the mucous membrane of the bowels. He combined it with opium in *pyrosis* accompanied with pain. The opium soothed the gastric uneasiness, while the kino gave tone to the mucous membrane. As an injection it has been employed in *gonorrhœa* and *leucorrhœa*, but is not proper if high inflammatory action is present. For the relief of a *relaxed condition* of the *uvula* and *fauces* a watery solution has been usefully employed, as a gargle, to cleanse the parts and act by its astringency.

Kino was formerly exhibited alone, or with tonics, in the treatment of *intermittents*, but the practice has long since fallen into disuse.

The dose of this medicine, in powder, is from ten to sixty grains, and can be taken in molasses, or syrup of ginger, or in sweetened water. The watery infusion is preferable to the tinc-

ture under all circumstances where mere astringency is needed. From two to four drachms of bruised kino and a half-drachm of cinnamon bark digested for an hour in a pint of boiling water make a good infusion. The mixture should be made in a covered vessel, and strained as soon as it becomes cold. The dose, a tablespoonful from three to six times a day, according to the urgency of the case. Dr. Elliotson remarks of kino and catechu, as remedies for bowel disease, that the watery infusion is as good as any other mode of administration. The tincture is easily made, by digesting an ounce of kino in a quart of brandy. The dose is from one to three drachms.

The alkalies, lime, corrosive sublimate, and tartar emetic are among the incompatibles of kino.

Kousso. *Hagenia Abyssinica.*—When full grown, this vegetable has the size of an ordinary fruit tree. The medicinal power is in the flower, which must be dried with care, freed of stalks, and then reduced to a fine powder. The dose varies from six to eight drachms, taken in cold water early in the morning. It usually acts in two hours, and has been known to expel a large *tape-worm* in the third or fourth evacuation.—*Ranking's Abstract*, vol. i. p. 88. In addition, we find facts of like tenor in *Braithwaite's Retrospect*, and the *London Lancet.*

We have never employed the kousso, but are induced to regard it as a very good *anthelmintic*, and specially suited to tape-worm.

Lactucarium.—This is a kind of extract somewhat like opium in color and anodyne properties, but lacking the objectionable qualities of opium. It is obtained with little trouble from the garden head-lettuce by wounding or bruising the white, solid, central portion of the mature plant. A milky juice flows out, which, after a slow evaporation by exposure to the air and a hot sun, acquires the consistence of an extract. Its taste is somewhat bitter, and its color nearly as brown as that of opium. The best lactucarium and the most is obtained from the juice taken when the plant is in flower and about to form the seed.

Aubergier regards the alcoholic extract of lactucarium as the best preparation. He directs the strongest alcohol to be employed, and the evaporation to be conducted on the water-bath, the mixture to be constantly stirred. The extract so procured is brown, very bitter, and not deliquescent. Homolle names a case of insomnia, after typhoid fever, accompanied with severe epistaxis, in which the alcoholic extract was of great service after the salts of morphia had failed. He began with a grain and a half, increasing the dose to between four and five grains, in the form of syrup.

Dr. John Redman Coxe, formerly Professor of Chemistry and

Materia Medica in the University of Pennsylvania, published a good paper on this article in the *Transactions of the American Philosophical Society*, which the reader can consult. I have known families in the West to prepare this medicine as a domestic substitute for opium, preferring it much to the latter, and finding it more pleasant. The dose is from two to four grains, which are conveniently administered in form of pill. It can be used a much longer time, without apprehension as to ultimate consequences, than opium can. Some have added it to ipecacuanha and sulphate of potash to make Dover's powder, omitting the usual quantity of opium.

One of the most agreeable methods of exhibition is in the shape of syrup, made by rubbing a drachm of lactucarium with a little water and adding to a pint of lemon, or ginger, or simple syrup, as may be most agreeable. The late Professor Eberle was in the habit of prescribing this *syrup of lactucarium* for nervous and hysterical females who could not, or thought they could not, take any preparation of opium. The dose is from one to two ounces, repeated as circumstances may require.

LARKSPUR.—Common garden larkspur, found in gardens almost everywhere, is so familiar to almost everybody as to require no particular description here. The plant is about two feet high, and abounds with variegated flowers, of white, blue, and red. It is a species of delphinium—the *delphinium consolida* of Linnæus.

I call the attention of my medical brethren to it because it is always within their reach and because of its valuable *anti-emetic* property. More than forty years ago I experienced great embarrassment in my efforts to control the *vomiting of autumnal fevers*, prevalent near to the Philadelphia Lazaretto, where I was stationed as physician of the establishment. I was induced, by the representations of a worthy old lady, to make trial of the larkspur leaves and flowers, in the form of infusion. The remedy acted, as some would say, like a charm. It was quite nauseous at first, but gave such delightful relief that the patient begged to have the dose repeated. I never knew it to be rejected. On the contrary, it calmed the stomach speedily.

The infusion was made of half an ounce of the leaves and flowers, added to a pint of boiling water. The dose, a wineglassful, to be given every half hour, or more frequently if necessary.

For want of a better therapeutic appellation, I have called this medicine an *anti-emetic;* but regard it as displaying sedative qualities also.

A few words are said touching the use of larkspur in affections of the eyes, in calculous complaints, as a vermifuge and as a

diuretic, in the American edition of *Christison's Dispensatory;* but no allusion is had to the peculiar property named above. The *United States Dispensatory* is equally silent on this point, noticing the plant pretty much as Christison's American editor has done.

A proximate principle, called *delphina*, has been separated from the larkspur; but it has not attracted special notice.

LAURUS SASSAFRAS.—This is an article so universally known in all parts of the country that it would be a waste of time to enter into details in order to describe it. The *sassafras bark* is one of the most common domestic articles for the preparation of a *pleasant beer*, and to make a *family tea to purge out the bad humors in the spring*, as the matrons would say; for they are all by nature humoral pathologists.

The root, wood, and flowers are all employed for various purposes in domestic and professional practice. All possess agreeable qualities, and are remarkable for a peculiar warm, aromatic taste, as well as an agreeable odor.

The younger shoots of the bark yield a pithy substance that contains a good deal of mucilaginous matter, which is readily extracted by water.

The peculiar properties of sassafras reside in a volatile oil, obtained by distillation of any and every part of the plant; hence the well-known *oil of sassafras.*

Hot water very readily extracts all the active qualities of sassafras, and hence the *family tea* of which mention has been made. Drank warm, this fluid acts kindly on the skin, giving rise to a pleasant *diaphoresis.* On this account, most probably, the bark and wood are added to sarsaparilla, lignum-vitæ, and other ingredients in the diaphoretic diet-drinks so much employed in some regions.

A very strong decoction of the bark and wood is employed in the West, as an *antiseptic*, in form of poultice to ill-conditioned, foul ulcers. Sometimes the powder of the bark is sprinkled over a bread and milk poultice with the same intent.

The bark and oil are employed as *carminatives;* the bark in shape of tea, and the oil dropped on sugar or made into an emulsion.

The mucilaginous solution procured from the pith is a pleasant application to inflamed eyes, especially after general and local depletion. It is also a convenient and useful demulcent, well suited to diseases of the chest, to derangement of the bowels and urinary organs. The proper proportions for making this solution are two drachms of the pith and a pint of hot water. When the solution is cold, it should be strained, if intended for the eyes.

From two to ten drops of the oil may be taken by an adult in the manner stated above.

LEECHING.—This is a very valuable expedient in practical medicine, and whenever within reach it should not be overlooked. It serves for depletion in parts on which we cannot so effectually operate in any other way.

The leeches employed in this country are imported from abroad, or obtained in the neighborhood of our large cities. Those gathered in the vicinity of Philadelphia are able to abstract about a drachm of blood, so that forty would draw five ounces; and if to this we add the fact that as much more may often be taken by fomentations to the leeched spot, we can readily perceive the extent of this depleting agency.

One of the objections raised to leeches in country places is the difficulty of preserving them. It was found to be a very troublesome part of their history forty years ago, in the Philadelphia Almshouse, and no doubt will yet be somewhat embarrassing. One of the best methods is to keep them in loose turf or moss, kept constantly moist, and packed in vessels which admit of a free renewal of air all the while. They have been well kept in glass bottles two-thirds full of water, renewed every two or three days, and covered with fine gauze. It is quite important to regulate the temperature so as not to allow it to fall below 50°. There should be free ventilation in the room where leeches are kept, and all strong odors should be excluded. As soon as a leech is known to be dead, it should be instantly removed, and fresh water applied.

With strict attention to the precautions above named, leeches may be preserved in an active state for many months without food. They are, however, subject to epidemic depredations, that destroy vast numbers in spite of all the care that can be given.

To insure the most efficient leeches, gather a quantity in the hand and squeeze them suddenly, yet gently. The most active will be found to have contracted themselves into a wrinkled oval ball, and they should be kept out of water before they are used. If they be kept in a dry clean bag of muslin, and the part to be leeched be perfectly clean, they will be found to act at once.

The practice of smearing milk or cream or blood on the part in order to make the leeches take hold, and the dipping them for a moment in porter, presuppose some defect in the leeches themselves. And besides all this it is notorious that they will not act, however vigorous, on parts impressed by poisonous or strongly-scented articles.

Various devices are in use to restore leeches, after having been employed once or oftener, to their original state of activity. It is necessary to rid them entirely of the blood they have imbibed,

in order to employ them soon again. The evacuation is effected by mere pressure, stripping them gently between the fingers, having first applied a few grains of common salt to the mouth. The most recent plan is to put them in a glass vessel half full of water, with an inch or less of sand at the bottom, and a quarter of an ounce of white wine, changing the fluid every day until the fourth day, and then employing pure water.

Leeches can be applied to any part of the body, while cups must necessarily be restricted to certain portions. As they actually make incisions in the more delicate structures, their application may be followed by fatal bleeding. Cases of this kind have occurred, especially in young subjects. Should a leech get into the stomach, it can be speedily destroyed by the introduction of some strong solution of common house salt, which is decidedly poisonous to it.

Pressure, all the astringents, stick caustic, the actual cautery, and taking up the part by ligature, have been resorted to in order to arrest the bleeding from leech-bites. A weak solution of creosote and collodion have also been strongly recommended.

Lichen Islandicus. *Cetraria Islandica. Iceland Moss.*—This was formerly lauded as a remedy for *pulmonary consumption*, but never accomplished anything in that relation. It abounds in a mucilaginous and slightly bitter fecula, and the most that can be affirmed of it is that it is a bland *nutritive*, a *demulcent*, and therefore slightly a *pectoral.*

The moss is easily prepared for use by washing five drachms in cold water to remove foreign matters, then digesting in a pint and a half of boiling water for two hours in a covered vessel. Then boil down to a pint, and strain while hot. From three to six tablespoonfuls will be found to be a good demulcent, and gently tonic. A little lemon-juice improves it.

The following formula for making jelly of Iceland moss and cod-liver oil merits notice:—

Of jelly of the moss, made in the usual way, thirty-two drachms;
Of gelatine, four scruples;
Cod-liver oil, to which add two drops essence bitter almonds, thirty-two drachms.

Dissolve the gelatine in some water, and pour it into the vessel containing the moss jelly. Heat the whole and add the cod-liver oil, stirring well until the mixture is perfect. From two to six or eight tablespoonfuls may be given at a dose. In troublesome coughs this combination may be valuable.—*Bull. de Therapeutique.*

Limones. *Lemons.* Fruit of the *Citrus Medica.*—The peel, the juice, and the oil are employed variously. The first is an adjuvant to bitters and nauseous medicines. It is stated that

chewing a small portion of the dried peel just before and after swallowing the usual dose of cod-liver oil deprives the latter of its unpleasant taste.

The juice is very largely employed for making one of the most grateful beverages for those in health and for the sick. Lemonade made of the fresh juice is always more pleasant than when prepared by dissolving the purest citric acid, or acid of lemons. The following is a good mode of using the fruit:—Take of the freshly-expressed juice, four ounces; half an ounce of the skin or peel; four ounces of white sugar; three pints of boiling water. Mix the whole in a clean pitcher with a cover, and strain when cold.

The juice is also employed in the preparation of real, genuine *lemon syrup*, a valuable article for medicinal and dietetic purposes. Take of strained lemon-juice, a pint; of refined sugar, two pounds; dissolve the sugar in the juice and simmer over a slow fire for half an hour. When cold, bottle and cork with sound corks. The syrup thus prepared will always be an excellent substitute for the fresh juice when it cannot be obtained. It is quite another thing from the so-called lemon syrup, manufactured and sold by the hundred thousand dozens and more every year. This sham compound has not a particle of the lemon in its composition, save about ten or fifteen drops of the oil added to each bottle which contains the syrup of tartaric acid.

No fluid so well allays thirst as lemonade, whether it be made of the fresh juice or by adding water to the genuine syrup. Dr. Marshall, deputy inspector of military hospitals in British India, traveled on foot over a vast territory in India, and found nothing that could allay thirst so certainly and effectually as lemon-juice and water. This and kindred testimony, furnished by most respectable men in all countries, is proof conclusive that ardent spirits are not necessary, as some have contended, as a beverage in tropical climates.

In *hemorrhages*, and *febrile affections* generally, *iced* lemonade is often a valuable adjunct. If there be a slight degree of nausea present, it may be well to add a half-teaspoonful of bi-carb. sod. to each tumbler of the lemonade, so as to create an effervescent draught, which should be swallowed quickly. The fresher the fruit the more grateful will be the lemonade made from it; but as we cannot always obtain lemons, nor citric acid, we must rely on the juice of the fruit carefully preserved in bottles by adding an ounce or two of brandy or alcohol to each quart bottle.

Lemon-juice is sometimes evaporated by a slow heat till a solid salt is procured. In this form it is brought from Jamaica, and found to be very pleasant. A scruple dissolved in water equal in bulk to the juice of a lemon, makes a solution of equal acidity.

Lemon-juice has been regarded in the light of an *antiseptic*, *tonic*, and *antiscorbutic;* to which I add that, paradoxical as it may seem, it is a real *antacid*. The antiseptic quality was announced many years ago in consequence of the obviously good effects obtained from its use in what was called *putrid dysentery*. A Dr. Wright administered it alone, and saturated with muriate of soda, and relied on these medicines exclusively. He gave the same articles in what he called *putrid sore throat*, not only as a gargle, but also to be swallowed. Whatever may be thought of the theory or practice of this physician, no one doubts the *antiscorbutic* qualities of lemon-juice, for these are palpable to the most casual observer. There can be no doubt that this acid alone could *prevent* the appearance of scurvy on shipboard during the longest voyage, and its *curative* character is equally certain. One or two tablespoonfuls daily will be sufficient, especially if good potatoes be employed as part of the diet, and if care be taken to ventilate and keep absolutely clean every part of the vessel and her crew. When scurvy makes no other manifestation but in the gums, as we often see on the land, especially in scrofulous females, the free daily use of lemon-juice, and gentle friction of the gums with the inside of fresh lemon-skin, will speedily arrest the tendency to bleed and give firmness to the texture.

Some facts recorded in the *Medico-Chirurgical Review* of 1824 seem to prove that lemon-juice alone, unaided by a suitable diet, will not always exert a favorable influence on scurvy. We presume, however, that its influence, added to such a diet, will always be salutary.

In some parts of Russia lemons are successfully employed in very hopeless cases of *dropsy*. On the first day one lemon is given, the peel being removed and the substance cut into small pieces, mingled with white sugar. On the two following days three are given in the same way, and after that eighteen per day. The patients are to subsist chiefly on animal food. The effusion quickly passes off, and hence the remedy, most likely, acts as a diuretic.

The *antacid* power of lemon-juice is a point that will be regarded as absurd and paradoxical to the last degree. But as I speak from personal experience as well as from practical application in others, what is to be affirmed may be considered as entitled to attention. And in saying that I have found the lemon-juice to be antacid I do not intend to preclude the idea of a previous tonic action as the basis of the final result. What I mean to aver is this: acidity of the stomach, persistent and distressing in its nature, after resisting all the ordinary medicines called antacid, finally yielded to strong lemonade and the unmixed juice of the

fruit. A mere casualty led to the use of the article, viz., the thoughtless act of sucking the contents of a lemon, and the immediate relief in the stomach as the result. The previous disagreeable feelings associated with an acid state vanished, and no discomfort remained for several hours. The lemon-juice was then resorted to intentionally in the pure and mixed forms named above, and the effect was so obvious as to admit of no doubt. The hardest old cider acted very much in the same manner on several occasions.

The facts had been mentioned to a colleague in the West, who appeared to be a little skeptical as to the power of an acid to cure acidity, not in infinitesimal doses, but in full draughts. That gentleman happened subsequently to have a very embarrassing case of gastric acidity on hand. The patient was a lady of some wealth and respectability, and exceedingly anxious to lose a troublesome companion. The lemon-juice was named to her, and immediately put to the test. The result was entirely satisfactory to patient and friends as well as to the physician.

The explanation is not impracticable. A writer has taught (Dr. Dick) that acidity may result from *deficient tone* of the stomach, and that the restoration of lost tone will enable the mucous coat to pour out the pure natural secretion, and not the morbid fluid which constitutes the acidity so much complained of by many persons. If this be a correct view we are at no loss to understand how the lemon-juice operates. It is in virtue of the *tonic* quality ascribed to it by all the books, and which it undoubtedly possesses. Whether this be so or not I can confidently commend this remedy for the purpose herein named, and advise that a trial be made of it for days or weeks after other and more common means have signally failed.

As far back as the year 1778, Dr. Pearce (England) was very successful in the treatment of *bilious remittents*, *fevers of a low type*, and a variety of diseases, by the use of tablespoonful doses of lemon-juice, associated with the application of sheets or towels soaked in ice-cold water to the surface. We have noticed the fact under the article *aqua*, and refer the reader for details to the works of Dr. John C. Letson, a name familiar to medical readers.

It is well known that *lemon-juice* (and orange-juice also) has long been a very popular remedy for *epidemic influenza*. It controls in a wonderful manner the great depression and attendant flux of the tissues so troublesome in this disease. It seems to act, as in scurvy, by depurating the blood rather than by restoring anything that is deficient. Dr. Golding Bird has put the question emphatically, "Can we, at will, by therapeutic agents, produce a depuration of the system, and by hastening the meta-

morphosis of matter aid the removal of a *materies morbi?*" I think we have no reason to give a negative reply so long as the lemon-juice practice furnishes so many affirmative proofs.

The most recent employment of lemon-juice noticed in the journals is in the treatment of *rheumatic gout.* I need hardly say that the remedy seems about as inappropriate here as for the cure of gastric acidity; for the popular feeling has ever been adverse to the use of acids of any kind in any form of gout. But we live in *progressive* times.

Dr. Rees, assistant physician to Guy's Hospital, furnishes the facts to which we have reference at this time. He had a female patient, aged eighteen, laboring under *acute articular rheumatism*, or *rheumatic gout*, and suffering intense pain. After purging with calomel and rhubarb, he gave half-ounce doses of lemon-juice in a little camphor mixture three times a day. In five days the disease had left her, and the only additional means were tonics to recuperate the enfeebled system.

Dr. R. says, "I first had recourse to lemon-juice for the cure of rheumatic gout, from a belief that the vegetable acids contributed to effect the transformation of the tissues generally, and because lemon-juice was the most palatable form in which that class of remedies could be exhibited. It seemed probable, moreover, that the supercitrate contained in the juice, though in small quantity, was a form of alkaline salt likely to contribute to the alkalinity of the blood in its transformations; knowing, as we do, from the examination of the urine, that such organic compounds become converted into carbonates during digestion and circulation."

Dr. R. further adds, "I have been for several months in the habit of prescribing this remedy with such marked and rapid benefit, that I am unwilling to delay its announcement to my brethren. The early relief from pain was such that any one unacquainted with the course pursued would have inferred that the patient was under the action of some of the best sedatives." (See *Braithwaite*, part xix.)

In a discussion at the London Medical Society, several physicians bore testimony to the efficacy of lemon-juice in the treatment of rheumatism, and Mr. Headland announced that he had found the same article exceedingly valuable in obstinate *dysmenorrhœa.*

The editor of the *London Medical Gazette* thinks that Dr. Rees has succeeded in demonstrating the remedial powers of lemon-juice in rheumatism, and supposes that it acts by eliminating morbid matter from the kidneys very much as colchicum does. (See *Braithwaite*, part xx. p. 40.)

Dr. Babington reports much success in the use of six-ounce

doses every four hours, no untoward symptom resulting. And we may add, without citation of other authorities, that in this country and abroad the confidence of the profession in this remedy has largely increased during the past five years. That it has not always succeeded we are well aware.

Braithwaite's Retrospect, from part xxiii. to xxxiv., furnishes proof in abundance of the value of this agent, although it was once held to be an impracticable remedy.

Dr. Owen Rees has shown that the lemon-juice is more apt to fail in *chronic* than *acute* rheumatism; and that in pseudo-rheumatic disease attending what is usually called Bright's kidney affection, and which sometimes complicates spinal disease, the lemon-juice signally fails. But it is decidedly, in his judgment, the most certain remedy for unmixed *acute rheumatism*.

Diluted lemon-juice has proved a good application for the relief of *pruritus* of the scrotum; it should be made morning and evening, the parts having been well washed with soapsuds.

The oil of lemon, in doses of from one to five drops, is sometimes given as a *carminative*.

It is said that overseers and slaves in the far South frequently cure the *bilious fevers* of that country by the use of hot infusions of green lemons and oranges, drank freely after purging with calomel, and rubbing the extremities smartly with the green fruit cut into slices.*

Lemon-juice would seem to be decomposed in the system; for Dr. Rees, who has given it in very large doses, has never known it to increase the acidity of urine, however much it augments the quantity. The matter is certainly involved in obscurity, while we cannot doubt that the remedy is decomposed and new compounds formed out of it.

And in respect of the use of lemon-juice to correct acidity of stomach, as in my own case, there can be no doubt that there is a decomposition of the remedy ultimately, for it does not leave behind a token of any acid product consequent on its use.

The experiments of Dr. Bence Jones show that the action of lemon-juice on the animal system is in all respects identical with that of free *citric acid*. The positive experience of Dr. Lonsdale, who treated scurvy on a broad scale in Cumberland, England, as

* For the removal of *freckles*, so disquieting to many females, the following mixture, known as the *Parisian freckle water*, will be acceptable. It is more safe than some in use:—

Finely powdered alum, an ounce;
Lemon-juice, an ounce;
Rose-water, a pint.

When the solution is complete, apply it two or three times a day.

well as that of other physicians, is in direct confirmation of the position that lemon-juice owes its remedial efficacy to this acid. We think the question is fully settled.

Dr. M. L. Knapp, late Professor of Materia Medica in a Western school, has published several tracts, in which he has ingeniously and forcibly attempted to show that cholera epidemica, cholera infantum, the nursing sore mouth, puerperal anæmia, yellow fever, &c. &c. &c., are only so many forms of *scurvy;* and he thinks that the old writers held substantially the same opinion. Hence his high estimate of lemon-juice, citric acid, orangeade, vinegar, punch, fruits, &c., aided by nutritious soups, beefsteak gravy, &c., as almost infallible remedies. He is also very fond of the free use of sulphate of quinine as an important adjuvant.

In bowel affections he has named the following mixture as first employed to quiet gastric and intestinal irritability, after which the lemon-juice and kindred articles find their proper place:—

℞.—Tinct. rhei comp.
Tinct. catechu,
Mucilag. acaciæ,
Syr. simp. āā ℥i;
Morph. acet. gr. i;
Sod. bicarb.
Ammon. carb. āā ℈i.

Mix.

Of this the sucking mother was ordered a teaspoonful in a little good brandy-toddy every three hours, her infant taking forty drops in a teaspoonful or two of the toddy at like intervals. This treatment, Dr. K. supposed, prepared the way for the exhibition of lemon-juice. He also, at the same time, invigorated the mother with good punch and sulphate of quinine.

The following, which is also a form of lemon-juice practice, was a favorite preparation, viz.:—

℞.—Pulv. cit. acid, ℥i;
Quin. di sulph. grs. xvi;
Morph. sulph. grs. ij;
Spt. vin gall. opt. Oij.

Mix.

For the mother, the dose was a tablespoonful in two or three tablespoonfuls of hot water, sweetened with loaf-sugar, three times a day, viz., at noon, evening, and bedtime; for the infant, teaspoonful doses in the same way. Meanwhile the mother took freely of the best fresh beef, potato-soup highly seasoned with cayenne, &c. Whatever Dr. Knapp's theory may be worth, we think there is a good deal of hard sense in the practice.

LINI USITATISSIMI SEMINA. *Flaxseed. Linseed.*—This needs no description. We introduced it here to speak briefly of the articles commonly called *flaxseed tea*, *flaxseed poultice*, &c. The *demulcent*, *emollient*, and *nutritive* qualities are all familiar to practitioners.

The first article named, viz., flaxseed tea, which is simply a decoction of the seeds, is often badly prepared, and therefore rejected, as it should be, by many who would otherwise readily take it. Instead of throwing the seeds into a vessel of water and boiling for a given time, they should be placed in a small linen, or muslin, or flannel bag, and be suspended in the fluid by means of a string. The vessel should be perfectly clean, and covered during the process. Two or three tablespoonfuls of seeds will suffice for a quart of water, and the latter should be made to boil at least twenty minutes. With this kind of care, instead of a ropy fluid you have a homogeneous, mucilaginous liquid that does not offend the eye nor the taste. If a little lemon syrup or currant jelly, or even vinegar, be added so as to acidulate gently, the decoction will be still more palatable.

The flaxseed tea is very useful in ordinary colds and in disorders of the bowels and kidneys, proving demulcent, emollient, and somewhat nutritive. It may be taken *ad libitum;* but as it is liable to spoil in a warm place, it should be prepared in small quantities at a time.

The poultice is exceedingly soothing by reason of its soft, emollient quality. It is prepared from the seeds and also from the meal, the latter being preferable because it avoids lumps and uneven aspects. Some add the meal to a common bread and milk poultice, while others make the poultice entirely of ground flaxseed. This is boiled in water or milk to a proper consistence, and sweet oil or lard is added to increase the emollient quality. It should be applied twice a day.

The flaxseed oil is sometimes employed alone or with kindred articles, as an emollient injection. The decoction is used in the same way, and both are soothing to the lower bowels, and often act through them on the bladder and other parts very beneficially.

The oil is likewise added to fresh lime-water to form the well-known lime liniment, an excellent application for *burns* and *scalds*. The two should be mixed until a soapy compound is obtained, the bottle being frequently shaken during the process.

LINIMENTS.—These are often very serviceable as external means of affording relief. They are usually compounded of oleaginous matters with some other more medicinal agents, the whole mixture having a decidedly oily aspect. We give a few formulæ that may be useful:—

Iodine Liniment.

℞.—Liniment saponis, ℥i;
Iodin. grs. x.
Mix.

Antispasmodic Liniment.

℞.—Ol. olivar.
Ol. terebinth.
Aq. ammon.
Tinct. opii,
Linim. sapon. āā ℥ss.
Mix.

Turpentine Liniments.

1. ℞.—Aq. ammoniæ, ℥ss;
Ol. olivar.
Ol. terebinth. āā ℥i.
Mix.

2. ℞.—Aq. ammon. ℥i;
Ol. olivar. ℥ij;
Spt. camph. ℥iss;
Spt. terebinth. ℥iij;
Sapon. dur. ℥ss;
Ol. cajeput. ℥i.
Mix.

3. ℞.—Pulv. opii, ℥i;
Pulv. camph. ℥ij;
Aq. ammon. ℥iv;
Spt. terebinth. ℥viij;
Sapon. dur. ℥iv;
Alcohol, ℔iss.
Mix.

4. ℞.—Spt. terebinth. ℥i;
Tinct. canthar. ℥ss;
Aq. ammon. ʒij;
Sapon. dur. ʒi;
Ol. cajeput. ℥ss.
Mix.

Anodyne Liniment.

1. ℞.—Ol. olivar. ℥i;
Aq. ammon. ℥ss;
Morph. sulph. grs. x.
Mix.

2. ℞.—Liniment sapon. ℥i;
Aq. ammon. ℥ss;
Tinct. opii, ℥ss;
Ol. caryoph. ʒi.
Mix.

Compound Soap Liniment.

℞.—Sapon. Castil. ℥i;
Alcohol, ℥vi;
Camphoræ, ℥ss.

Dissolve these by gentle heat; then add

Ol. rosmar. ♐iv;
Ol. cajeput. ♐i;
Aq. ammon. ʒij.
Mix.

Tobacco Liniment.

℞.—Tabac. fol. ℥i;
Adip. suill. ℔i.

Melt, and simmer for fifteen minutes, and strain through flannel.

Rubefacient Liniment.

℞.—Ol. olivar.
Spt. ammon. āā ℥ij;
Camphoræ, ʒss;
Sinap. sem. pulv.
Cayenne Afric. āā ʒi;
Alcohol, ℥ij.
Mix.

Compound Camphor Liniment.

℞.—Pulv. opii, ♐ij;
Camphoræ,
Succini, āā ʒi;
Spt. ammon. ℥vi.
Mix.

Pustulating Liniment.

℞.—Ol. croton tigl. ʒss;
Antimon. tart. ♐ij;
Ol. olivar. ℥i.

Mix. Rub smartly into the skin, guarding carefully the eyes.

Liriodendron Tulipifera. *American Poplar.*—It is named here because it is a native substitute for the Peruvian bark. It is one of our most stately, elegant forest trees, growing to the height of eighty and a hundred feet. It flowers early in May, and when in full bloom presents a very inviting aspect.

The bark of this tree has been the subject of several inaugural theses, the best of which was furnished by the late Professor Emmet, of the University of Virginia, who succeeded in obtain-

ing a peculiar proximate principle to which he gave the name *Liriodendrine.*

The powder of the bark is a decided tonic, proving also occasionally diaphoretic and diuretic. It has been combined with carbonate of iron for making the *tonic powders.* Under its use the tone of the stomach is invigorated, the appetite improved. From thirty to ninety grains may be given to an adult several times a day, in any kind of syrup. A tincture and infusion have also been employed. Sometimes it excited some intestinal disturbance, but that is easily controlled. When neither Peruvian bark nor sulphate of quinine can be procured, a pretty fair substitute will be found in a mixture of this bark with dogwood and snakeroot.

LIVERWORT. *Marchantia Polymorphia.*—I introduce this article not because of any personal acquaintance with it, but simply on the authority of Dr. Shortt, of Edinburgh.

The plant grows in moist, shady places, on the banks of rivers, and is met with at all seasons, though found to be most vigorous near the end of autumn. It has a penetrating and mildly-pungent taste, with a good deal of bitterness. It was formerly deemed an excellent medicine for liver disease, and hence its name. It has been called *aperient, resolvent,* &c. &c., and certainly merits the title of *diuretic.*

Dr. S. called public attention to its powers as an *external* remedy, in a paper first published in the *Edinburgh Medical and Surgical Journal,* affirming that he has for a long time employed it, in the shape of poultice, in the treatment of *dropsies.* He directs two large handfuls of the leaves, carefully picked so as to have the most mature, and these put in a pot containing boiling water. The vessel, covered, is to be placed on a gentle fire to simmer for several hours, fresh water being added sufficient to keep the leaves covered. The mass is then to be beaten into a pulp, and flaxseed-meal to be stirred in, so as to form a poultice. This, while pretty hot, is spread on flannel and applied to the abdomen or legs, according to the location of the dropsy; a bandage is to be employed to keep the poultice in place, and this application is repeated once in twelve hours, until the water is drained off; or, if this result does not come at once, continue for three or four days, to see what will result.

The poultice almost always excites a copious perspiration and a free discharge by the kidneys. In persons of feeble health, feelings of sinking and exhaustion may come on as a consequence of the evacuation; but these can be controlled by teaspoonful doses of sweet spirits of nitre, or volatile aromatic spirit in half that quantity.

The poultice was exclusively relied on by Dr. Shortt to re-

move the effusion, so far as medicine was concerned. The effects were augmented by the free use of warm diluent drinks, by thin chicken broth, &c. &c.; warm clothing and a recumbent posture being also enjoined as long as the application was continued.

The treatment is affirmed to have succeeded best when other means had been tried, fairly, in vain. Some of the reported cases are quite remarkable. A female, aged forty-four, quite emaciated by the repeated use of mercurials, acetate of potash, and other diuretics, submitted to the use of the liverwort poultice. In nine days it effected the discharge of seventy-four pounds and a half of urine, being an average of eight pounds per day. In this case the poultice was laid on the abdomen, for the cure of ascites. The patient being a good deal exhausted, the remedy was laid aside. In a few days it was resumed, and kept on for eighteen days, in which time one hundred and ninety-six pounds of urine came away, being an average of eleven pounds per day. In three months afterward the patient was entirely well, and that, too, without a resort to any other medicine.

Dr. Stevenson, a British surgeon, was requested by Dr. Shortt to give the remedy a fair trial in India. He did so, and with great success.

LOBELIA INFLATA. *Indian Tobacco.*—Savages and empirics have been familiar with this article from time immemorial, but its first introduction into regular practice was by Dr. Cutter, a New England clergyman. The *steam*-doctors claim it as one of *their* medicines, although its virtues were well known prior to the birth of the first patron of the steam system.

It is a very common weed on roadsides and in neglected fields, in most parts of the United States. In the West, almost every boy is familiar with it as a plant, and not less so with its high repute as a remedy in his own neighborhood. It is a biennial plant, varying in height from one to two feet, with bluish-looking flowers and inflated capsules. When bruised or broken, a copious, milky juice flows out. Every portion of the plant is medicinal, and the proper time for gathering is near the close of summer. When the fresh leaf is chewed, it gives a heating and pungent sensation, somewhat like that of green tobacco. If the leaf be held in the mouth for half an hour, or even a few minutes, it induces giddiness, pain of the head, sickness and vomiting. It is *emetic*, *diaphoretic*, *expectorant*, *antispasmodic*, *sedative*, and *poisonous*.

From ten to twenty grains of the powdered leaves, or of the seeds, will act as an emetic in an adult. If given as such when the system is too much excited, the article displays a cumulative quality, and kills by the terrible violence of the vomiting when it does ensue, or by its fatally sedative agency. A case of this

kind happened in the West, in 1832, a few months before the Asiatic cholera made its appearance. A well-known printer, in a very extensive newspaper establishment, was taken ill at midnight, after returning from his *lodge*, where he had passed the evening in apparent good health. A steam-doctor plied him with lobelia, dose after dose, until the man was killed by the physic. The treatment occupied but a few hours, and the event produced quite an uproar among the comrades and friends of the deceased. It was resolved to have a public *post-mortem* examination, which was made in the presence of a large crowd of citizens. Scarce a trace of disease could be found in the stomach or bowels; certainly nothing to account for the result. The appearances were precisely like those seen after death from Asiatic cholera; and if this case had occurred three months later, it would have been chronicled with the daily death-reports of that disease. The rapidity of the case to a fatal issue was so great, and the violence of the action so intense, as to give no opportunity for the development of obvious lesion. The like has been seen frequently after sudden death preceded by intense suffering.

It is quite obvious that a medicine of so much power ought not to be employed by any but the most judicious physicians, and should never be exhibited by ignorant men.

The *nauseant*, and, consequently, *expectorant* action of small doses is generally safe, and often salutary. Hence its adaptedness to ordinary *colds* and *coughs*, in which the lobelia is so frequently employed in domestic practice.

For these ends the tincture is sometimes preferable. I have often used a mixture of equal parts of this tincture and the tincture of sanguinaria Canadensis, with very good effect, for the relief of *chronic bronchitis* and *catarrhal affections*. A teaspoonful of the mixture, two or three times a day, will be a suitable adult dose; and it should be gradually augmented until it induces slight nausea.

The simple tincture is made by digesting four ounces of the seeds or leaves in a quart of alcohol for two weeks. Of the filtered liquor, the adult dose is half an ounce as an emetic, and from one to two drachms as an antispasmodic. Dr. Cartwright, of Mississippi, prefers a *saturated* tincture, made by filling a bottle loosely with the leaves or seeds, and adding of the strongest brandy as much as the bottle will contain. Of this, which makes a very efficient medicine, he gives a teaspoonful every two or three hours, generally in combination with syrup of squill. Dr. Cartwright addressed a letter to one of the editors of the *Medico-Chirurgical Review* some years ago, in which he says, "Lobelia is for inflammations and congestions of the mucous coat of the bronchial tubes just what the lancet and anti-

monials are for inflammation of the serous membranes of the thoracic viscera." This is very high encomium, and plainly teaches the *sedative* property of lobelia.

The tincture, combined with oxymel of squill, has been frequently employed as an expectorant for old persons and children. The same combination has been useful also in *asthmatic disease* with accompanying spasmodic action.

The tincture of lobelia has been much employed by patients who have not sought medical advice to direct them. They have used it in *chronic bronchitis* and *paroxysmal asthma*, and felt sure of deriving benefit from it. It often induces nausea and sense of depression for half an hour following each dose, yet the appetite and digestion seem to be really improved in the end. When the nausea is insufferable, three drops of dilute hydrocyanic acid will check it.—*Lon. Medical Times*, Nov. 12, 1853.

The saturated tincture of lobelia, frequently applied by muslin cloth saturated with it, is affirmed to be more satisfactory, as an application in erysipelas, than iodine, by Dr. Livezey, of Boston. Of course the usual internal means for rectifying the digestive organs must be fully attended to.—*Boston Medical Journal.*

An infusion of the leaves or seeds in hot water has often been substituted for the tincture, and will answer quite as well. Three or four ounces may be added to a quart of boiling water and allowed to stand until cold. The filtered liquor, given in tablespoon doses, will soon vomit an adult. An interval of twenty minutes between the doses is desirable. The second dose will generally operate.

To illustrate the folly of quackery in reference to articles of Materia Medica, I give below an extract from a long statement of reasons for becoming a convert to the Thompsonian or steam system of practice. It is taken from a periodical conducted by a professor in a Western school. The narrator tells the public that he was nearly dead of pulmonary consumption, and that lobelia cured him. The extract runs thus:—"The last day of breaking up my fallow unraveled the whole secret. A near neighbor of mine, a real Thompsonian, who had noticed my great increase of health and strength, happened to come into the field where I was ploughing. I stopped my team, and a conversation commenced on the subject of my recovery, when the gentleman, looking over the ground, not yet ploughed, for some minutes, turned to me and asked if all the field had been covered with the same vegetation then growing there? I answered that it had. Ah! then, said he, you are now compelled to become a Thompsonian in spite of yourself, with all your prejudices to the contrary notwithstanding. I asked him, with some surprise, why he made that assertion. Why, do you not know that that weed is

lobelia? said he. I replied that I did not know it. He then told me it was what had effected my cure, and recommended me to leave the balance of my field, about half an acre, being well covered with this valuable (or, rather, invaluable) weed. My friend then recommended me to walk over this piece of ground every day, and occasionally to lie down and roll about over it. I did so until it became time to expect frost; and, for fear my cure was not perfected, I determined not to lose the benefit of this during the winter. I therefore gathered enough of it to fill a bedtick, on which myself and wife slept all the fall and winter, she not being in very good health. And now, to the astonishment of every one who knows us, we are both in first-rate health and spirits."

Local Bleeding.—This is effected by the use of cups and a scarificator, or by leeches. The latter are always to be preferred when we desire to deplete from the mouth, the eyelids, the lips, the ears, the axillæ, the organs of generation, the anus, &c., where it is impossible to apply cups. But we are often much assisted in our therapeutic intentions by the use of cups, and both modes may be alike efficient in the work of local depletion. It must never be forgotten that the local method is never so proper before as after general depletion in a plethoric, febrile subject. We must first lessen the quantity and momentum of the blood in the vessels by bleeding from the arm, or we shall fail to give relief to a local inflammation by the use of cups or leeches."

Lozenges. *Trochisci*, from a Greek word meaning a wheel.—Lozenges are flat and round, like a wheel. They are compounded of powders and other matters blended with glutinous substances, made into cakes, and dried. This form suits well for some patients; and as the lozenge generally contains some aromatic, it is, on the whole, an agreeable mode of exhibition.

When the mass for lozenges is so glutinous as to stick to the fingers in making it up, the hands may be anointed with some sweet or aromatic oil, or sprinkled with starch or liquorice powder, or wheat flour. In order to dry the lozenges completely, place them on an inverted sieve, in a shady, airy place, and turn them several times in the day. They are best preserved in glass or glazed earthen jars.

We have more than once taken lozenges for the relief of a cold, and have been obviously benefited. The smallness of the dose in each is no objection, because they may be taken repeatedly and without injury.

We give the formulæ for a few of these compounds:—

Tolu Lozenges.—Take two pounds of white sugar, three ounces of cream of tartar, an ounce of starch, half an ounce of tincture of tolu, and as much mucilage of gum tragacanth as may be needful to make a proper mass. Divide into parts, each weighing six grains.

Ipecacuanha Lozenges.—Take of powder of ipecacuanha half an ounce, of sugar fourteen ounces, four ounces of arrow-root, and as much mucilage of gum Arabic or gum tragacanth as may be needful. Mix, and divide into masses of ten grains each. These and the tolu lozenges are *expectorant.*

Lozenges of Liquorice and Opium.—Take of powder of opium half an ounce, liquorice ball, sugar, gum Arabic in powder, of each ten ounces, oil of anise two drachms. Mix, and add water enough to form a mass. Divide into lozenges of six grains. They are *demulcent* and *anodyne.*

Mint Lozenges.—Take of oil of peppermint a drachm, sugar in fine powder a pound, mucilage enough to make a mass. Divide into parts weighing ten grains each. These are *carminative.*

Magnesia Lozenges.—Take of calcined magnesia four ounces, sugar a pound, nutmeg a drachm. Reduce to a fine powder, and make into mass with mucilage. Make into lozenges each weighing ten grains. These are *antacid.*

MAGNESIA.—This was formerly employed as a generic term, to denote any substance that had the power to attract something from the air, as moisture, and was taken originally from *magnes*, a loadstone.

Magnesia is a white, earthy-looking substance, having a metallic base, and being, in fact, an oxide of magnesium. It imparts a sensation of roughness to the fingers, is insipid, inodorous, infusible, attracts water feebly, and yields it again at a red heat.

It is insoluble in water, and yet augments the solubility of camphor in that fluid. It is known in the shops as *pure magnesia*, *magnesia usta*, *calcinata*, *burnt* or *calcined magnesia.* The action of a strong heat expels the carbonic acid from the carbonate of magnesia, and the pure earthy-looking matter is left, on the same principle that pure or quicklime is obtained.

With nitric and muriatic acids, magnesia forms salts that are soluble in alcohol and quite deliquescent. These are not employed in practice. With sulphuric acid, it forms a salt very soluble in water, and much in use in the profession.

The alkalies precipitate magnesia from its salts. But if carbonate of ammonia be added to a solution of a salt of magnesia, there is no precipitate until phosphate of soda is added, and then a copious white powder falls, which is the phosphate of magnesia and ammonia. On this principle we detect the presence of magnesia in mineral and other waters.

If pure magnesia be rubbed with calomel and a little water, a grayish tinge runs through the mass, supposed to depend on the formation of a little protoxide of mercury. Whether this be the fact or no, it is best to mix the usual dose of calomel and magnesia with syrup, and not with water. This avoids the show of a change of color.

In all cases of excessive flatulence with acidity of stomach,

the pure or calcined magnesia is preferable to the carbonate. The latter increases the difficulty, so far as flatulence is concerned, by the evolution of carbonic acid gas by the action of the gastric acid. The magnesia neutralizes the acid, forming a salt that has some cathartic power, and passes off by the bowels. The usual adult dose of the calcined magnesia is a teaspoonful, to be repeated if necessary. It may be taken in water or in milk. Some prefer the latter, rubbing well together and straining through fine gauze. The gritty particles are thus detached, and no injury done to the medicinal property of the dose.

It is well to remember that the frequent use of magnesia or its carbonate may be attended with accumulations in the alimentary canal, which will impact it, and sometimes destroy life. To prevent this accident, a mild yet sufficiently potent cathartic should be occasionally interposed for the purpose of clearing out the bowels.

The physician is liable to imposition in respect of this very simple medicine. At one time there were but two persons in Europe whose *patent* calcined magnesia came to this country, and no one prepared it at home. Now it is probable that twenty establishments have their *pure* article in the market, and the result is an actual increase in the quantity of defective material. It is therefore important to have some convenient method for determining the purity of calcined magnesia. If really destitute of carbonic acid, as it should be, there will be no effervescence on the addition of any acid stronger than the carbonic; even pure acetic acid or strong vinegar may be sufficient. Hydrochloric and sulphuric acid will certainly and instantly decompose the compound if it be a carbonate and not the pure base.

Carbonate of magnesia differs from the article last spoken of in the fact of carbonic acid being part of its composition. It can be readily obtained by the double decomposition of sulphate or muriate of magnesia, and carbonate of potash or soda in solution. One hundred and forty-four grains of crystallized carbonate of soda will decompose one hundred and twenty of crystallized sulphate of magnesia. These salts should be separately dissolved in six times their weight of boiling water; the mixture of the two being afterward boiled for the space of ten minutes, and the copious precipitate well washed with pure water on a clean linen filter, so as to carry off any undecomposed sulphate.

The lump or square magnesia, kept in drug stores, is the carbonate, and differs not at all from the powder, save in form.

The medicinal uses of the pure or calcined magnesia and the carbonate are very much alike. Both have been long employed in the treatment—and prevention, too—of calculous deposits in the shape of urinary sediment, consisting of *uric acid*, or *red*

sand, as it has been called. The continuous action of this medicine, either directly as a chemical agent or in virtue of its power to transform the tissues, has frequently caused a total disappearance of the peculiar color and deposit referred to. Given in doses of from twenty to sixty grains three times a day, or even once a day, it certainly does induce the result named; although I am of opinion that a wiser course is to employ as substitutes lime-water, soda, and potash, occasionally recurring after a time to the magnesia. All act on the same principle, but each with some peculiarity; and each will act the better for being laid aside for a few days. Whether these articles operate primarily on the stomach, and secondarily on the kidneys, or not, is immaterial; we cannot certainly determine the question, nor would it help us much if we could. That the action is in great part chemical, appears from the well-ascertained fact that in all cases of urinary and calculous disease that are benefited by magnesia and kindred articles, the acids do harm, and *vice versâ*. The magnesia preparations not only appear to neutralize the acid, but also to control the acid diathesis.

It will often happen that carbonate of magnesia alone will fail to correct an *acid* and *nauseated stomach* when the object will be gained by adding lime-water. This is one of the numerous illustrations of desirable modification, as the result of combination. A teaspoonful of the carbonate in a wineglass half full of lime-water is an admirable mixture for the purpose named, and is most effective if taken half an hour before a meal.

We may also add the carbonate to aromatic waters and bitter infusions advantageously. Half a drachm in an ounce of compound infusion of gentian, and a few drops of oil of cinnamon, or a tablespoonful of cinnamon tea, will make a very good mixture for persons who have little appetite and some acidity of stomach.

The well-known patent medicine, *Dalby's carminative*, owes its good properties chiefly to magnesia. A little of the carbonate, or calcined article, rubbed with some oil of mint or cinnamon and water will answer quite as well.

Magnesia is occasionally employed to *excoriated surfaces*, especially in infants. It is far better than many of the substitutes in use, because it is perfectly safe, while other articles are often pernicious. It acts as an *absorbent* of the moisture of the parts, and also by protecting them from the external air.

In our boyhood we heard many a suggestion as to the sudden cure of *warts*, and once we were silly enough to test an old woman's hint as to the efficacy of a small bit of meat snatched, unseen, from a butcher's stall. This was rubbed over the warts, and they disappeared after a time, how long we do not remember.

It is likely they went irrespective of the beef appliance. In a foreign journal for 1853, we find a notice of the removal of warts by the internal use of the common carbonate of magnesia, in teaspoonful doses, night and morning. The excrescences dried up and fell off in fragments, not a trace being left at the end of three weeks. Many a young lady would gladly try this simple remedy.

Bi-carbonate, or *super*-carbonate of magnesia is the carbonate with the addition of another equivalent of carbonic acid, which renders it quite soluble in water, while the simple carbonate is very sparingly so. A stream of carbonic acid gas passed freely into water in which magnesia is suspended at length produces the bi-salt. The solid bi-carbonate is readily soluble in fifty parts of cold water, while the carbonate requires twenty-five hundred parts. The *aerated magnesian water*, formerly kept in fountains in the apothecary shops, was a watery solution of this salt, a pint of which contained a drachm of magnesia, and therefore proved mildly aperient. It was a much more convenient and agreeable method for the exhibition of magnesia than any of its predecessors. The sparkling quality of the water resembled it to the common soda water, and increased its agreeable qualities. It is to be regretted that this water has gone so generally into disuse. Many things are retained that do not possess a thousandth part of its real value.

Both magnesia and its carbonate may be made more active as cathartics by the addition of two drachms of the sulphate of magnesia. When added to water and well mixed, the ingredients make the *white dose*, so popular in past years. The obvious whiteness of the mixture gave it the familiar name. It is well suited to cases of gastric acidity associated with habitual costiveness.

The incompatibles of the carbonate and bi-carbonate are the acids and acidulous salts, neutral salts, alum, nitrate of silver, corrosive sublimate, sugar of lead, salts of copper, zinc, and iron.

Sulphate of magnesia is the well-known *Epsom salt*. The old name, *sal catharticum amarum*, indicates its *bitter* quality. It retains its long-established character as the best of all our saline cathartics, and is in general use. We can make it by due admixture of diluted sulphuric acid and carbonate of magnesia, but that is not the usual mode. It is largely procured from the liquor that remains after the separation of common salt from sea-water. This liquor is boiled to separate a further portion of common salt, after which crystals of sulphate of magnesia are deposited, as the fluid cools, and these are purified by repeated solution and crystallization. But the salt is found in large quantities, not only in solution, but as a salt. The famous *Epsom*

springs are composed almost exclusively of this salt. In several of the United States, the sulphate, nearly pure, is found in great quantities in caves.

The close resemblance of this salt, as usually met with, and oxalic acid, has been the occasion of fatal mistakes. The latter has been dealt out for the purging salt, and death has been the consequence in repeated instances, of which the journals furnish abundant details. A very little care would prevent such blunders. The *taste* of the two is widely dissimilar, the one being intensely sour, the other unpleasantly bitter. This alone should suffice. The acid is wholly dissipated by a red heat, while the Epsom salt is unchanged. The latter has no effect on ink stains, which are soon obliterated by the former.

The bitterness of the salt has made it objectionable, and we must when practicable accommodate the taste of our patients, especially while the infinitesimal practice rests on no other foundation. A very small quantity of pure tannin will effectually remove the bitter taste from Epsom salt; and on the same principle strong coffee will have the same effect, for it contains tannin. In place of dissolving a half-ounce or an ounce of the salt in water, let it be added to a cup half full of strong coffee. If any prefer the watery solution, let half a lemon be squeezed into the fluid mixture, and the bitter taste will be removed. Cremor tartar, and even strong vinegar, will have a like effect, though not to the same extent. We shall name presently a new mode of preparing this salt which entirely obviates the objection made touching its bitterness.

For some adults, a teaspoonful of the salt will generally suffice to procure gentle evacuations. Others may require a half-ounce or an ounce. Even in the largest dose named it is a safe medicine, and seldom procrastinates the purgation beyond three or four motions. A half-ounce or an ounce in a quart of thin gruel, milk warm, will be found a good expedient to keep up purgation for twelve hours, by exhibiting wineglass doses every hour or two. In cases of high arterial excitement this operation proves very beneficial by its sedative agency. Here the effect is also *hydragogue.**

Dr. Henry, an Irish physician, some years ago published an article in the *Medico-Chirurgical Review*, setting forth a new plan for the exhibition of sulphate of magnesia; and having prepared and used the medicine according to his suggestions, I

* It is well known that the action of a purgative dose of Epsom or Glauber's salt is materially aided by any condition that favors absorption. A small dose will suffice if given on an empty stomach before breakfast. And combination with a minute proportion of tartar emetic, which aids absorption by relaxing the vessels, will often powerfully assist the action of a cathartic. A quarter-grain will often meet this end.

can speak of it in very favorable terms. His plan is thus:— Saturate any quantity of water with Epsom salt and filter through paper. To the clear solution add diluted sulphuric acid (an ounce and a half of acid to fourteen and a half of water) in the proportion of one ounce to every seven ounces of the solution. The product is perfectly clear, and very slightly acidulous, but wholly void of bitterness. The dose is a tablespoonful in a wineglassful of water, which may be repeated if occasion require. Having taken the dose on several occasions, I can speak of its pleasant and effective qualities from personal knowledge, and therefore advise practitioners to give it a trial. Each tablespoon dose contains two drachms of the salt and half a drachm of diluted sulphuric acid.

Epsom salt is a good medicine to follow a dose of calomel, to accelerate the operation of the latter. If the calomel be given at bedtime and purging do not follow by the next morning, the usual dose of the salt may be administered. In this way it is often very useful in febrile diseases.

We also add Epsom salt advantageously to infusion of senna, cremor tartar, and cardamon seeds. The French are partial to such combinations, and they are sometimes desirable; they secure thorough evacuations better than the salt alone. A drachm or two of common salt added to a watery solution of the same quantity of Epsom salt will give an energetic purgative draught, and yet free of any drastic quality.

Epsom salt is one of the oldest medicines for the treatment of *dysentery*. Heberden gave a drachm of it with a grain of ipecacuanha, every six hours, in some simple aromatic water. The bloody discharges soon ceased, tenesmus vanished, and the patient promptly recovered.

Citrate of magnesia has recently been highly praised as a cathartic by a French practitioner, whose formula and mode of administration were noticed in the *American Journal of Medical Sciences* for October, 1847. The preparation was formed in order to obviate the bitterness of Epsom salt, and to furnish a mild, agreeable cathartic. The citrate is made by the double decomposition of sulphate of magnesia and citrate of soda, or by saturating citric acid with carbonate of magnesia. The mode of administration is thus:—

Take of citrate of magnesia, an ounce and a quarter;*
Citric acid, two ounces and a half;
Simple syrup, four ounces;
Essence of orange, two drachms;
Carbonic acid water, nearly enough to fill a common soda-water bottle, (a pint.)

* The original prescription is in *grammes*, which I have substituted as above.

The citrate and citric acid being reduced to fine powder, and with the syrup and essence placed in the bottle, are ready for the carbonated water. The happiest mode of filling it would be by means of a common fountain of Seltzer water. The bottle should be corked instantly, very tight. The citrate in the mixture is about equal to an ounce of Epsom salt, and the taste of the solution resembles that of lemonade. It causes no thirst, and very seldom any uneasiness in its cathartic action.

I have never made a trial of this preparation, but cannot doubt that it will prove a happy substitute for Epsom salt and other magnesian compounds, and there may be patients to whose cases it would be peculiarly suited.

MAGNOLIA.—The *U. S. Pharmacopœia* has selected as medicinal the *glauca*,† *acuminata*, and *tripetala*, regarding them as possessed of like properties. They are alike also in the shining quality of their leaves and the exceedingly odorous nature of their flowers. My chief reason for introducing the magnolia here is because it may be usefully employed as a substitute for Peruvian bark.

Dr. Floyd, of Kentucky, and a graduate of the University of Pennsylvania, published an inaugural thesis on this article in 1806, which may be seen in Dr. Caldwell's volumes of *Select Theses*. The naked fact that this paper was chosen as a part of the volumes referred to is some evidence of its value. Two varieties of the magnolia are especially noticed by Dr. F., viz., the *acuminata* and *tripetala*. The latter is most abundant in Kentucky, Tennessee, Alabama, Georgia, and the Carolinas, where it is called the *umbrella-tree*, because of a peculiar arrangement of the leaves. It is known also as the *big-leaf*, *elk-wood*, *Indian bark*, &c. &c. It grows to the height of fifty, and even eighty feet, has a slender trunk, smooth bark, with very numerous branches and exceedingly large leaves; some of these are eighteen inches long and eight wide. The flowers are large and white, having a very penetrating odor, which, though grateful to many persons, is offensive to others. The whole aspect of the tree is highly ornamental.

The magnolia *acuminata* is most abundant in the Northern States, though found elsewhere. It is known by the names *long-leaved mountain magnolia*, *cucumber tree*, and *cypress tree*. The latter name is peculiar to the State of New York. The tree grows sixty feet high, and is nearly two feet in diameter; near to the summit it divides into several branches, and abounds in large, oblong, sharp-pointed leaves. The flowers have a bluish tinge, and are very large; the seed-vessels resemble a cucumber,

† The *magnolia glauca* is familiarly called *sassafras swamp*.

and hence one of the names. They have a fine crimson color when perfectly ripe, and, as they hang down, display the seed suspended by cotton fibres, and give to the whole a beautiful aspect.

In the earliest periods of the aboriginal history of this country, the magnolias were employed in the various febrile diseases to which the natives were subject, and especially for the cure of *intermittents*. The details furnished by Dr. Floyd show quite conclusively that intermittents were frequently cured by the magnolia after cinchona had failed; and this fact alone proves the value of the article. It is stated that the bark always manifests a considerable degree of diaphoretic action, which favors its curative agency. It is less apt to disagree with the stomach and bowels and to induce fulness of the head than the Peruvian bark, and can be continued a longer time with more safety in all respects. In *dyspepsia* dependent on loss of tone in the stomach, magnolia was found to be a very useful medicine, acting evidently as a tonic and augmenting the digestive powers.

Dr. Floyd made many experiments with the bark in *powder*, *tincture*, and *infusion*. The dose of the powder was from a half to a whole drachm three or four times a day, and may be conveniently taken in syrup of lemon or ginger. An ounce added to a pint of boiling water will make a sufficiently strong infusion, of which a wineglassful may be taken six or eight times a day. The same quantity of the powder and a pint of brandy will give a tincture at the end of a week or ten days, which may be taken in tablespoon doses three times a day. The tincture and hot infusion have been employed in chronic *rheumatism*.

Dr. Floyd speaks also of a resinous extract which he employed occasionally, though he appears to have regarded the powder as the best form of administration.

On the authority of the same gentleman I am happy to add another feature in the history of magnolia that is really valuable and should be more generally known and appreciated. "In early life," says Dr. F., "I was much addicted to the use of tobacco, and especially to chewing the weed. I began to be seriously apprehensive that I should never get rid of the habit. Often have I thrown all my tobacco away while riding, resolving never to taste it again; but I felt wretched without it. At last I tried the magnolia tripelata bark as a substitute, and filled my tobacco box with it cut into small pieces; I found it quite agreeable, and soon became entirely satisfied with my new expedient, and thus got rid of a bad habit entirely." If Dr. F., who was born and reared in a tobacco-growing State, and accustomed to the weed from early boyhood, could so easily cure himself of a pernicious practice, who ought to despair?

MANGANESE, THE OXIDE OF.—It was observed that the workmen in the manganese mines of Macon, in France, uniformly escaped the *itch*, and that such persons as went to the mines as new hands, having the disease on them, were soon cured, merely by the circumstances of the place. Hence the fine powder of the oxide was resorted to as a remedy for the affection elsewhere. Six parts were rubbed with sixteen of lard to make an ointment the daily application of which for a short time effected a cure. As the fact was long ago stated in *Tilloch's Philosophical Magazine*, vol. vii., it is wonderful that medical men have not paid more attention to it. The remedy is simple, cheap, and easily carried out.

The sulphate of manganese was found rather accidentally to possess cathartic properties. Mr. Thompson, a surgeon of the Glasgow Infirmary, has employed it thus for several years, and finds it to act very much like Glauber and Epsom salt, and in pretty much the same dose. It is readily obtained by the action of diluted sulphuric acid on the common black oxide.

M. Hannon has paid special attention recently to the medicinal powers of manganese, in consequence of the discovery of this metal in the blood by M. Millon, who presented a memoir on the subject to the *Académie des Sciences*, of Paris. Hannon has made experiments on himself and others, proving conclusively the power of manganese to improve the color of anæmic persons, just as iron has long been known to do. The result has been the development of important therapeutic resources, fully equal, and in some respects superior, to the ferruginous medicines so long known to the profession. In addition to the oxide and sulphate, we now have the carbonate, malate, tartrate, phosphate, and iodide.

It is stated as among the prominent advantages of manganese over iron that its preparations may be combined with all the vegetable tonics and astringents without any risk of chemical incompatibility.

The carbonate is prepared by dissolving seventeen ounces of the pure sulphate and nineteen ounces of carbonate of soda in a sufficient quantity of water. Double decomposition ensues, and the precipitate is collected on a cloth saturated with honey. It is then mixed with ten ounces of honey, and rapidly evaporated to a proper consistence for making pills. The saccharine matter is necessary to prevent the proto-carbonate from being changed into per-carbonate of manganese. The dose is from four to ten pills, each of four grains, to be given daily to chlorotic girls who have not been benefited by iron. The further oxidation of the manganese is also prevented by adding fresh charcoal to the

pills. Two weeks suffice in most cases for the restoration of the natural color and the general vigor.

The malate is procured by acting on the carbonate with malic acid. It is called an eligible preparation, the dose of which is from two to five grains in the form of pill. A *syrup* of the malate is made by combining an ounce of the malate and two drachms of the essence of lemon with sixteen ounces of simple syrup. An ounce of this syrup contains twenty-nine grains of the malate of manganese, so that the dose is about a teaspoonful. *Pills* are made by rubbing fifteen grains of the malate with as much powdered Peruvian bark, and enough honey to form the mass, which is to be divided into twenty pills. To form *lozenges* rub an ounce of the malate with eleven ounces of sugar and a sufficient quantity of mucilage of gum Arabic. Divide into lozenges of twelve grains each, and there will be a grain of malate of manganese in each lozenge.

The tartrate is prepared in the same way as the malate, substituting tartaric for malic acid. It may be employed for the preparation of syrup, pills, and lozenges, as the malate. But a very highly tonic syrup has been formed with it, as follows:—

℞.—Syrup tolu, ℥xvij;
Ext. rhatan. ʒiiss;
Tart. mangan. ʒiiss.

Mix well together, and give to an adult four or five teaspoonsfuls daily.

Phosphate of manganese is best made by dropping a solution of phosphate of soda into a solution of sulphate of manganese. Collect the precipitate on paper, dry, and put away in close bottles. To make the pills, rub a drachm and a half with half a drachm of Peruvian bark, and a sufficient quantity of the syrup of catechu or other syrup to make a mass. Divide into pills of four grains each. The syrup is thus prepared:—

℞.—Phosph. mangan. ʒss;
Syrup tolu, ℥iij;
" cinchon. ℥v;
Ess. limon. ʒiss;
Pulv. g. Arab. ℈i.

Rub well together with as little delay as possible, and keep in a well-stoppered bottle. The dose is a teaspoonful.

To make lozenges, rub an ounce of the phosphate with twelve ounces of sugar and divide into masses of twelve grains each. Every lozenge should contain a grain of the phosphate.

The *iodide* of manganese is prepared by digesting the recently-prepared carbonate with hydriodic acid, filtering and evaporating, at the same time preventing the access of air as far as practicable. Or it may be made by mixing an ounce of iodide of potassium with as much sulphate of manganese, both as dry as

possible and in the state of powder. Then make it into pill-mass with honey, and divide into pills of four grains each. The dose is one pill daily, increasing gradually to six pills per day. Omit for eight days, and resume the dose as at first. The *syrup* of the iodide is made by adding concentrated hydriodic acid to a drachm of perfectly pure hydrated carbonate of manganese until complete solution is effected, then add seventeen ounces of the syrup of sarsaparilla. The dose is from two to six spoonfuls daily.

M. Hannon proposes, where iron alone has not succeeded, to combine the two metals, thus:—

℞.—Sulph. ferri. cryst. ℥xiij;
" mangan. pur. ℥iiiss;
Carb. sod. pur. ℥viiss;
Mellis, ℥x.

Mix well together, adding syrup if needful to form a mass, which divide into pills of four grains each.

The dose is from two to ten pills daily.

It is also suggested to prescribe the insoluble preparations first, as the carbonate, phosphate, and oxide, and afterward the more soluble, as the tartrate, malate, &c. &c. As these preparations are more readily assimilated than those of iron, it is not necessary to exhibit them for so long a time as the preparations of iron. It is said that in the depraved state of the blood succeeding intermittent fevers the salts of manganese are useful; and it is held to be the most certain remedy for preventing a return of the attacks. Enlargement of the spleen is promptly reduced by the iodide with syrup of cinchona. (See *Braithwaite's Retrospect*, part xx.)

Maranta Arundinacea. *Arrow-root.*—The juice of this plant was employed by the Indians to extract the poison from parts wounded by poisoned arrows, and hence the name arrow-root. The substance sold under this appellation is a true fecula or starch, obtained from the roots a year old. These are well washed and beaten to a pulp in wooden mortars. The fibrous mass being thoroughly squeezed, a milky liquid passes, which after filtration deposits a white mass, which is the arrow-root. It is again washed with pure water, and dried in the sun. This is the genuine *West India*, *Bermuda*, or *Jamaica* arrow-root, and is an excellent article of diet for sick persons.

What is called the *East India* arrow-root is seldom seen in this country, because of a plentiful supply of the article just spoken of, and also in consequence of a large quantity of *potato arrow-root* manufactured in this country and very much in use. The potato contains a large amount of fecula or starch, and yields it readily. It makes a fair article of diet, but is not so

good for delicate females nor for young children as the *Bermuda* arrow-root, which commands a much higher price.

Arrow-root contains a good deal of nutriment suitable for the sick in a small bulk; it is very bland and inoffensive. Boiled in water it is converted into a sort of jelly not unlike starch. A dessertspoonful will make a half-pint of the desired food. Rub it with a little water to make a paste, and add a half-pint of boiling water. Place the vessel on red-hot coals to boil for a few minutes, stirring briskly all the while. When cool add sugar and nutmeg, lemon or ginger syrup, as may be most agreeable. Sometimes I have boiled a piece of cinnamon in the mixture, and thus pleasantly aromatized it.

We can employ the arrow-root also as an injection, and its soothing agency is often valuable. We can make it the vehicle, too, of anodynes and other articles that we may not desire to exhibit by the mouth.

MASTIC. (See *Pistacia Lentiscus.*)

MATICA. *Matico. Piper Angustifolium. The leaves.*—The first American notice of this article was by Dr. Ruschenberger, a surgeon in the United States Navy, who acquired a knowledge of it in 1834, while on a voyage on the Pacific coast. The full account can be seen in his published narrative.

It would seem that the natives of Peru apply the term matico to the leaves of several different vegetables, and hence the subject is involved in some confusion. The appellation is probably given more generally, however, to the *piper angustifolium*, which is said to be not unlike cubebs in point of odor and taste.

The principal therapeutic property is its *astringency*, which does not depend entirely on tannin, for that has been detected in very minute quantity. We know that the presence of tannin is not essential to astringent properties, since we find these in alum and sugar of lead. The plant is certainly in high estimation with the natives of South America on account of its power to arrest *hemorrhages* and other *profluvia;* hence it has been designated as a *styptic.*

Mr. Horne, of London, speaks in the highest terms of the styptic powers of matico administered internally. He regards it as decidedly superior to all other astringents and styptics. He refers to his success in alarming hemorrhage from the nose, uterine hemorrhage, and bleeding after the extraction of teeth. (See *Braithwaite*, part xix. p. 144.)

Dr. Lane, who furnished some account of it in the *London Lancet* for Oct. 1843, made a tincture and an infusion of the matico leaves, or those of the *piper angustifolium*, which are said to be from three to six inches long and an inch wide. The infusion was made of an ounce of the leaves digested during two

hours in a pint of boiling water, in a close-covered vessel, and then strained. To make the tincture, he put into a pint of brandy two and a half ounces of the leaves, macerating for the space of two weeks, and then filtering through paper. The dose of the infusion is from one to three ounces; of the tincture, from one to three drachms.

The infusion and tincture were also employed in the shape of injection, in *leucorrhœa*, *menorrhagia*, *diabetes*, &c. &c.

May Apple. *Mandrake. Podophyllum Peltatum.*—The term *May apple* refers to the fruit of the plant known in all parts of the United States, very grateful to many persons, and as much disliked by others. Children reared in country places are very fond of it, and wander into woodlands to pluck it at the season of maturity. The plant rarely grows over eighteen inches high, and is remarkable for having but two long leaves, with a single flower, which is large, white, and rather fragrant. The fruit does not ripen in May, as its name imports, but early in August or late in July in some parts of the country, and not before September in others. It is nearly oval, of a pretty lemon hue, quite soft, and containing a thick mucilaginous pulp and a good deal of saccharine matter. If eaten freely it acts gently on the bowels; but I never heard of any injurious effect, even when greedily consumed.

Something has been said of a narcotic property in the leaves, but no fact in that relation has ever fallen under my notice, and I have had abundant opportunities for learning everything appertaining to its history.

The properties of the root vary as it is quite fresh or dry. If the juice be forced out of the young roots as they are taken from the ground, it will be found to possess active powers. Applied to a common ulcer it is evidently *escharotic;* and I have been told that, swallowed in tablespoonful portions, it manifests symptoms of *irritant poisoning*. The dry root loses all this juicy matter, is about as thick as a goose-quill, of a blackish-brown exterior and a dirty white within, and is corrugated with knots here and there. It has a faint, unpleasant odor, somewhat like that of ipecacuanha, and a bitterish, blended with a sort of sweetish taste.

The term *mandrake* is very commonly given to the May apple in certain parts of the western country; and the botanical stores in that region label the drawers containing the article with the one as often as with the other title. It is evidently a different article from the mandrake of Asia.

The Indians were well acquainted with the cathartic properties of this plant long before the settlement of America by the whites; and although they held it in high esteem as an *anthelmintic*, it is

altogether probable that this property depended entirely on its decidedly purgative action. No one now regards it as a vermifuge in any other sense.

The root is among the most difficult vegetables to pulverize, or even to grind into a fine powder. This is the form generally preferred, and it is certainly by far the best substitute for jalap that we possess. Its action is very much like that of jalap, though a little more drastic when given alone. A very good modification is effected by the addition of cremor tartar, which makes it act more pleasantly, but giving it the property of a *hydragogue*. It is also modified advantageously by the addition of a few grains of calomel. Five or eight of the latter and twenty of May apple constitute an effective dose, and is best given in syrup.

It is undoubtedly one of the best of our indigenous cathartics, and may well take the place of jalap in the shops of country practitioners. The Wyandotte Indians affirm that a careful roasting of the root takes away its griping quality; but this needs confirmation. We name an additional use of the plant by these Indians, viz., for the cure of *deafness*. They apply the fresh juice of the recent roots to the ear, on cotton or sponge.

Mr. Barclay, in his notices of the *Diseases of Syria and Arabia*, in the *N. Amer. Med.-Chir. Rev.* for September, details the poisonous effects of May apple root on a Scotch gentleman, who felt great anxiety to know whether it could be eaten with safety. The root, cut in slices, was boiled some ten hours, without being much softened. The water was made as black as ink by the process, owing to the action of tannin on the iron vessel. The slices were then fried in butter and served up at tea, and although the bitter taste prevented him from eating freely of it, yet he swallowed enough to render him very comatose. In bed, the narcotic action was decidedly augmented. In short, the man was evidently in a state of undeniable mental aberration, not very unlike that of delirium tremens. His pulse beat 140 in the minute, and he talked incessantly of the serious losses he had sustained by the fancied robbers with whom he had been battling for hours. Being of very full habit, blood was drawn freely from the arm, dry cupping was applied to the spine, and he was freely purged with croton oil. The pupils continued to be dilated for many days, and it was nearly a week before he was well.

MEAT BISCUIT. *A new article of food.*—Mr. Gail Borden, Jr., of Galveston, Texas, has taken out a patent for a process combining in a cheap, convenient, and portable form all the nutritive portions of animal and farinaceous food. His invention has the further advantages that all refuse, excrementitious

and superfluous matters are rejected; and that the meat biscuit—for so Mr. Borden denominates his prepared article—can be preserved *fresh*, without condiments or preservatives of any kind, for years, and in all climates; care only being taken that it be kept dry. From several satisfactory trials, it is proved that Mr. Borden's process is equally adapted for combining any farina, flour or meal, with any of the meats of the animal kingdom used by man for food; but he has hitherto confined himself to combining wheat flour with the flesh of neat cattle.

Dr. Ashbel Smith, of Texas, well known in the political as well as in the medical world, thus describes the mode of preparing, and the uses of this new article of food:—

"The nutritive portions of the beef or other meat, immediately on its being slaughtered, are by long boiling separated from the bones and fibrous and cartilaginous matters; the water holding the nutritious matters in solution is evaporated till it becomes thick; this is then made into a dough with firm wheaten flour, the dough rolled and cut into the form of biscuit, and then dried or baked in an oven at a moderate heat. The cooking, both of the flour and the animal food, is thus complete. The meat biscuit thus prepared have the appearance and firmness of the finest crackers or navy bread, being as dry, and breaking or pulverizing as readily as the most carefully-made table crackers. The article is preserved in the form of biscuit, or reduced to a coarse flour or meal. It is best kept in tin cases hermetically soldered up; the exclusion of air is not important; humidity alone is to be guarded against. I have seen some of the biscuit perfectly fresh and sound that have been hanging in sacks since last July in Mr. Borden's kitchen; and it is to be borne in mind that in this climate articles contract moisture and moulder promptly unless kept dry by artificial heat.

"For making soup of the meat biscuit, a batter is first made of the pulverized biscuit and cold water; this is stirred into boiling water, the boiling is continued some ten or twenty minutes, salt, pepper, and other condiments are added to suit the taste, and the soup is ready for the table. I have eaten the soup several times; it has the fresh, *lively*, *clean*, and thoroughly-done or cooked flavor that used to form the charm of the soups of the Rocher de Cancale. It is perfectly free from that vapid, unctuous, stale taste which characterizes all prepared soups I have hitherto tried at sea and elsewhere. Those chemical changes in food which, in common language, we denominate *cooking*, have been perfectly effected in Mr. Borden's biscuit by the long-continued boiling at first, and the subsequent baking or roasting. The soup prepared of it is thus ready to be absorbed into the system without loss,

and without tedious digestion in the alimentary canal, and is in the highest degree nutritious and invigorating.

"I might here insist on the very great conveniences of Mr. B.'s meat biscuit arising from its dryness. For long voyages, it is best preserved in soldered tin cases or tight casks; but it may be carried in sacks, suspended from one's saddle-bow, for weeks or months, over the prairies, or through the desert, without risk of spoiling, using care to keep it dry.

"As the meat biscuit requires only ten to twenty minutes to be made into a hot, delicious soup, with the aid of fire and water only, its advantages for family use, for hospitals, at sea, and on long journeys over land, and wherever it is desirable to prepare food promptly, must be obvious."

We have not had an opportunity of examining this article, but are disposed to think favorably of it as a valuable addition to our dietetics.

MEL.—This is the well-known saccharine secretion from the honey-bee. As a matter of course honey will partake, more or less, of the properties of the plants whence the bees have gathered it, and hence we hear, occasionally, of *poisonous* honey. Diluted with water, honey soon undergoes vinous fermentation, and furnishes the pleasant beverage known as hydromel, or *mead*.

Honey is demulcent, laxative, and expectorant. It is largely employed in gargles, and a constituent of several useful compounds. Recently, it has been spoken of as well suited to make pill masses when it is desirable to avoid hardness in the pills. It insures a comparatively soft pill, no matter how long the pills are on hand.

MENTHA.—The various kinds of mint are so well known and appreciated by medical men and others as to require no special notice here. In the form of infusion, poultice, or fomentation, or in the shape of oil and essence, the mints are justly regarded as good domestic remedies. They are *carminative*, *stimulant*, *antispasmodic*, and *anthelmintic*. Some persons regard them as *emmenagogue* also.

MESMERISM. (See *Electricity*.)

MILK.—In the article on *Diet* we have noticed the use of milk as a part of food. We have no doubt that sound, healthful milk is the best food for young children, and an excellent substitute for tea and coffee. In reference to adults not early accustomed to it, much will depend on peculiarity of constitution; and individual circumstances must direct.

We propose now to speak of milk as it is sometimes met with in various places. That it may be poisoned, even without criminal design, is now well understood. The leaden milk-pans in use in Europe, and to some extent in this country, have often im-

parted a deleterious quality to cream and consequently to butter. Many facts directly in point could be cited from the best authorities.

Among the most fruitful sources of injury to milk is that agent, whatever it be, that gives rise to the disease so common to the western country, and called *milk-sickness*. This unexplained source of mischief has perplexed not only the common people, but men of science, all over our own country, and not less the learned and unlearned of Europe. Hence the inaugural dissertations that have been repeatedly written by candidates for graduation in medicine, the numerous essays of practicing physicians in various sections of the Union, and the elaborate disquisitions of eminent Germans and Frenchmen on this recondite question. And yet the darkness that envelops it is as dense as ever; and we see not that science promises much to dissipate the gloom.

Christison justly remarks, as others had done before, "That the milk of the cow, the ewe, and the goat may act like a virulent poison, although no mineral or other deleterious impregnation could be detected in it; and these effects have been vaguely and variously ascribed to the animal having been diseased, or to its having been fed on acrid vegetables, which enter the milk without injuring the animal necessarily." And Orfila, to whom, in conjunction with Marc, was intrusted the examination of goat's milk that had proved poisonous to many persons, reported "That no mineral poison could be detected; that none of the usual explanations were satisfactory; and that the *poisonous change in the milk should be ascribed to new principles, formed or developed by a vital process.*"

The conclusions just stated are, it may be, correct; yet there is reason to believe that the poison may be derived from some kind of vegetable matter which could not be detected by chemical tests. Dr. Westrumb, who wrote on the poison of cheese, held this opinion, and conjectured that the milk was poisoned by the cattle partaking of a species of spurge (*Euphorbia esula*) which, agreeably to Viridet, caused certain fields in the neighborhood of Embrim to be abandoned by the shepherds because it rendered the cow's milk useless. The same writer also observes "That the cows would not touch this plant so long as wholesome pasture was within their range."

The symptoms in the cases already referred to as having occurred in France were those often seen in violent cholera. At Herford, Westphalia, where, according to *Rust's Magazine* for 1828, a woman and her five children were poisoned with goat's buttermilk, sent to them by a charitable neighbor, the symptoms were violent pukings, dilated pupils, the eyelids half closed, pulse

small, hard, and slow, epigastrium tumid, abdomen contracted, bowels unmoved. These, as will be seen, were not unlike the symptoms of milk-sickness in this country. Lukewarm water was given to increase the vomiting, after which two ounces of medicated soap, dissolved in a pint of water, with the addition of an ounce of almond syrup, were administered, and the bodies of the patients were washed with vinegar and spirits. In ten hours all the patients had recovered.

A most careful examination of a portion of the buttermilk that had poisoned the family failed to detect any trace of mineral poison; and the physician attributed the mischief to some narcotic herb, probably the *ethusa cynapium*, or fool's parsley.

I have been at some pains to compare a thesis, written by Dr. Read, of Ohio, who graduated at the Medical College of Ohio in 1832, with another thesis written by Dr. Simpson, of Kentucky, who graduated at Transylvania University in 1839. Both treat of *milk-sickness;* and although entirely unknown to each other, their statements, professedly drawn from personal experience and actual observation, very closely agree. Both assign the deleterious agent in milk to some vegetable consumed by the cows in *new* lands; and they testify that the effect fails when the lands have long been under cultivation. This statement accords with the great mass of evidence throughout the world where the phenomena have been noticed. Dr. Simpson and others object to the *miasmatic doctrine* contended for by some in accounting for milk-sickness, because, as they allege, if cattle be placed on two distant fields on the same farm, the one subject to cultivation for several years, the other in a wild state and full of native vegetation, those in the latter will be sickened, while those in the former will retain their accustomed health, although both be precisely alike as to the influence of the usual sources of miasmatic exhalations.

In 1833, two citizens of Kentucky came to Cincinnati, anxiously seeking the cause of a terrible devastation among cattle and human beings in their neighborhood, which they supposed could be detected in the water of which the animals and others drank. They handed me a jug full of the water, which was perfectly limpid, insipid, inodorous, and without sediment. The disease complained of was the *milk-sickness*, and the water was imagined to be poisoned with arsenic in some way or other. Yet it was not possible to detect any sort of poisonous matter; in fact, the water was of the purest kind. I gave it as my opinion then, and still believe, that the milk had been deteriorated by some unknown and not discoverable agent belonging to the vegetable kingdom. When I say "not discoverable," I refer to the

action of tests, for I fondly hope that the source of this poison is yet to be ascertained.

I have never witnessed the disease called *milk-sickness;* but as it is most probably a form of *gastro-enteritis*, it should be treated as that disease is generally managed. In mild cases, such as those referred to above, in *Rust's Magazine*, a very simple treatment, as there stated, will suffice.

My own opinion of the source of this peculiar *milk-sickness* is that it depends on the same agency, modified, no doubt, that gives rise to autumnal fevers generally. This view has been strengthened by the perusal of Baron Larrey's description of a fatal epidemic among cattle, recorded in the first volume of his *Memoirs*, page 84, &c. I do not remember to have seen this paper referred to by any writer on milk-sickness, though I have not been able to read all that has been published on the subject. But I have no doubt that the disease described by Larrey, although somewhat changed in character by climate, was truly and essentially the same disease that we call *milk-sickness* for want of a better term. The specific poison that generated it we know not, because we are yet ignorant of the essential nature of the poison that gives birth to epidemic intermittents and remittents.

"The disease was at its acme when I arrived at Udino, in 1793. It assumed all the characters of an inflammatory *anthracia*, or malignant fever. It commenced by a general heat, which was particularly observable in the horns, dryness of the nostrils, bristling of the hair, hardness of the skin, and obstinate constipation. The sick animal drooped its head, appeared agitated, the eyes became red and haggard. This fever proceeded, from the commencement of the symptoms, with more or less rapidity, according to the age of the animal or its irritability.

"After this first stage the abdomen became inflated, the hair dry and stiff, and easily disengaged by the fingers; the strength failed; the ears became withered and pendent; cutaneous perspiration ceased; the breath grew fetid, respiration difficult; the animal tottered, and if it fell had not power to rise. Sometimes, at this second period, the intestines relaxed spontaneously for the copious discharge of a black, fetid excrement. To this succeeded an almost constant dysenteric flux of blackish, bloody matter, equally fetid; the debility increased, and the animal died. Malignant tumors appeared sometimes on the cows, near the udder.

"Post-mortem examination showed the stomach to be filled with undigested vegetable matters. The mucous membrane of the stomach and intestines was inflamed, and in some places

gangrenous. The pituitary membrane also partook of the inflammation. The intestines were inflated, and the omentum decayed.

"At the third stage the disease was highly contagious: in fact, all the cattle in the stable with an infected animal took it and died. The constant communication between cow-herds and shepherds of different farms, between domestic animals, such as dogs, cats, &c., propagated the disease from stable to stable, from village to village, and I have observed on some farms the oxen, cows, sheep, and fowls all infected.

"The whole province of Frioul had been thus infected in a short space of time by this disease. Even the inhabitants of the places where it was most violent were subject to its malignant influence."

Larrey notices the influence of "sulphuro-ferruginous springs," in a certain neighborhood, in securing animals from the disease, and quotes authorities of a like nature.

"The disease," says he, "was first observed in the black cattle which were put into this *swampy pasturage*, and soon extended to the interior of Frioul, while it disappeared along the borders of the Adriatic, where the sea-breezes conveyed vapors which held mineral substances in solution. The mortality was very great, and the disease began to affect even the inhabitants themselves."

Larrey bled in this disease at once, if symptoms of plethora were present. After bleeding, measures were adopted to overcome the costiveness, which always demanded attention. Emollient and camphorated clysters were given; cooling mucilaginous and nitrated drinks; the whole body was bathed with warm water and vinegar, and then covered with a woolen cloth. The horns of the animal were also bored, to give vent to fluid matter. Free evacuation of the bowels about the third day and cutaneous perspiration were good signs. In all cases in which the crisis was clearly marked before the ninth day, the animal was saved. If the symptoms were not calmed before this period, it died. To keep up the perspiration, and also to purge moderately, strong decoctions of serpentaria Virginiana, absinthium, &c. were given, adding at intervals a few grains of jalap. When all the symptoms had disappeared, parboiled corn or wheat flour softened with warm water, a little salt being added, were found to be the best nutriment.

We may remark that this fatal disease has been by some supposed to be peculiar to the United States, although we have shown above that this is not the fact. And although Larrey, probably from the occupancy of his time by his duties as military

surgeon, did not note down the effects produced by the milk of the cows on human beings, yet we think he has stated enough to make it very probable that the disease he describes was *milk-sickness*. The idea of the spreading of the disease from one animal to another is intimated, yet all this may have been the result of exposure to the common cause, whatever that may have been.

The rapidly fatal nature of the disease set up in the West and elsewhere by deteriorated milk excites terrible consternation in comparatively small neighborhoods; and we do not wonder that it is so. But is the evil less real in all our large cities, where thousands of infants and young children perish every year from the same cause? Who does not know that milk has ever constituted a very large part of the diet of young children in all countries? And who can doubt that when pure it is among the most suitable articles of nutriment? Yet this necessary item is poisoned by the murderous cupidity of men who often pass for respectable members of society.

We desire to attract the attention of medical men to this interesting subject, since we believe most unhesitatingly that many of the diseases of childhood and even of riper years may be traced to the pernicious action on the stomach and bowels of a daily article of food, rendered slowly poisonous by fraud, neglect, want of cleanliness, and various other deleterious agencies.

While, therefore, we talk of the milk-sickness of the far West, it is important to keep in mind the notorious fact that a far more extensive milk-sickness prevails in all our large cities, where every sort of fraud is perpetrated to render the milk of the cow a source of poison to the community, and especially to the infantile race.

No man will be at a loss to comprehend the force of our remarks who will read attentively the essay of Hartley, on milk, published in New York in 1842. The facts therein set forth have never been controverted, because it was not possible to refute them. They prove with the certainty of a mathematical demonstration the position here announced, viz., that cow's milk is poisoned by wholesale in our large cities, and that the common use of such an article of food is the grand secret of a very large portion of the infant mortality of our country.

MIXTURES.—The foreign books abound with articles of this description, which are neither tinctures, infusions, nor decoctions. Some of them are more available than other forms of medicinal composition, and we subjoin several that will probably be found valuable. They were formerly called *Juleps*.

Alkaline Anodyne Mixture.

℞.—Sod. bi-carb. ℈i;
Tinct. hyosciam, ʒss;
Tinct. cardam. comp. ℈i.

Mix for a draught. This may be repeated.

Anodyne Mixture.

℞.—Aq. menth. ℥vi;
Nit. potass. ℈ij;
Spt. nit. dulc. ʒij;
Sulph. morph. grs. iv;
Ext. taraxaci.
Syr. limonis, āā ʒij.

Mix, and take a tablespoonful for a dose.

Stomachic Mixture.

℞.—Magnesia, ʒi;
Potass. nit. ʒiss;
Quin. sulph. grs. v;
Syr. zingiber. ʒij;
Aquæ lavend. ℥iss.

Mix. Dose, a tablespoonful just before dinner.

Compound Camphor Mixture.

℞.—Camphor, ℈i,
reduced to powder, with
Alcohol, ♏vi;
Moschi, ʒss;
Ammon. aromat. spt. ʒij;
Spr. limonis, ℥ss;
Muc. g. Arab. ℥iv.

Mix well. The dose is a tablespoonful, to be repeated as circumstances require.

Chlorate of Potash Mixture.

℞.—Liq. chlorid. sodæ, ℥ss;
Potass. chlorat. ʒi;
Aquæ cinnam. ℥vi.

Mix. Dose, a tablespoonful two, three, four times a day.

Acidulated Cinchona Mixtures.

1. ℞.—Infus. cinchonæ, ℥vi;
Acid. hydroch. dilut. ʒi;
Pulv. serpent rad.
Pulv. cayenne, āā ℈i;
Syr. zingib. ʒij;

Mix. Dose, a tablespoonful five or six times daily.

2. ℞.—Decoct. cinchon. ℥vi.
Elix. vitriol, ʒi;
Tinct. opii, ʒss.

Mix. Take one-third of the whole for a dose.

Copaiba Mixture.

℞.—Copaibæ opt. ʒiij;
Mucil. g. Arab. ℥iss;
Mix, and add, gradually,
Aquæ cinnam. ℥iiiss;
Carb. sodæ, ʒi;
Tinct. opii, ʒiss;
Aq. lavend. ℥ss;

Mix. Dose, a tablespoonful five or six times a day, shaking the bottle frequently.

Diaphoretic Mixtures.

1. ℞.—Spt. nit. dulc. ℥ss;
Liq. ammon. acet. ℥ij;
Pulv. ipecac. ℈i;
Antim. tart. grs. ij;
Camphor. grs. iv;
Morph. sulph. gr. i;
Aquæ, ℥ij.

Mix. Dose, a tablespoonful every hour or two.

2. ℞.—Antimon. tart. grs. ij;
Spt. mindereri, ℥iv;
Acet. morph. gr. i.

Mix. Dose, a teaspoonful every fifteen minutes.

3. ℞.—Vin. antimon.
Acet. scillæ, āā ℥i.

Mix. Dose, a teaspoonful every half hour.

Camphorated Mixtures.

1. ℞.—Camphoræ, ʒi;
reduce to powder with
Alcohol, ♏xx;
Magnesia carb. ℈ij;
Sacch. alb. ʒij;
Aquæ fervent. Oi.

Mix. Dose, a tablespoonful repeated frequently.

2. ℞.—Camphoræ, ℈i;
Magnes. carb. ʒi;
Pulv. g. Arab. ʒiss;
Morph. sulph. gr. i;
Aq. rosar. ℥vi.

Mix.

3. ℞.—Camphoræ, grs. x;
Alcohol, ♏vi;
Sacch. alb.
Pulv. g. Arab.
Magnes. carb. āā ℈ij;
Aquæ, ℥vi.

Mix.

4. ℞.—Camphoræ, ʒss;
P. gum Arab.
Sacch. alb. āā ʒij;
Magnes. carb. ʒss;
Morph. sulph. gr. i;
Aquæ menth. ℥vi.
Mix.

Carminative Mixtures.

1. ℞.—Magnes. sulph. ℥ss;
Magnes. carb. ʒiss;
Ol. anisi,
Ol. menth. p. āā ♏v;
Aq. cinnam. ℥viij.
Mix. Dose, a tablespoon half full to a child two or three years old.

2. ℞.—Sem. cardam.
Sem. carui,
Sem. fœnic. dulc. āā ʒij;
Aquæ bullient. ℥viij.
Digest an hour, and strain; to the cleared liquor add
Magnes. sulph. ʒij;
Magnes. carb. ʒss;
Sacch. alb. ʒij.
Mix.

Cathartic Mixtures.

1. ℞.—Infus. sennæ, ℥viij;
Sodæ sulph.
Magnes. sulph. āā ʒi;
Sacch. alb. ℥ss;
Ol. cinnam. ♏x.
Mix.

2. ℞.—Rad. rhei contus.
Sennæ fol. āā ʒij;
Magnes. sulph.
Tart. potass. āā ℥ss;
Aq. bullient. ℥x.
Digest for half an hour, and strain.

Diuretic Mixtures.

1. ℞.—Antim. tart. gr. i;
Potass. bi-tart. ʒiss;
Sodæ bi-bor. ʒss;
Spt. nit. dulc. ℥ss;
Ol. juniperi, ʒss;
Morph. sulph. gr. i;
Aquæ, ℥viij.
Mix. Dose, a tablespoonful every second hour.

2. ℞.—Potass. bi-tart. ʒij;
Sodæ bi-bor. ʒij;
Aq. fœnic. dulc. ℥viij;
Ol. juniperi, ℈i;
Spt. nit. dulc. ℥ss;
Morph. acet. gr. i.
Mix. Dose, same as the last.

3. ℞.—Baccæ junip. contus. ʒvi;
Sem. carui,
Sem. cardam. āā ʒi;
Aq. fervent. Oi.
Digest for three hours; to the strained liquid add
Potass. nit. ℈ij;
Syr. scill. ℥ss.
Mix. Dose, a wineglass half full every two hours.

4. ℞.—Pulv. gum Arab. ʒv;
Sapon. Cast. ʒss;
Potass. carb. ʒij;
Potass. nit. ℈i;
Ol. juniper. ʒi;
Aquæ, Oi.
Mix. Dose, a tablespoonful frequently.

Emetic Mixtures (active.)

1. ℞.—Sulph. zinc, ℈ij;
Aq. menth. p. ℥iv;
Mix, and add
Pulv. ipecac. ʒss.
Mix. Take one-third for a dose, and repeat in ten minutes.

2. ℞.—Antim. tart. grs. x;
Aq. menth. p. ℥v;
Mix, and add
Vin. ipecac. ℥i.
Mix. Divide into four parts, to be taken at intervals of half an hour.

Expectorant Mixtures.

1. ℞.—Pulv. gum Arab.
Vin. ipecac.
Syr. scill. āā ʒi;
Syr. tolut. ℥ss;
Aquæ, ℥iv.
Mix. Dose, a tablespoonful.

2. ℞.—Succ. glycirr.
Pulv. gum Arab.
Sacch. alb.
Rad. polyg. sen. āā ℥ss;
Aquæ bullient. Oi.
Digest an hour, and strain. Dose, a teaspoonful frequently.

3. ℞.—Oxymel scill. ℥i;
Ant. tart. gr. i;
Pulv. gum Arab.
Sacch. alb. āā ʒij;
Aquæ, ℥v.
Mix. Dose, a tablespoon half full frequently.

Febrifuge Mixtures.

1. ℞.—Ant. tart. gr. i;
Pulv. gum Arab. ℈i;
Tinct. opii, ℈i;
Aquæ, ℥vi.

Mix. Dose, a teaspoonful every fifteen minutes.

2. ℞.—Camphoræ, ʒss;
Pulv. gum Arab. ʒij;
Nit. potass. ℥ss;
Ant. tart. grs. iij;
Spt. nit. dulc. ℥ss;
Aquæ, Oi.

Mix. Dose, a teaspoonful every half hour.

Anodyne Mucilaginous Mixture.

℞.—Mucil. gum Arab. ℥iij;
Oxymel scill. ℥i;
Morph. sulph. grs. ij;
Syr. simp. ℥i.

Mix. Dose, a tablespoonful three or four times a day.

Nervine Mixtures.

1. ℞.—Camphoræ,
Gum fœtid, āā ʒi;
P. gum Arab. ʒij;
Ammon. spt. aromat. ℥ss;
Aquæ, ℥v.

Mix. Dose, a tablespoonful.

2. ℞.—Camphoræ, ʒss;
Aromat. spt. ammon. ʒij;
spt. nit. dulc. ℥ss;
Muc. gum Arab. ℥ij;
Aquæ, ℥iij.

Mix.

Strychnine Mixture.

℞.—Strychnia, grs. ij;
Acetic acid, ʒij.

Mix. Dose, six drops three times a day.

Fetid Expectorant Mixture.

℞.—Gum fœtid, ʒss;
Aquæ menth. ℥iv;
Rub these together, and add
Vin. antimonii, ʒi;
Syr. scill.
Pulv. gum Arab. āā ʒij.

Mix.

Anti-Cholera Mixtures.

1. ℞.—Tann. acid, grs. x;
Sulph. morph. grs. ij;
Aromat. spt. ammon.
Tinct. capsici, āā ℥ss;
Aquæ camph. ℥iv.

Mix. Dose, teaspoonful every hour.

2. ℞.—Tinct. catech.
Tinct. gall. āā ℥ij;
Tinct. opii, ℥ss;
Ol. cajeput. ʒss;
Camphor, ℈i.

Mix. Dose, teaspoonful every hour.

3. ℞.—Ammon. aromat. spt. ℥ij;
Terebinth. spt. ℥ss;
Camphor spt. ℥ij;
Morph. sulph. grs. x;
Ol. cajeput. ℈i.

Mix. Dose, teaspoonful every hour.

4. ℞.—Rhatan. ext. ʒij;
Acid nit. ʒss;
Tinct. opii, ʒij;
Aquæ camph. ℥iv.

Mix. Dose, teaspoonful every hour.

Molasses.—As this familiar term occurs frequently in this volume, it is proper to say that between this and *treacle*, so often named in the older books, there is not a very great difference. The former is the brown, saccharine, viscid fluid which drains from raw sugar when placed in hogsheads, and is used in the preparation of brown sugar. The latter is a viscid, dark-brown, uncrystallizable syrup, which drains from the moulds in which refined sugar concretes. These liquids result from an alteration effected in crystallizable sugar, and do not exist in the sugar-cane. Both contain free acid.

The chief use of molasses, in medical practice, is in modifying various doses that would be otherwise disagreeable, in preparing injections, &c. By some, burns and scalds have been happily treated by covering the whole injured surface with molasses. The

parts are thus protected from the action of the air and from injury by other external causes. As a simple remedy for *irritative coughs*, molasses, in the form of candy, is often useful. Very recently it has been stated that a case of *intus-susceptio*, in which the usual means failed, yielded readily to a pint of heated molasses, swallowed in a few minutes. Whether the remedy acted by its weight or bulk, or lubricating or cathartic qualities, is not stated by the writer.—*Journal of Health*, 1857.

Monesia.—This was first announced as a new product of the vegetable kingdom by Dr. St. Ange, in the *Gazette Médicale* for 1839. It has been noticed frequently since in the foreign and American journals. It was imported from South America in hard, thick cakes, each weighing less than twenty ounces. The cakes are said to be a sort of extract made of the bark of a tree the botanical name of which is not mentioned, and perhaps is unknown. The druggist who first introduced it to the Parisians says that certain travelers called the bark that yields monesia by the name *goharen*, and also *buranhem*, the import of which is not stated. Naturalists who have examined specimens of the bark think it a species of *chrysophyllum*. When the cake or extract is fractured it looks not unlike roasted cocoanut. It is quite soluble in water. Its taste is sweetish and a little like that of liquorice, then rather astringent, and leaves finally an acid taste that is felt on the tonsils. The bark which yields this cake is said to be smooth and gray, with a sweetish taste. Chemical analysis gives the following components, viz.: chlorophylle, vegetable wax, a fatty and crystalline matter, glycirrhizine, an acrid and bitter matter, some tannin, a peculiar acid, red coloring matter, phosphate of lime, &c.

Various pharmaceutical preparations have been made and administered as an extract, syrup, tincture, and ointment. The syrup contains thirty grains of monesia in an ounce; the hydro-alcoholic tincture, thirty-seven grains to the ounce. The ointment contains one-eighth of its weight of the extract of monesia.

Monesia is given in doses of from fourteen to twenty-four grains daily, for ten days, in the form of pill, tincture, or syrup. It exerts a decided effect on the digestive organs, and evidently improves the condition of the stomach. It has been pushed to seventy-four grains daily with the effect of sensibly improving the appetite. Such large doses, however, sometimes act as an irritant, inducing tenesmus and obstinate constipation, and therefore it should be alternated with an occasional aperient or injection.

The ointment has been found useful in various kinds of cutaneous disease, and in painful ulcers consequent on the action of

blisters in sores caused by burns, in varicose ulcers and old wounds.

The extract has been happily employed for the relief of scorbutic gums, after other means had failed. Externally and internally it has been found useful in scrofula, and in uterine hemorrhage its internal administration has been salutary.

Dr. Nancrede, of Philadelphia, made trial of it in *diarrhœa* and *dysmenorrhœa*, with good effect. Dr. Burns gave it in *menorrhagia*, *hæmoptysis*, *chronic diarrhœa*, and *cholera infantum*, with benefit. Dr. Gibbon, of New Jersey, furnishes six cases of *diarrhœa* treated successfully with monesia. (See *Dunglison's Medical Intelligencer*, January, 1842.) His doses were eight grains three times a day for an adult, and two grains three times a day for a child eighteen months old. He regarded it as an astringent rather than a tonic.

Dr. Lane, in the *London Lancet* for October, 1843, confirms the statements previously made touching the properties of the article, believing them to be analogous to those of kino and catechu.

It is proper to say, however, that at a meeting of physicians in London, in 1843, Dr. Sigmund declared that monesia had been ascertained to be a compound drug, made of various articles. But, even admitting this to be true in the fullest sense, it is no valid objection to it as a remedial agent, if the testimony as given above should find confirmation hereafter.

Moschus. *Musk.*—This is an unctuous substance, obtained from an animal called *musk* or *musk-deer*, a little like the antelope. It is procured from the navel of the male, and is found in a bag or sac. The best musk is brought from China, and is of a very brown color, and sometimes almost black. The odor, which is the best evidence of good quality, should be very strong and pervasive. The taste of the best musk is bitter. In respect of its medical and chemical properties musk resembles castor.

Musk has always been classed with stimulants and antispasmodics. The ordinary adult dose varies from three to five grains. It is employed in various *nervous affections*, as *hysteria*, *singultus*, &c. &c. It is capable of exerting a happy influence on the subsultus tendinum of low fevers, and has been very highly praised in cholera for its agency in checking vomiting. It is administered in form of bolus, julep, and injection.

I never employed it more than once for any medicinal purpose, and am much inclined to believe that it will not long be esteemed a very important aid in practice.

The term *artificial musk* has been applied to a compound made by digesting amber in nitric acid. The product is a yel-

low mass, with an odor somewhat like that of the native musk, and possessed of stimulant and antispasmodic properties. It has been employed in this city in *pertussis*.

Moxa.—This is a Chinese invention for the purpose of effecting counter-irritation. Various devices were employed for this end, but always some substance of ready combustibility. This being kindled, was brought into close contact with the surface of the part affected. Cotton, finely carded and saturated with a solution of nitrate of potash, and then thoroughly dried, furnishes a very good article for this purpose. Perhaps there is not an article capable of acting more promptly, and neatly at the same time, than potassium. It becomes at once an actual and potential cautery, and is therefore a real moxa. To this end a small bit of the metal is laid on a given spot, first moistened with a very little water. The metal is fired instantly; and, being converted into pure or caustic potash by the act of combustion, accomplishes the results named. A particle not larger than a pigeon-shot will suffice.

The *London and Edinburgh Monthly Journal of Medical Science* for March, 1842, has the account of a lime moxa, as follows:—A small piece of quicklime is applied to the skin so as to be confined to the spot, and a drop or two of water is brought in contact with it. The lime swells and emits intense heat, equal to 500° Fahr. The effect is proportioned, of course, to the length of time the lime is kept on the part. Dr. Osborne, who communicates the fact, prefers this moxa because it is free of sparks or fire, and is sufficiently prompt.

All sorts of moxas act on the same general principle in the cure of disease, as blisters, setons, issues. The effect and operation of such remedies is shown by cases of *epilepsy* suddenly cured by deep burns. (See *North American Medical and Surgical Journal*, vol. v.)

Mr. Gilbert, in a work on pulmonary consumption, thus notices the effects of a most painful accidental moxa. A young lady labored under *tubercular phthisis*, and accidentally took fire; the upper part of her body, especially the chest, was badly burnt. The phthisical symptoms were quickly relieved. The lady got well, had no return of cough nor other attendant of tubercular disease of the lungs.—*Medico-Chirurgical Review*, July, 1842.

Mushrooms.—The number of the species of the article commonly called *mushrooms* that are decidedly poisonous has not been, and perhaps cannot be, definitely settled. Even close familiarity with the different species, for reasons to be named hereafter, cannot wholly avoid danger. The details necessary, in an attempt to point out the distinctions, even so far as they

are supposed to be known, would occupy more space than we can spare, and are of less practical value than has been imagined.

It is affirmed that the qualities of these articles are modified by circumstances, so that some which are ordinarily poisonous may become inert, or even esculent, and *vice versâ*. That climate has some effect on their properties is evident, for some that are quite poisonous in one country are eaten with impunity in others. Cultivated in the same region, or growing spontaneously, the quality is much influenced by the weather, so that a long continuance of rain develops properties of a highly pernicious nature.

The very best mushrooms are also affected by the process of cookery. In the raw state, all of them are indigestible; but, under the operation of a suitable degree of heat, this quality vanishes. Nor should it be forgotten that many persons are unable to partake of any kind of mushrooms in whatever way prepared. This may be owing partly to idiosyncrasy, but is also somewhat dependent on the natural disrelish for the article, which, if taken as a matter of mere experiment, induces nausea or vomiting, followed by painful colic and diarrhœa. And there would seem to be good reason for the opinion expressed by some intelligent botanists, that the best kind of mushrooms could not be tolerated by any one, as a daily dish; the experiment, so far as it has been made, proving that deleterious results would ensue.

Various efforts have been made to ascertain wherein consists the poisonous principle of mushrooms of any kind and under any circumstances. We are not sure that any one of these has been successful, nor have we good reason to hope for satisfactory results. Letellier supposes he has detected two principles, as the source of the evil. One of these is an acrid matter, so exceedingly volatile as to fly off when the plant is dried, or boiled, or macerated in weak acids, alkalies, or alcohol. To this principle he attributes the irritant properties of some mushrooms. The narcotic property, according to his researches, is more fixed, as would appear from its resistance of the drying process, the operation of boiling, and the agency of acids and alkalies. This principle is soluble in water, has no smell nor taste, and forms crystallizable salts.

The symptoms induced by poisonous mushrooms are exceedingly variable, but almost always a mixture of the usual products of irritant and narcotico-acrid poisons. In some cases the irritant, and in others the narcotic symptoms appear to preponderate. Urgent dyspnœa, scorching thirst, tormina of the bowels, abdominal tension, and profuse diarrhœa supervene. Dimness of vision, giddiness, delirium, and coma constitute the usual narcotic symptoms. Convulsions and fainting are sometimes

noticed. These distressing effects are not always observed until several hours after the poison has been swallowed; yet they do, now and then, appear in a half hour, or even less.

We have said that esculent mushrooms may sometimes prove hurtful, and the remark is confirmed by the following case, recorded in the *London Lancet* for July, 1839:—"F. B——, aged 25, Ann B——, his wife, aged 23, and their child, aged 4, gathered a quantity of mushrooms on the morning of August 20, 1830, with a view to sale. They could not dispose of them all, and, on going home, cooked the stock on hand and ate them, with the addition of nothing but water. In a half hour they were quite giddy, and the giddiness increased to dimness of sight. The hearing became painfully acute, and objects were seen imperfectly. The husband fancied himself involved in flame, and felt a sentiment of uncontrollable gladness that prompted to muscular movements. The wife gave a similar account of herself; but the condition of the child could be gathered only from the obvious state of excitement.

"An hour after the meal, Mr. Edwards saw the family, and supposed that all were drunk, as they were exhibiting feats indicative of a state of inebriation. Their countenances exhibited great hilarity, and yet consciousness was unclouded. The man was most vividly affected; his eyes glistened, the pupils expanded, the pulse was full and frequent, the tongue clean, and the breath untainted. He conversed without embarrassment, and appeared entirely rational.

"The sulphate of zinc was employed, but to no purpose. The stomach-pump was next resorted to, and by it some half-digested mushrooms were removed. This gave considerable relief, and a few leeches to the temple completed the cure. It is proper to add that no other persons were injured by the mushrooms gathered by this family."

The following cases evince the irritant as well as the narcotic effects of the poisonous mushrooms very clearly:—A man, his wife, and three children and a servant, dined on fish stewed with poisonous mushrooms. The wife, the servant, and one child had vomiting, followed by stupor, but all recovered. The husband experienced violent cholera, but he got well also. The other children became profoundly lethargic and comatose; could not be vomited, and soon died, without exhibiting any other remarkable symptoms. Here was pure irritation, and obvious narcotism, from one and the same cause, operating on different constitutions.

The *treatment*, as above noticed, consisted mainly in a resort to general principles; for it was but recently that a true antidote for the mushroom poison was announced. The following state-

ment by M. Chansarel, taken from *Journal de Chimie Médicale* for April, 1839, will speak for itself. "The use of vinegar as a remedy for mushroom poison is improper, because the acetic acid dissolves the energetic portion of the vegetable and irritates the parts inflamed by the poisonous matter. The true antidote is *nut-galls*, or rather the *tannin* contained in them. If nut-gall be used, add one ounce, bruised, to a pint of hot water, and give the clear infusion in wineglassful doses, oft repeated. In lieu of this, add from thirty to forty grains of tannin to a pint of water, and give it in the same way." Whatever be the poisonous base of the mushrooms, the tannin most probably forms, in union with it, an inert and harmless compound.

The *morbid* condition noticed after death has not been fixed with sufficient accuracy. The appearances observed are lividity of the surface of the whole body, fluidity of the blood, distension of the abdomen, inflammation and gangrene of the stomach and bowels, and venous congestion of the lungs. The sinuses of the dura mater have been found enormously distended with blood, the substance of the brain quite red, and a large clot of blood has been taken from the cerebellum.

Myrrh.—This is affirmed to be a product of the *Balsamidendron myrrha*, but whether obtained spontaneously or by artificial means is not known certainly. It is a gum-resin, and composed of thirty-five resin and sixty-five gum in a hundred parts. Myrrh is one of the medicinal substances named in the Bible, and is therefore of great antiquity. It is imported from the Levant and East Indies, and is usually met with in irregular lumps in pieces of variable size, many of which are nearly globular. It has a reddish-brown color, is opake, quite brittle in cold weather, but adhesive in warm and moist weather. When broken, the interior presents a much brighter appearance than is exhibited by the exterior. The taste is rather bitter, and a slight aroma is obvious. The dark-colored pieces are not prized, as are those of a bright or light red. The gummy part is taken up by water, the resin by alcohol, and the whole is dissolved by brandy or diluted alcohol, thus making a tincture.

The best myrrh adheres to the teeth when chewed, and whitens the saliva, an effect that is due to insolubility of the resin in the watery portion of the saliva.

Myrrh is *tonic*, *stimulant*, *expectorant*. The latter property fitted it for the treatment of *humid asthma* and *chronic catarrh*. It has also been well spoken of in the exhaustion that attends purulent expectoration. It has been a good deal employed in *chlorosis*, and in defective menstrual discharge in pale, languid females; hence it has been called *emmenagogue*. Its *expectorant* quality has been sometimes augmented by the addition of ipeca-

cuanha or squill, or both. Regarded as a stimulant, it has been considered improper in affections with inflammatory symptoms.

Myrrh may be given in powder alone, or with nitrate of potash, opium, camphor, &c., or in form of pill in combination with other tonics, or in watery infusion, or in tincture. The dose of the powder is from ten to thirty grains; of the tincture, from thirty to sixty drops in two ounces of water. The tincture can be readily made by digesting two ounces of myrrh in a quart of brandy. The *compound tincture of myrrh* is the *number six* of the steam-doctors, and has great celebrity in the western country. Its composition was stated under the article *capsicum*. It is a good rubefacient, and usefully applied to old indolent ulcers.

The powder of myrrh has long been employed as a dentifrice; and the diluted tincture is a good application to sore mouths and spongy gums.

I have very seldom employed this article, and hold it to be of little value.

NAPHTHA. *Naphthaline. Pyroxylic Spirit. Pyro-acetic Spirit.*—This is a pale, straw-colored fluid, having the odor of wood-smoke in its concentrated state. It is obtained in the process of manufacturing wood vinegar or pyroligneous acid, and may be found in all the drug stores. It is said to be *narcotic*, *sedative*, and *calmative*. Dr. Hastings published a book on its uses in *pulmonary consumption*, and praised it highly. He employed it by inhalation as well as by internal use. The journals have abounded with notices in relation to it, and are diverse in their opinions. I do not believe a word of its alleged curative powers in real *tubercular phthisis*, although I have no doubt that it may be useful as an *expectorant*.

Christison speaks of naphtha as an *anti-emetic*, and regards it fully equal to creosote. The usual dose is five drops in some aromatic water; a very small dose in contrast with the forty-drop doses given by Hastings. The *Medical Examiner* for August, 1848, speaks of its exhibition in *epidemic cholera;* but it does not seem to be entitled to great confidence in that relation.

Having paid a good deal of attention to the discussion of the merits of this article, as contained in the *London Lancet* and other journals, I am satisfied that naphtha is not superior, as a therapeutic agent, for any purpose, to good spirits of turpentine.

NARCISSUS PRATORUM.—Dr. Fresnoi, of Leipsic, noticed in 1786 the good effects of this plant in *hooping-cough*, which was then epidemic at Valenciennes. Forty-two children were promptly cured in a short period. Four grains of the extract of the plant were dissolved in four ounces of syrup, and a table-spoonful was given every third hour. The cough was soon abated, and its course very much shortened.

I am not aware that this particular species of narcissus has been named in our books of Materia Medica. The *pseudo-narcissus* variety, or the common *daffodil*, is spoken of as emetic, cathartic, and antispasmodic. The latter quality seems to be inherent in the genus.

NARCOTICS.—The word comes from the Greek, and means to *stupefy*. The import of the term is, a stupefying power of certain medicines, in virtue of which they diminish the activity of the nervous system. Generally speaking, narcotics have a stimulating power, and this is manifested chiefly when they are given in small doses, while a full dose produces a narcotic effect at once, without any evident stimulation preceding it. A decidedly over-dose, on this principle, will destroy life without any other than a directly narcotic manifestation.

NARCOTINE.—This is one of the numerous constituents of opium, and gives rise to all the unpleasant effects of that medicine. It is obtained in small, colorless, prismatic crystals, which are nearly insoluble in water, and composed of carbon, hydrogen, and nitrogen. It is decidedly *poisonous*, and has never been exhibited in any form of disease *per se*. Some of its salts have been employed in the East Indies in intermittents, but they are now rarely heard of.

NICKEL.—The sulphate of this metal has been brought to notice, as a gentle *tonic*, by Prof. Simpson, of Edinburgh. He has given it in half-grain or grain doses, thrice per day, in solution and also in pill. Large doses act as an emetic. It is best exhibited half an hour after a meal. It has been found to cure *inveterate headaches* which have long resisted ordinary treatment. In chlorosis and amenorrhœa it has also been very useful in the most obstinate cases.

As nickel is a very hard metal, it will require a spirit-lamp heat to form a perfect solution in sulphuric acid.—*Braithwaite*, p. xxvii. p. 340.

NICOTIANA TABACI FOLIA. *Tobacco. The leaves.*—This is indigenous to America, and can be cultivated in all temperate latitudes, though easily injured by a premature frost. It is affirmed that not an animal in the universe will eat the green plant save the mountain goat, nor will he except he be very hard pushed for food. It was called *nicotiana* after Jean Nicot, French ambassador at the court of Lisbon, who did much to extend its cultivation. It was called *tobacco* from *Tobasco*, the place where the Spaniards first smoked it; or from *tabac*, the name of the instrument or reed employed by Americans in smoking the leaf before pipes were known. Prior to 1580 it was cultivated in Spain, France, Italy, and Portugal, and introduced into England by Sir Walter Raleigh, whose example

brought it into general use. The various edicts and anathemas against it, and especially the famous *counterblast* of King James, have long been before the public. While they indicate clearly enough the excesses perpetrated in regard to it, they show, with equal plainness, how difficult it is to denounce an evil out of existence. They warrant the inference, too, of the better way, viz., to kill it and every other odious custom by a *persistently good example.* The likeness, as respects evil and cure, to alcoholic drinks, is too palpable not to be recognized, if we permit our eyes to be open. We may lecture by the year, and so try to persuade the mass to do right; but the labor will be lost in both cases, unless we can persuade the good men—preachers of the Gospel and others in authority and high in respectability—to take an immovable stand on the right side. There lies the *secret of success.*

That tobacco acts badly on the human economy no sober man will deny. We do not mean to say that all who use it long and often are obviously injured; but we do affirm that it is an unsuspected yet real cause of a hundred ills that are attributed to some other source. We know this to be true from large observation touching this very thing, for it has occupied our special attention. And as we never touch nor taste the nasty weed in any form, we feel that our hands are clean when we investigate the subject, nasty as it is.

Tobacco acts as a local *stimulant* primarily, but it is also a very sure *narcotic.* Apply it to the nose of one who never before felt its influence, and severe sneezing proclaims its stimulant power loud enough, while the increase of the natural mucus demonstrates the same agency. That snuff-takers do not realize such results is a confirmation rather than a negation of this assertion; for in them the law of habit displays its mighty power to convert painful into pleasurable sensations; and for that reason alone does snuff fail to stimulate the Schneiderian membrane, already coated with impervious layers of the article.

But tobacco does more. It seriously impairs the voice in many instances. It induces *dyspepsia*, *gastrodynia*, *headache*, and many other morbid states. It is reported on good authority that even *deafness* has been occasioned by snuff, gradually accumulated so as to impair the organ of hearing, and at last cured by the ejection of hard snuff-balls, like pills, in the act of coughing.

That tobacco is unfriendly to insect life is abundantly proved by its power over moths, as all housekeepers well know. Washington Irving, in his *Astoria*, affirms that the surest protection from the visits of snakes within the tents of his exploring company was the tobacco leaf freely spread along the earth's sur-

face immediately under the edges of the tents. Not a snake ventured across the sure, though simple barrier. It is also stated that the oil collected in old tobacco pipes is instantly fatal to all venomous reptiles in the smallest quantity. In this relation we may remark that serious results have followed the inunction with snuff ointment of the heads of children laboring under *scald head*, such as vomiting, fainting, profuse sweats, and even apoplexy. A case is reported in the New York reprint of the *London Lancet*, vol. i., of all the usual symptoms of *phthisis pulmonalis* following the excessive use of snuff, and recovery from the simple expedient of laying the poison aside. Borricheus tells the story of a man who used snuff so long and so profusely that his brain was reduced to a brownish-black mass. The celebrated work of Tissot, *On the Disorders of Men of Letters*, furnishes much valuable testimony in this connection, and should be extensively read. I only add just here that one of the most distressing cases of *gastrodynia* I ever met with was occasioned by smoking and chewing tobacco, and cured in a short time by abandoning the practice.*

To show how deep an impression is made on the nervous system by long devotion to the use of tobacco, in chewing, smoking, or snuffing, we give the case of an old gin-sot and habitual cigar-smoker who was under treatment for a severe burn. She was under the care of Mr. Curling, who is good authority. Stimulants were freely allowed, because of the ascertained habits of the patient; but she soon showed palpable signs of delirium tremens. The fondness for tobacco having been discovered, she was indulged in smoking, which was just the thing her case demanded. She became tranquil and slept well. There was no more delirium, and she was soon discharged. "Prevention," says Mr. Curling, "is always better than cure," which is a friendly hint to avoid tobacco altogether, just as it is best to eschew strong drink.

But bad as tobacco is in the relations stated above it is sometimes a good medicine; and it is only as a remedy that it should be retained in civilized society. The smoke of the weed, the infusion and decoction, are all powerfully *emetic*. On this account they have been resorted to in cases of *strangulated hernia*,

* We do not vouch for the truth of the following, furnished by a Boston correspondent of the *Hampshire Gazette*, very recently. "Sharks abound on the sea-coast so fearfully in the present season that few persons dare indulge in the luxury of sea-bathing, save the most inveterate tobacco-chewers, who can swim "*outside*" with entire impunity, as the sharks (like cannibals) will not touch human flesh tainted with the filthy and poisonous weed. This is supposed to account for the large increase of the tobacco-habit among young men who visit watering-places." The writer marks this as one of the benefits of tobacco to the race.

to avert a surgical operation. The universal relaxation induced, in connection with the severe gastric sickness, often unlocks the spasm or stricture and frees the bowel from its dangerous position. For the same reason, the remedy has been useful in *obstinate constipation*, in *tetanus*, and *hydrophobia*. Being an exceedingly energetic remedy, it should be restricted to very judicious hands.

The Germans have made a neat yet simple instrument for exhibiting the smoke injection. It has a chamber lined with tin and perforated with small holes, in which the dried tobacco leaf is placed and kindled; a tube opening into this chamber favors the escape of the smoke, and another tube at the upper part allows the mouth to be applied, in order to force the smoke into the rectum. The smoke injection is preferable to the decoction, because more likely to escape, and hence more readily controlled. A sedative action always ensues, and sometimes with fatal results.

The infusion is variously made; from a drachm to an ounce of tobacco leaf, in a pint of hot or boiling water, according to the end in view, being the proportions. A few ounces of the infusion thrown up the rectum will induce speedy relaxation of the entire system, and hence its use in strangulated hernia.

An hysterical girl, aged eighteen, who had been long costive, took a tobacco injection made by boiling three drachms of common tobacco in a pint of water. The whole was thrown up the rectum at once. In half an hour she complained of faintness and sickness; in a half hour more she was collapsed and covered with cold sweats. She vomited, was slightly convulsed, and died in an hour and a half after the injection was administered. (See *London Lancet*, March, 1850.)

Injections of tobacco decoction thrown up the nostrils daily for a week or ten days caused the expulsion of maggots or worms from the nose, that had occasioned very severe suffering to the patient. At first the injection was painful, but in a day or two it was rather the reverse, and it corrected the fetor of the discharge from the nose completely. (See *Medical Commentaries*, vol. iv.)

The infusion is also employed in *ischuria*, with benefit. For this end some add only a drachm to a pint of boiling water, and of the clear liquor they give from ten to fifteen drops for a dose, every ten minutes, until the stomach is sickened. The urine soon flows freely, after the exhibition of a very few doses. The same article has been administered also in *dropsy* in the same doses.

Tobacco leaf soaked in hot vinegar and laid over the epigastrium induces vomiting very promptly, and is a good expedient

when you cannot introduce an emetic into the stomach. I found it to answer admirably in a case of deep intoxication, with the jaws so fixed as to preclude the introduction of an emetic in the usual way. The man was roused in a few minutes effectually.

The leaf prepared in the same manner has been tried very satisfactorily as a local application to an old *tetter* on the inferior extremities, and when so used it is apt to induce decided nausea. The same application has proved salutary in the onset of *croup*, the leaf, thoroughly wet with hot vinegar, being bound close to the throat and neck. On the same principle the snuff cerate of the late Dr. Godman has been resorted to in the same disease, and sometimes with success.

A writer in the *Edinburgh Medical and Surgical Journal*, vol x., advises an injection of tobacco made of twenty-five grains to twelve ounces of boiling water, for the arrest of *pneumonic inflammation* after the use of the lancet, and also in *cynanche tonsillaris*. He affirms that the stricture of the chest and pain in the former, and the pain and swelling of the latter, are speedily abated.

We named injections of tobacco as a remedy for *tetanus*, but it is proper also to notice the use of a *tobacco-bath*, long ago employed in Trinidad with success. Dr. Anderson furnishes some facts in this regard in the *Edinburgh Medico-Chirurgical Transactions*. Four ounces of the dried leaves were boiled for one hour in eight gallons of water, and the whole added to a tepid water-bath. It is stated that injections of tobacco were employed at the same time. The continuance of the patient in the bath was governed entirely by its obvious effects.

In the journal just named, Dr. Vetch praises the tobacco infusion as an external application of great value in *gout*, *rheumatism*, *affections of the synovial membranes*, &c. &c. He says the remedy not only assuages pain, but aids the parts in regaining their former tone and vigor. The *antipodagric* or *antigout* powers of tobacco were insisted on by some of the earliest admirers of the weed; and if it could be so administered as to maintain a perpetual nausea for six months, I think its virtues would not be questioned. The low diet necessary to such a state of the digestive organs would probably work a salutary reformation in the blood and tissues, and so effect a cure.

The infusion of tobacco was employed by Dr. Fowler in eighteen cases of *dysentery* with the effect of curing eleven and relieving seven. He gave it in different forms. He digested an ounce of the leaves in a pint of spirit or of vinegar, and began with from ten to twenty-drop doses. Sometimes the pill form was resorted to according to the following prescription:—

Take of powder of tobacco,
Conserve of roses, each a drachm;
Mucilage, enough to make sixty pills.

A pill was administered three times a day.

Under this treatment it is said that amendment soon took place; and I suppose the action was not unlike that displayed by ipecacuanha in the treatment of the same disease. The latter would seem to be the safer medicine of the two.

Dr. John W. Moore states, in a Mobile paper, that he cured one hundred or more extreme cases of *cholera*, not losing one, by the use of tobacco. He administered it in the form of an enema, of the strength of one drachm to a pint. He first tried it upon a negro whose pulse was gone; his tongue was cold, and his muscles so rigid that he rested only on his head and heels. In five minutes he was relieved, and the cure perfected by drinking a decoction of senna. In his own case, Dr. Moore took into his stomach a spoonful of the tobacco decoction, with perfect relief from cramp and diarrhœa. He has no doubt but that cholera may be as easily managed as the fevers of our country.

Those who have not been accustomed to the use of tobacco often find relief from the distress of *asthma* by smoking. Others have taken the infusion so as to excite nausea and free expectoration, and thus have been relieved. In this connection it may be well to mention an incident that occurred some years ago in London. Lobelia inflata had been highly extolled as a remedy for *asthma*, and was sold largely by a certain drug house as a remedy for that disease. At length the entire stock was exhausted, and it became necessary to meet the calls for it in the best way that could be devised. The fumes of tobacco being appreciated in reference to the same malady a large quantity was worked into the spirituous and ethereal tinctures, and an advertisement announced a fresh supply of the favorite medicine. Large sales were effected, and the substitute accomplished wonders. The deception was not detected until many months had elapsed, and the people were none the worse for the cheat.

Strange as it may seem to many, tobacco has been employed as a remedy for *scarlatina* by some of the German practitioners. It was resorted to during an epidemic prevalence of the disease, and with success. From a quarter-grain to two grains of the fine powder were given three or four times a day, according to the age of the child. If the case presented marks of high arterial action, mercurials and antimonials were added. Expectoration was made easy, the throat was relieved, and the symptoms generally improved. Fifty patients were thus treated, and were well at the end of eight days. The medicine exerted a sedative

influence on the whole system by emesis, diaphoresis, and diuresis.

Professor Graves speaks well of tobacco poultice to the abdomen in *colica pictonum*. He says it generally gives the desired results in a short time, and has several advantages over the injection, being more easily applied and more promptly controlled. It is, therefore, decidedly a safer mode. Dr. James Curry reports a case of *epilepsy* cured by tobacco poultices to the scrobiculus cordis. The paroxyms were intermittent, occurring every afternoon. The poultice was applied an hour before the expected attack, and prevented the paroxysm effectually. The case might have depended on some sort of abdominal derangement that was readily controlled by the external application. It is hardly probable that so obstinate a disease would often yield to such simple treatment.

Tobacco poultices have been resorted to for the purpose of destroying *worms* in the alimentary canal, or of expelling them thence. Applied to the abdomen, they must of necessity induce nausea and irritation of the bowels. Dr. Giles Everhard published a treatise on the *anthelmintic* property of tobacco, both in the form of poultice and in the shape of a syrup, administered internally. We have safer and better anthelmintics, however, and this practice will not become popular.

Bishop Gobat, in his *Journal of a Residence in Abyssinia*, p. 367, speaks of an attack of *ophthalmia*, in his own person, cured by *snuff*. He says the pain was promptly relieved by frequently taking a pinch. He learned the use of the snuff from a negro, and has tried it often. Used very early, it cures in one night.

NULLA MEDICINA.—This may seem a strange item in a work on Materia Medica and Therapeutics. It is an abbreviation of the famous maxim of Sydenham, that deserves to be had in lasting remembrance. *Nulla medicina aliquando optima medicina.* There is nothing more certainly true than the sentiment inculcated in this memorable sentence. But, says one, when and where is it found to be an important doctrine in practical medicine? The response is at hand. Thousands of patients are teased almost to death with medicine upon medicine, dose upon dose, until nature can tolerate physic no longer. The man or the woman is literally dying of the doctor and his drugs, and not of any real disease. The most critical moment in the whole lifetime has been reached. Every aspect of the case proclaims "let the patient alone." Who has not known cases in which the physician's own patience became exhausted, till in despair he has exclaimed, "I can do no more; give the man anything he calls for. Die he must, and therefore gratify him." Medicine ceases to be inflicted on the sufferer, and from that hour he begins to

improve, and in a few days is out of danger. *No medicine* has signally shown itself to be the *best* medicine the man ever swallowed. If it were needful, cases by the score could be detailed to illustrate more strikingly the truth of the position, but every one can perceive its force at a glance.

NUX VOMICA.—As we prefer to speak of the medicinal properties of this medicine under the head of *Strychnia*, the reader is referred to that article.

OINTMENTS.—The design of ointments is to offer a soft application containing medicinal power to an ulcerated or other surface where such qualities may be available. It follows, therefore, that the substance to be incorporated with the oily or fatty matter should be perfectly fine, so that when the whole mass is thoroughly triturated no part of it should be rough or uneven, but that the quality should be uniform throughout. The only exception to this statement is found in some ointments for the itch, which are supposed to act the better for containing small, gritty particles; as, for instance, the ointment of powdered sal ammonic. As almost all ointments are preferable in a sound state—that is, the opposite of rancidity—it is well to prepare small quantities at a time, and always of good materials. The metallic ointments, and especially those of mercury, should not be dealt out with metallic spatulas, as these may spoil the color of the ointment or give it an undesirable tinge. Wooden spatulas are better. The consistence of ointments being affected by temperature, it is proper to vary the fatty matter to suit this contingency: suet is a good addition, if the ointment be made in warm weather; and a small portion of wax acts in the same manner. The following formulæ for ointments will be found useful to the medical practitioner:—

Tartar Emetic Ointments.

1. ℞.—Antim. tart. ʒi;
   Adipis suill. ℥i. Mix.

2. ℞.—Antimon. tart. ʒi;
   Adipis suill. ℥i;
   Camphoræ, ℈i;
   Ol. cajeput. ♏xv;
   Moschi, grs. iij. Mix.

3. ℞.—Antim. tart. ʒss;
   Adipis suill. ℥i;
   Ol. croton. tigl. ʒi. Mix.

Compound Camphor Ointment.

℞.—Sapon. alb. ʒiss;
Camphoræ, ʒiii;
Spt. terebinth. ℥ss;
Aq. ammon. ʒi.
Mix.

Compound Ointment of Galls.

1. ℞.—Pulv. gallæ, ʒiii;
   " opii, ʒi;
   Acet. plumb. ʒiss;
   Cerat. simp. ℥iij.
   Mix.

2. ℞.—Pulv. gallæ, ʒi;
   Camphoræ, ℈i;
   Pulv. opii,
   Nit. potass. āā ʒss;
   Adipis suill. ʒss;
   Ol. cinnam. ℈ss.
   Mix.

Iodine Ointments.

1. ℞.—Iodin. ʒi;
   Hyd. potass. ℈iv;
   Adipis suill. ℥ij.
   Mix.

2. ℞.—Iodin.
Hyd. potass. āā ʒi;
Adipis suill. ʒij;
Pulv. opii, ʒi;
Tinct. opii, ʒi. Mix.

Ointments for Scald Head.

1. ℞.—Flor. sulph.
Ung. picis liq. āā ʒiss;
Sapon. mollis, ʒi;
Ammon. hydrochlor. ʒi. Mix.

2. ℞.—Cal. ppt. ʒij;
Alum exsic.
Plumb. carb. āā ʒss;
Terebinth. venet. ʒiv;
Spermaceti, ʒiss. Mix.

Ointment of Chloride of Lime.

℞.—Calc. chlorid. ʒiiss;
Turp. min. ʒij;
Mix well, and add
Adipis suill. ʒiiss;
Ol. amyg. dulc. ʒi. Mix.

Sulphuric Acid Ointment.

℞.—Acid. sulph. ʒi;
Adipis suill. ʒi. Mix.

Compound Ointment of Lead.

℞.—Cret. prepar. ʒviij;
Aq. distill. ʒvi;
Empl. plumbi, ℔iij;
Ol. olivar, Oi.
Melt the plaster by a slow fire, and add the other articles.

Compound Tar Ointment.

℞.—Picis liquid,
Sevi, āā ℔i;
Flor. sulph. ʒi;
Ol. olivar, ʒss. Mix.

Elder Ointment.

℞.—Flor. sambuci,
Adipis suill. āā ℔i.
Boil together for half an hour, and strain.

Compound Sulphur Ointment.

℞.—Flor. sulphur, ʒi;
Nit. potash, ʒij;
Acid. benzoic.
Acid. sulphur.
Ol. bergamot, āā ʒi;
Adipis suillæ, ℔ss. Mix.

Olea. *Oils.*—These are composed of oxygen, carbon, and hydrogen chiefly. They are generally marked by an unctuous feel, by their combustibility, and insolubility in water. They have been divided into *fixed*, and *volatile or essential* oils. The terms are sufficiently significant. The *fixed* give a permanently greasy stain to paper, while the stain of most *essential* oils is removed by heat.

Perfectly-fresh fixed oils are generally inodorous, and in this respect differ much from essential oils. They are also insipid, or nearly so, and lighter than water. Most of them have a yellow color, which is obliterated by charcoal. A red heat converts them into an illuminating gas, which is exceedingly brilliant. The combustion of this gas in the open air gives rise to water and carbonic acid.

Although the fixed oils are not soluble in water, they can be suspended by the addition of mucilage of gum Arabic, the yolk of egg, sugar, &c. It is in this way we may prepare the well-known castor oil mixture, and give it a homogeneous appearance.

The fixed oils are commonly prepared by powerful pressure of the seeds which contain them. This is done sometimes with, but frequently without, heat. The pale, *cold-drawn* castor oil, as its name imports, is procured without any elevation of temperature.

The volatile or essential oils are obtained by distillation of various parts of plants. They are quite soluble in alcohol, and hence the various spirits, essences, &c.

Some of the oils are liable to undergo a change to a more solid state in the alimentary canal. Thus castor oil has given rise to hard, fatty formations in considerable quantity, and sometimes occasioning unpleasant symptoms.

Some of the oils have been applied to the surface with success for the cure of *skin diseases* supposed to be induced by very minute insects. Castor oil, cod-liver oil, and lard oil have been so used for the cure of itch. The insects are said to perish when coated over with these oils, and the disease ceases necessarily. The application of castor oil for the cure of *ringworm* is a well-known and useful practice. The cathartic quality of several of the fixed oils is also well understood, as is also the carminative and antispasmodic properties of the essential oils. Some of these, rubbed in very small quantity along the spines of young infants, are more efficacious than when given by the mouth. I have tested this so often that it ceases to be a matter of doubt. Five drops of oil of cinnamon with a teaspoonful of sweet oil will often act thus.

The *New York Journal of Medicine and Surgery* for November, 1848, speaks very confidently of the successful treatment of the *bites of rattlesnakes*, by the administration of sweet oil in two-ounce doses every half hour, and the constant friction of the same oil to the bitten part.

Opium.—This word is derived from the Greek, and signifies *juice*, referring, of course, to the juice of the poppy. Opium is therefore to be regarded as the *concrete juice* of the *papaver somniferum*, or *white poppy*. This plant is probably a native of Asia, where it is found growing as a common vegetable. It may be cultivated almost anywhere, and in this country it is exceedingly difficult to expel it from a garden spot. The small bulk of the seeds allows them to be carried by the wind to considerable distances, and thus, without the trouble of sowing, the plants are often very numerous. Like most other vegetables, this is improved very much by special care in its growth, and yet it is very easily cultivated. The seeds are sown very much as others of like size, and are put into the soil just as soon as it is in good order. The young plants, when only a handsbreadth high, are taken out of their bed and set in rows a yard apart, the plants being six inches asunder. The usual care bestowed on other plants thus disposed of is here specially needed, as frequent watering, protection from the hot sun by boards, which are to be removed at twilight, &c. When the plants are near to the time

of flowering, watering is very important, as it greatly improves the seed capsules and increases the opiate quality.

The collection of the juice, which on being dried makes the opium, commences when the seed capsules are more than half grown, though some persons defer it to a later period. Just at sunset two or three longitudinal incisions are made into each capsule, great care being observed to avoid penetrating the interior cavity. The juice flows freely through the apertures so made: the process is, in fact, a kind of bleeding operation. The juice is very much paler than any variety of opium, and becomes dark by exposure to the air and by commixture with foreign particles of various kinds. It is collected very variously as to care and cleanliness, and this may well explain a part of the diversity met with in specimens of this important drug. Certainly it could be accumulated in a state of purity, and then we should find pure opium. But if it be allowed to fall on the ground, in part, and on broken leaves and bits of decayed wood and manure, we should expect to see a product of a doubtful character in point of opiate strength, to say the least. These items assist in accounting for the vast disparity noticed in this article at different times. They may serve as a clue to explain an official announcement made by the inspector of drugs for the port of New York, viz., that from July, 1848, to May, 1849, he had rejected three thousand three hundred pounds of opium as *spurious;* and this quantity imported, too, from Smyrna, Marseilles, and London.

The opium brought to this country is in spherical masses, varying from three to four inches in diameter, covered with poppy and tobacco leaves, varying in point of hardness with the weather. In warm, moist weather, it is adhesive, tenacious, and soft; in cold weather it may be fractured into pieces, and can be pulverized readily.

Much interesting matter may be found touching the culture of the poppy in *Coxe's Medical Museum*, vol. i., and in the ninth volume of the *Quarterly Journal of Science.*

When a lump of opium is broken, the interior should present a pretty uniform brown color, and have a strong *opiate* smell as well as the marked *opiate* taste. It should look like a mass of a simple unmixed article. If it present a heterogeneous aspect, showing dirt, small pebbles, dung, pieces of leaves and sticks, having also a burnt odor, the inference is unavoidable that the article is not pure. There may be good opium in the mass, but there is much that is not opium; hence the necessity of an interior inspection, which may compare very badly with a fine outside.

We have named the bitter taste and peculiar smell as an *opiate*

odor and taste. There is no other article, however bitter, that has the same kind of bitterness or the same peculiar smell. A little experience will convince any one of this, and he will find the importance of such knowledge sooner or later to be real.

Besides the foreign matters seen in defective opium, I have known the masses to have small leaden balls in the centre, which were employed for the purpose of enlarging the weight at a time when opium sold for thirty dollars a pound, as it frequently did in the years 1810 and '11 in this country. These leaden additions were made to opium of valuable quality, but are sometimes found in the most defective samples.

Much as has been said of the superiority of opium from this or that place, I prefer my senses as the arbiter, rather than the reputation of Turkey or any foreign land. Come whence it may, if it lack the qualities and appearances named above, it should be rejected, for no sort of name can compensate for these. Let all medical men bear this in mind when about to purchase for their own use. Trust the assertion of no man, when your taste and smell and eyes can be so profitably employed as to settle the question of purity with certainty.

I have seen excellent specimens of opium made in this country. One of these was of Ohio culture, and was equal to any that I have seen anywhere. The late Dr. Anthony, of Georgia, made excellent opium also, and in considerable quantity, during the last war with Great Britain.

For a reason already named, physicians should always pulverize their opium in the coldest weather, and the powder should be kept in well-stoppered bottles to exclude moisture. This is a matter of importance, since the ingress of moisture would tend to agglutinate the whole mass and unfit it for use as a powder.

Opium contains all the appropriate elements of vegetable matter, viz., carbon, oxygen, and hydrogen. In addition to these, the French chemists have shown that it contains *morphia* or *morphine*, *narcotine*, *meconic acid*, *codeine*, *narceine*, *paramorphia*, &c. &c. The most important of these is morphia, which exists in the opium in combination with meconic acid, constituting meconate of morphia.

Various expedients have been resorted to in order to separate the morphia from opium, and so to have it ready for any subsequent combination. Its high value in practical medicine has induced the best operatives to put forth their efforts in order to present it in the best possible form. Liquid ammonia added to a watery solution of opium will soon separate the morphia by a quiet chemical agency. The process has generally been to form the opium into a paste with acetic acid and sufficient water. The whole is filtered through coarse paper, and ammonia is added in

excess to the liquor which passes. The morphia is thus thrown down or precipitated, but is impure, and blended with the coloring matter of opium, though found to contain great opiate power in small bulk. To detach the coloring matter and any other impurity, the manufacturers digest the mass in cold alcohol. The coloring matter is thus taken up, and the liquid, being filtered, furnishes a powder that is to be acted on by boiling alcohol, which takes up all the morphia. This alcoholic solution is set aside to allow of crystallization, which begins as soon as the temperature falls sufficiently low. The pure morphia is thus obtained in an imperfect crystalline state.

The rationale of this process is quite simple, and very easily comprehended. In the first place an acetate of morphia is formed, which is decomposed by the liquid ammonia. The products are acetate of ammonia, which is held in solution, and impure morphia, which falls to the bottom of the vessel.

The process of Robiquet is a little different. He boils coarsely-pulverized opium with a little calcined magnesia, (two hundred grains to one pound of opium,) and soon a gray precipitate is visible. This is to be collected on a filter and well washed with cold water. The mass on the filter, after careful drying, is then boiled in strong alcohol, and the solution filtered while hot. As it cools down to the ordinary temperature, morphia is deposited. In this process the native meconate of morphia in the opium is decomposed by the magnesia, meconate of magnesia and morphia being produced as precipitates. When these are acted on by boiling alcohol the morphia only is dissolved, because the meconate of magnesia is not soluble in that fluid.

Messrs. Henry and Plisson made morphia from opium without the use of alcohol. M. Blondeau did the same, as we learn from the *Journal de Chimie Médicale* for February, 1830. The process of fermentation was resorted to under the conviction that it would answer the end effectually. Two pounds and three-quarters of the best opium, cut into very small pieces, were placed in a vessel having a large mouth and furnished with a tight cover. Double the above weight of tepid water and three ounces of honey were poured on the opium, and two ounces of yeast added to the whole. After a careful mixture by stirring for a season the vessel was placed in a stove moderately heated, the cover having been properly adjusted. Under these circumstances fermentation commenced, and was allowed to go on until it ceased spontaneously. At the termination of this process it was discovered, as was anticipated, that the mixture had an alcoholic smell. It could not be otherwise, since the materials acted on were precisely such as must necessarily give rise to an alcoholic formation. The whole mass was next put into a tight bag and

well squeezed, fresh water being occasionally added. The liquid thus forced through the bag, when cold, was treated with excess of aqua ammonia, which caused a copious precipitate, which was well washed and dried. Subsequently the dried precipitate was pulverized, and water acidulated with muriatic acid was poured on it. The color of the whole is thus changed to yellowish-brown; and after the acid has acted for several hours, the liquid is to be filtered and evaporated. The product is colored muriate of morphia, which can be made white by washing with pure water and boiling with animal charcoal.

The pure muriate of morphia, so obtained, is an excellent preparation, and regarded by many foreign practitioners as the best of all the salts of morphia. When we desire to get the pure alkaloid, we detach it from this muriate by the decomposing power of aqua ammonia. The article in question is the basis of all the morphia salts, although careless apothecaries and physicians do not always make the distinction. I knew a gentleman who, although a practitioner, kept a large apothecary store in a western city, and who once ordered from a New York house a considerable quantity of *morphia*, intending at the time to procure the sulphate of morphia, which was then the most popular salt. His order was faithfully put up, and the real morphia came. The difficulty then was to convert the alkaloid into one or more salts; and after some consultation he was able to effect the object. The great insolubility of morphia is the grand objection to its medical use. Indeed, Orfila was disposed to deny it a place among poisons, because of its insoluble, and, therefore, inert property. This morphia, however, very readily unites with acids, and hence we are enabled to form several good salts. We have only to add the base to an acid until the acid properties are lost or neutralized, and then evaporate the solution. Although pure morphia is insoluble in the manner above named, it has been ascertained that if it be well rubbed with olive oil, the opiate quality of the medicine is signally developed.

Before we speak particularly of the salts of morphia and their medicinal applications, it is proper to notice the *denarcotized opium* and the more common opiate preparations. The term *denarcotized* imports the abstraction of narcotine from opium; this is effected by the solvent power of sulphuric ether, which dissolves all the narcotine and leaves the residue of the opium unchanged. On evaporation of the ethereal solution a crystalline substance is left, which is quite distinct from morphia, and affirmed to be the most unpleasant part of opium. After its discoverer, it was first called the *salt of Derosne*, but is more

commonly called *narcotine.** Opium thus freed of this noxious and offensive ingredient, is called *denarcotized* opium. For a while this new preparation had great popularity, and I believe it is still a valuable opiate. It appeared to have all the good, and none of the bad, properties of opium. The color is very little changed by the process, and the dose is the same with that of opium.

The *common laudanum*, so generally in use, is known by the names *tinctura opii* and *thebaic tincture*, and is sometimes styled *liquid laudanum*. Various formulæ are in use for preparing this tincture, but they are generally objectionable. I prefer one with even and exact weights and quantities, because the formula is more easily remembered and because the opiate strength of a dose can be more certainly known. I take an ounce of the best opium, well bruised, and digest it in a pint of the best brandy. Each fluidounce contains just thirty grains of opium. The dose is from twenty to sixty drops for an adult.

Sydenham's *liquid laudunum* is a much stronger preparation. According to Dr. Thompson, it contains ten grains of opium in each fluidrachm; but this is evidently a mistake. The following is the formula of Sydenham:—Take Spanish wine, a pint; opium, two ounces; saffron, one ounce; powder of cinnamon and cloves, each a drachm. Expose the whole to a sand-bath heat for two or three days, and strain. It is easily calculated that each fluidrachm holds in solution seven and a half grains of opium, and not ten, as Dr. Thompson has said. This laudanum is plainly double the strength of the common laudanum, and of course the dose is diminished accordingly. Ten drops are equal to twenty of the ordinary tincture.

The *black* or *Quaker's drop*, so highly esteemed many years ago, and to this day, is an acetic tincture of opium. The old method of preparation is thus:—Take half a pound of good opium in slices, an ounce and a half of bruised nutmegs, and a half-ounce of saffron, and boil them in four pounds of verjuice, (or common vinegar,) and then add a quarter-pound of sugar and two tablespoonfuls of yeast. Let the mixture be put in a warm place to ferment for the space of six weeks. Then decant, filter, and bottle, adding a little sugar to each bottle. Some add, during ebullition, other aromatics, but it is not necessary. It is very obvious that an acetate of morphia is formed in the process, and hence the solution is sometimes called acetous tincture of

* The *London Lancet* for Sept. 1857, notices the issue of vol ii of Pareira's *Materia Medica*, 4th edition, greatly enlarged, in which notices are given of new alkaloids, &c. &c., such as *cotarnine*, a new product by decomposition of narcotine; opianine, opianic acid, papaverine, hellebrine, &c. &c., all save the last being related to opium.

morphia. The opiate strength is three times greater than that of common laudanum. Many have preferred this preparation to others because of its more uniform agreement with the digestive organs.

My own opinion is in favor of making a solution of the pure acetate of morphia as we need it, and combining it as circumstances may demand. We know more certainly what medicine we are employing, and the salt furnishes us everything to be desired from the black drop. It rarely constipates the bowels, or sickens the stomach, or induces itching of the skin, all of which follow the use of ordinary opiates. The dose of the acetate is about the sixth of a grain, which is equal to twenty-five drops of common laudanum.

Rousseau's laudanum is fermented wine of opium, and made as follows:—Take twelve ounces of pure honey and three pounds of warm water, and put the vessel containing these in a warm place. When fermentation has begun, add four ounces of good opium previously diffused in twelve ounces of water. Let the whole ferment one month. Pour off the liquor, and evaporate to ten ounces. Filter, and add four and a half ounces of alcohol.

The article as thus prepared is plainly a tincture of the acetate of morphia, the strength of which exceeds the common laudanum, but is liable to uncertainty.

The *Dublin Pharmacopœia* has an *acetate of opium*, made by macerating four ounces of opium, rubbed to a pulp in a pint of distilled vinegar, for the space of seven days. The mixture is to be shaken frequently, and finally filtered. It is simply acetate of morphia, and inferior to the black drop. The dose is from five to fifteen drops. It is consequently a good deal stronger than common laudanum.

Battley's *sedative liquor of opium* is made thus:—Take dry opium, in powder, one part; clean wash-sand, two parts. Mix, and moisten with water; introduce into a percolator, and pass distilled water at 65° or 70° through the whole till it runs off tasteless and colorless. Evaporate the liquor by steam or water bath to the consistence of a hard pill extract. Take of this hard extract three drachms, and of distilled water thirty ounces. Boil together for two minutes. Let it cool, filter, and then add rectified spirit, six ounces, and enough distilled water to make up nearly a quart. The dose is fifteen to twenty drops. Twenty drops are equal to thirty of best laudanum.

McMunn's *elixir of opium* has been before the public for several years, and professes to have some special advantages over all other fluid preparations. It continues to be a secret nostrum, however, so that we cannot give its composition. Our experience

in its use has not been very extensive, but it has not equalled our expectations by any means. Some persons are extravagant in its praise. They say it avoids all the unpleasant attendants of other opiate doses.

The *ammoniated tincture of opium* is a worthless compound, and should be discarded. The ammonia precipitates the morphia, and renders the mixture comparatively inert.

The *camphorated tincture of opium*, *paregoric elixir*, *asthmatic elixir*, are names given to an excellent medicine. A drachm of good opium is to be digested in a pint of brandy, adding a drachm of camphor and half a drachm of flowers of benxoin in order to make it. In a week or ten days it will be fit for use, after due filtration. One hundred and sixty drops of this tincture are equal to twenty of common laudanum, or one grain of opium.

The pectoral qualities of this tincture, and which led to the name *asthmatic* elixir, are due partly to the flowers of benzoin, which also improve the sensible qualities and make it more agreeable.

We have already named an easy mode by which pure morphia can be converted into the various salts; and enough has been said touching the *acetate* which enters black drop.

The *sulphate of morphia* has been more largely employed in practice than any other preparation. It is a very pretty white crystalline article, and when in fine powder looks exceedingly like the sulphate of quinine. The surest mode of distinguishing a bottle of one salt from a bottle of the other is very simple. Put a particle of each on two watch-crystals, and on each let fall a drop of strong nitric acid. The morphia salt will be changed to a deep red, while that of a quinine will turn to a yellow. The taste of both salts being quite bitter, we cannot decide on that ground any more than by the external aspect. I have been in the habit of prescribing the sulphate of morphia thus :—

℞.—Sulph morph. grs. ij;
Aq. menth. ℥i.

The dose for an adult is a teaspoonful, and equal to thirty drops of common laudanum, or perhaps a little stronger. It may be conveniently administered in form of pill, because the bulk is very small. An eighth, or a sixth of a grain, or a quarter may be given in a pill, according to the urgency of the case. During the prevalence of *epidemic cholera* in July, 1849, I had an attack which threatened to be quite severe; and in less than two hours I swallowed pills of the sulphate of morphia equal to four grains of opium, combined with less than ten grains of calomel. The spasmodic pains and other symptoms were thus controlled.

In a very severe gastric attack in the summer of 1844, in the city of Lexington, not very unlike the one just named, I took nearly the equivalent of six grains of opium in pills of the acetate of morphia in about two hours, and was cured.

Dr. Edward Smith read before the *Med. Society of London*, in 1856, a paper that merits notice, on the uses of very minute doses of morphia in certain chest diseases. We should think the disciples of infinitesimalism could hardly object to such minute portions, even of morphia and its salts. He began with one-sixty-fourth of a grain for a child four months old, repeating it six times in twenty-four hours. In adult cases, the dose was from one-twentieth to one-twelfth of a grain, to begin with, and repeated as in the other case. Supposing that the *cough* of *pertussis*, *chronic bronchitis*, and even *phthisis* often depended on spasmodic irritation, he aimed to control this and so give the patient rest. At the same time the usual local appliances were resorted to. The writer does not specify the salt of morphia, but probably meant the sulphate.

Before we dismiss the sulphate of morphia, it is proper to say that it has been and continues to be a subject of shameful *adulteration*. The report of the inspector of drugs for the port of New York shows that *amygdaline*, an article very difficult of detection, is employed for this end.

Nitrate of morphia was first made accidentally, being intended as a remedy for *dysentery*, and so employed with benefit. Dr. Hope, of Edinburgh, employed a solution of opium in nitric acid, in 1826, in this disease. There can be no doubt that the powerful action of this very energetic acid completely detached the morphia and gave rise to the nitrate. And I have no doubt of its utility after free evacuations had left the bowels in a very relaxed state, though it could not have been a safe article in the early stage.

Citrate of morphia has had its admirers. At least two modes of preparation have been named. Four ounces of good opium and two of crystallized citric acid are well rubbed in a porcelain mortar, adding a pint of pure water. Macerate for twenty-four hours, and filter. The mixture is a citrate of morphia, but contains narcotine. Some prepare it by the addition of rectified spirits. Thus:—

Take of hard opium, three ounces;
Citric acid, an ounce and a half;
Boiling water, fifteen ounces;
Rectified spirit, thirty-five ounces.

Pour the boiling water on the opium, and macerate for twenty-four hours. Add the spirit, and again macerate for fourteen days, and strain. This preparation is said to agree well with the

stomach when other opiates do not. It is stronger than the ordinary tincture of opium. In this solution narcotine is also present.

The following formula avoids narcotine completely, and gives a very neat medicine. Sixteen grains of pure morphia and eight grains of cristallized citric acid are to be dissolved in an ounce of water, and just enough tincture of cochineal added to give a light-pink tinge. The dose is from five to twenty-five drops. I made this solution some years ago for my own use, and found it a very pleasant opiate.

All the salts of morphia named above are decomposed by solutions of potash, soda, or ammonia. The muriate is the most soluble in water, and hence supposed to be the most efficient by some practitioners.

What is called the "morphia suppository" has been introduced into the Samaritan Hospital, having been previously used with great advantage by Prof. Simpson, of Edinburgh.

℞.—Acet. morph. six grains;
Sacch. lactis, one drachm;
Cerat. simp. half a drachm.

Mix, and divide into twelve suppositories; which are then to be coated by dipping into a mixture of white wax, one part, and lard plaster, two parts, melted together. Put a needle into the apex of the suppository, dip into the melted wax and lard, and then instantly into cold water to harden it. The shape is conical.

These suppositories are very useful after operations on the vagina, rectum, uterus, perineum, &c. Mr. Coulson has employed them in several lithotrity cases, with decided benefit. They are an excellent substitute for the internal use of opiates.

Opium and all its salts and fluid preparations have been placed at the head of *anodynes*, *sedatives*, and *narcotics;* these terms being employed synonymously by most persons in the profession. Although many attempts have been made to explain the actual mode of operation, we are yet very much in the dark touching the whole subject. That the first or primary effect of small doses is always stimulant, is generally conceded. The gradual augmentation of the dose in the same person, on the next day, develops a like action. This is manifest in the acceleration of pulse, the mental exhilaration, the slight headache, the elevated temperature of the skin. If the dose be not repeated, a peculiarly quiescent state ensues; the pulse, though fuller, is slower; the skin is not so hot, and is moist; the mind is tranquil, the sensation of pain is mitigated or obliterated, and presently a sense of comparative feebleness is realized. If a dose be given just sufficient to procure sound sleep, the man awakes refreshed. If the dose be disproportioned to the actual state of the nervous system, he is troubled with dreams, his sleep is disturbed, and the

whole system is the worse for the medicine. These results may follow a dose too small or too large; and hence the common phrases, a *right dose*, a *wrong dose*, meaning simply that the quantity administered was, or was not, exactly adapted to the state of the system.

The great therapeutic principle here involved has been very forcibly illustrated by Smith, in his late work on *Parturition*. "Some striking differences must be made respecting the administration of opium under different circumstances, particularly in *puerperal convulsions*. If a dose of opium be given in this disease in a full state of the circulation before bleeding, there is an aggravation of the disorder;. while, if it be given in the same convulsions in an anæmic subject, or after excessive depletion, it is of great service. If in a case of convulsions opium be given at the commencement, it is dangerous in its effects; but the same medicine is frequently valuable in the advanced stage of the same case when the vascular system has been powerfully depleted. Thus it would appear that while opium in convulsions with a full state of the circulation is a *stimulant* to the spinal marrow, in convulsions with anæmia it is distinctly *sedative*." I have long been in the habit of teaching substantially the same doctrine to my classes in *Transylvania University;* and my usual phraseology was simply this:—Opium will prove a stimulant or sedative, according to the state of the system at the time of its exhibition.

One of the simplest uses of opium has been merely to *lock up the system*, as the phrase is, for several hours, in order to extinguish pain. This has been effected beneficially in that painful but not dangerous complaint the *toothache*. I have found it signally successful in my own person as well as in the persons of others. A fit of toothache can often be deferred in this way for six months or a year. My plan has been to swallow a large teaspoonful when the pain became very severe, and to go to bed. The effect has been to quiet the local disturbance, and to give a profound sleep for six or eight hours, and to prevent a recurrence for a long while. A similar practice was adopted many years ago to prevent a paroxysm of an intermittent, to save from the chill and its consequences. An hour prior to the dreaded hour of attack, two, three, or even four grains of opium were administered in a single dose. The system was put into a state of perfect quietude, and remained thus a long while; even a longer period than all the stages would probably have occupied had the dose not operated to keep them off.

This *locking-up* practice may sometimes prove injurious, but I have never realized any unpleasant consequences from it, although I have often resorted to it. If there be no obvious determination to the lungs or brain, there can be little hazard in the ex-

hibition. When it is employed to prevent the cold stage of an intermittent, the salutary action is generally improved by immersion of the feet in hot water, and the use of sinapisms to the ankles, before the patient falls asleep. Such was the custom of Sydenham, and I know it to be a wise course. He supposed the opium acted in all such cases by its *stimulant* power; but that is not quite certain, since Lempriere, Lind, and some other physicians of high character gave opium by preference in the hot stage, because of its tendency to augment the discharge by the skin. They speak of the remedy so applied with great confidence, and doubtless it may answer in persons of phlegmatic and melancholic temperament, while it would seem to be unfit for the plethoric. Lind affirms that this use of opium considerably abbreviates the hot stage, while it also lengthens the period of intermission, and so prepares the way for the use of the bark.

That opium stimulates when given after the manner of Lempriere would seem quite plain from the augmented action of the cuticular vessels; but it is problematical whether its curative agency after all can be on the same therapeutic principle in the two stages named. We doubt it.

Before we dismiss the consideration of the *stimulant* character of opium it may be well to cite some additional facts. If a watery solution of opium be applied to the eye or urethra, or any tender, irritable surface, it gives pain more or less severe, and displays a marked stimulation. In the sot shops of Constantinople, opium is prepared with rich syrups and other confectioneries, and divided into cakes varying from ten to one hundred grains. The sombre Turks sit in rows, and the waiters pass along, throwing a cake into each open mouth. This operation is repeated at suitable intervals, as the excitement is observed to rise in each man, or until obvious signs of incipient intoxication are visible. Soon the fellows become delirious, and the raving Turks are now most unceremoniously pitched out of the front door just as the sot is kicked from the groggery when he can drink no more or his cash is exhausted. These shops are visited by the poorer classes, the more wealthy indulging themselves at their own dwellings. Many of these places are represented as the most miserable and wretched dens imaginable. The Reverend Mr. Squire, of the Church Missionary Society, says of them :—"Never, perhaps, was there a nearer approach to hell upon earth than within the precincts of these vile hovels, where gaming is likewise carried on to a great extent." At one place or another in China all classes in the community are addicted to this practice.

In these cases the regular repetition of the opiate keeps up and gradually augments the stimulant action, which continues to

rise while the dose is administered. If these men could be inspected a few hours afterward, their symptoms would present the clearest tokens of indirect debility as the product of indirect sedation. Here are very opposite states of the system as related to the effects of opium. And the philosophy of the cases is not unlike that discoverable in the use of opium at different periods of the day. Taken early in the morning and on an empty stomach, it will generally induce a very excited state of the system, but no sleep. The same dose swallowed after sundown causes but little excitement of the nervous system, and sleep is soon obtained.

Some physicians have supposed that opium acts through the medium of the blood, and independently of the nervous system. Fontana was inclined to this opinion, from observing that opium applied to the brain or the nerves of a frog produced no effect; that the heart detached from the body and placed in a solution of opium is not deprived of its irritability sooner than when put into water; but that when opium is injected into the veins death instantly followed.

Others believed that opium acted chiefly on the muscular fibre, destroying its contractility. Some have ascribed all its effects to mere sympathy, which is just no solution at all, in any sense. Far more rational is it to regard the medicine as acting on the great centre of the system, affecting all the filaments of the central organ, and thence, by nervous communication, operating on all other parts. Some have contended that it acts only by absorption into the mass of blood. This has been inferred from the length of time required to affect the general system. This may call for one or more hours, although the opium is in contact with the nervous structure of the stomach indirectly. The rapid effects of opium injected into the veins, and the speedy anodyne influence of the mother's milk on her infant after she has been put under opiate influence, are supposed to indicate the agency through the medium of the circulation.

The practical applications of opiates are exceedingly numerous. Dr. Thompson proposes opium as a good addition to calomel in *obstinate tertians* that have resisted the ordinary treatment. A pill of one grain of each article, taken at bedtime for a week, has happily prepared the way for the successful employment of the bark.

There are cases frequently occurring in which we fear to give opium because we dread the presence of more arterial excitement than seems to be consistent with its administration. In circumstances like these the addition of a little ipecacuanha will exert a happy modification, while opium alone might be inadmissible.

Three or five grains, with one or two of opium, will compose the system, and carry off undue excitement by a copious and salutary perspiration. This combination is often useful as a means of subduing wakefulness, subsultus tendinum, and diarrhœa, that are sometimes troublesome features of *typhus* fevers. More than a hundred years ago, Dr. Gilchrist strongly recommended the use of opium very early in inflammatory fevers, to prevent delirium; and his practice led to the use of wine and opium jointly in fevers with inflammatory symptoms.

Delirium is very differently affected by opiates. If it be accompanied by flushing of the face, impatience of light and sound, throbbing of the temples, &c., opium will uniformly increase the difficulty. On the other hand, the low muttering delirium of debility very often yields to opiates, and especially if camphor be added in proportion of a grain or two to the opiate dose.

Almost all acute affections of the chest are relieved by full doses of opium after free or appropriate depletion. Especially do good effects follow the exhibition of opiates, if modified by a small amount of tartar emetic or ipecacuanha. Cullen's practice in acute inflammation of the substance of the lungs (*pneumonia*) was to bleed freely, and then to give a full dose of opium, to tranquilize generally, but particulary to relieve the cough and irritable state of the lungs. This practice was very successful formerly, and has been so in recent times in innumerable instances.

The *peripneumonia notha*, as it was formerly called, of old persons, has often been signally relieved by a grain of opium and two grains of squill, given every three or four hours. It acted by allaying irritation and promoting expectoration. When a similar disease affects younger persons, in the shape of *bronchitis*, the opiate must be preceded by moderate venesection or local bleeding from the chest. After this preparation the opiate exerts a happy influence through the pneumogastric nerves, enabling the patient to make fuller and more perfect inspirations, the expectoration being already greatly relieved.

After general and local bleeding *acute ophthalmia* is often much relieved by opium, and especially by a watery solution of the denarcotized opium in the proportion of three grains to an ounce of water. Sometimes the dropping of a little common laudanum in the eye has been serviceable by its counter-irritant, and ultimately by its sedative influence.

In *acute rheumatism* not a few persons make opiates their sheet-anchor, even to the exclusion of depletion; while some are equally partial to them after venesection or leeching. But if the disease be really acute, it will not answer to rely merely and

exclusively on the sedative and anodyne qualities of any sort of opiate. There is too much danger hanging over the heart in such cases to allow of this sort of treatment. Were the opium combined with ipecacuanha and calomel, or blue mass, we should be less reluctant to assent to the propriety of the practice. *Dover's powder* is better than opium alone; and if the relative quantity of the emetic were increased, so much the better. This powder, as we said elsewhere, is composed of one grain of ipecacuanha, one of opium, and eight of sulphate of potash, well incorporated by trituration; and its usual dose is from ten to fifteen grains. The best period for administration is at bedtime; and if warm drinks be taken in small quantity soon after, the effect on the skin will be more apparent. It is diaphoretic, and sedative or anodyne.

The irritation of calculous matter in the pelvis of the kidneys and ureters is often exceedingly distressing. Early in the attack, besides the use of the warm bath and bleeding, which is generally needful, a full dose of opium or a salt of morphia should be administered, and repeated in an hour, or in a half-hour if relief be not sooner procured. The pain and severe irritation of *biliary calculi* may be promptly relieved by a similar course of treatment. Should the stomach be so irritable in these cases as to preclude the administration in that way, let a resort be had to injections; or it would be very well to make a blister speedily, on the abdomen, near to the course of the urethra, or over the liver, by firing a piece of linen soaked in pure alcohol, removing the cuticle, and putting on the raw surface a half-grain of the acetate of morphia, or even a grain, and repeating in an hour or sooner. Thus all danger of irritation of the stomach would be avoided.

In *gonorrhœa*, with severe chordee and painful micturition, no remedy is more salutary than opium, if bleeding and purging be first resorted to. A grain of opium and two of calomel, repeated every two hours, will not only mitigate the pain, but the effect will be, very perceptibly, antiphlogistic. In such cases Dr. Hamilton, of Norfolk, in England, gave two grains of opium with six of calomel at a dose, repeated every eight hours. It is not a safe practice in the early stage of gonorrhœa unless preceded by bleeding and purging.

Dr. Lane reports very marked success with opium in the *reduction of hernia* that had resisted all ordinary means. In one case, sixteen grains of opium and thirty-two of calomel were administered, besides some laudanum, before the result was accomplished. It is supposed that the opium operated by allaying local irritation, and also by its anæsthetic action. (See *Ranking*, No. 10, p. 134.)

Mr. Skey, surgeon to Bartholomew's Hospital, reports a very

interesting case of the cure of an old ulcer on the calf of the leg, and as large as one's open hand. It had resisted all the efforts of surgeons for seventeen years, and was regarded a hopeless case. The patient was put on the use of half a grain of opium night and morning, the limb being strapped and rolled as usual. In three days the color of the ulcer was manifestly improved; and in two months its dimensions were reduced to the size of half a crown, and the general health also improved. No other means besides the opium were resorted to by Mr. S. Did not this act chiefly by allaying mental and physical irritation? (See *Braithwaite*, part xx.)

A good deal of diversity of opinion has obtained in the profession touching the use of opium in *dysentery*. Sydenham, Lind, and many others, have advocated the practice in decided terms; while Pringle, Cleghorn, Blane, and others, as strenuously opposed it. Some gentle purgatives, as Epsom salt and castor oil, followed with full doses of laudanum, and suitable diet, made the common treatment in Great Britain for many years, and it was successful. Such was substantially the practice of the celebrated Heberden. Nor do I doubt the propriety and great usefulness of opium in very many cases of this disease subsequently to the reduction of high morbid action, whether general or local. If bleeding be deemed inadmissible, I should prefer the use of emeto-cathartics, consisting of calomel and ipecacuanha, so as to induce free vomiting and purging; and at bedtime the laudanum or other opiate should be given by the rectum. Powders made of calomel and ipecacuanha, each five grains, and given every half hour until three or four are administered, will usually suffice. Sixty or eighty drops of laudanum, given by injection, will quiet the system, and the disease will thus be arrested, provided attention be paid to the use of light emollient diet.

Much has been said of the use of opiates in the management of *pulmonary consumption*, but they can only palliate. And here it is proper to say that the less medicine of any kind the better for the patient. If he can take cod-liver oil without disrelish, let him persist in its use. But the practice of dosing with this panacea and the other, while it does not meet the case at all, seriously impairs the tone of the stomach and destroys the appetite. And when this state is fully reached, the man is near the end of his journey. I would not give him an opiate by the mouth for any purpose whatever; nor is it necessary. Perhaps his chest is painful, or he has occasional stricture, or both, which may justify the application of a blister. Let the surface be kept running a while, and now and then apply a half-grain or more of a salt of morphia to the raw surface, and you give the wished-for relief. And if the state of the chest should not seem

to call for a blister so large, apply one of the size of a dollar, and there let the salt of morphia be placed. Or give laudanum by injection if an anodyne must be administered, but do not derange the digestive organs by exhibiting opiates by the mouth.

The following *linctus*, which owes its power chiefly to the opiate ingredient, is affirmed to be admirably suited to a large majority of *coughs*, and may be worth notice. It is in common use in St. Bartholomew's Hospital:—

℞.—Confect. ros. canin, ℥ij;
Tragac. pulv. ʒi;
Syr. papaver, ʒvi;
Acet. scill. ʒvi;
Acid. acet. gtt. xx;
Aquæ fervent, ℥vi.

℔.—Dose, one to three teaspoonfuls at bedtime.

Opium in every form has been profusely administered to patients laboring under *tetanus*. The well-known antispasmodic property of this medicine seemed to adapt it precisely to such a disease as this, and we dare not assert that the use of it has not been successful. We do affirm, however, that in hundreds of cases it has not appeared to be at all beneficial, though given in very large quantities. We have the record of a case in vol. i. of *Medical Commentaries*, in which fifteen hundred grains of opium were exhibited in seventeen days, with success; and another showing that the patient took twenty ounces of laudanum in twenty-four hours, to no good purpose. I have given it as fast as it was possible, and in large doses, day after day, not only by the mouth, but in form of ointment as strong as powder of opium could make it, and that rubbed frequently along the spine, and this associated with wine and brandy and kindred means, and no good appeared to result. The force of the radial artery was not augmented in the least, and all the stimulant power seemed to go into the muscles to augment their rigidity.

I am inclined to think that the best *opiate* practice in *tetanus* would be to blister the whole length of the spine, and to keep it under the constant influence of a salt of morphia and extract of belladonna, alternated on the raw, decuticulated surface. I infer this from one or two facts that were published in a foreign journal not long since, and think the suggestions worth a trial.

We do not very often hear of the use of opium in *menorrhagia*, although laudanum alone, or with sugar of lead, has been employed successfully in *uterine hemorrhage*, strictly so called. We have strong testimony in Lettsom's works, vol. iii. p. 104, in favor of large doses of opium in this form of disease, and the authority is sufficiently credible at least to claim our attention. Dr. L. asserts that for thirty years it was his custom, when called

to a patient made extremely feeble by profuse discharges of blood, to give an injection *per vaginum*, of five grains of opium dissolved in two or three ounces of water, and to repeat every three or four hours until the flow ceased. He adds that notwithstanding the well-known success of this practice, he is not aware that any other physician has tried it. There can be no doubt, we think, that this very vigorous opiate treatment operated chiefly on the nervous system, inducing a state of universal quietude, while at the same time the direct stimulant force of the medicine induced the closure of the bleeding vessels.

The fourth volume of *Medical Facts*, page 120, announces that Dr. Whytt and Mr. Copland treated menorrhagia by injections at bedtime of from sixty to eighty drops of laudanum and four ounces of water, and found them to succeed much better than any of the ordinary astringents.

But we must not omit to notice the importance of opium as a remedy for *Asiatic cholera*. We have noticed this subject, though briefly, in another place, in connection with the calomel practice. That opium alone, or with calomel, is competent to arrest that terrible disease, has certainly been shown in very many instances. The popular medical opinion in this respect is abundantly obvious. Wherever we turn our eye to peruse the notices of successful treatment, whatever may be in the prescription, opium is never absent. Very many of the compound mixtures employed during the late epidemic in various parts of the country have come under my notice, and some form of opium occupies a conspicuous place in all.

After a careful survey of this subject, I have come to the conclusion that the best treatment, not only during the premonitory stage, but when the rice-water discharges begin to abound, is the opiate medication in some shape or other. Often it is better to prepare the way by a mustard emetic, and then to administer from one to five grains of opium alone, or with from five to ten grains of calomel, and to repeat in an hour if necessary. This and perfect rest, with the usual external appliances, constituted the safest and best practices, so far as *opium* was concerned.

I know that some physicians gave six, eight, ten, and twelve grains at a dose, and sometimes with great success. But I cannot resist the conviction that such doses have sometimes killed the patient by a fatal narcotism; and I make the remark as the result of some observation and study of this very point. And I think it possible that some persons, in the hurry and tumult of the terrible scourge, have been consigned to the narrow house not actually dead, but so deeply narcotized that all the usual phenomena of life were suspended, so that vitality appeared to be extinct. It is much wiser to give opium in smaller doses,

and to repeat frequently, than to exhibit at once ten or twelve grains.

The largest dose of opium on record, so far as I know, for any purpose, is forty grains. In vol. viii. of *Duncan's Medical Commentaries*, it is said that this dose was given by Dr. Binns, of Liverpool, in 1798, in a case of *insanity*. In four hours after a scruple was given, with the effect of complete restoration.

The addition of some form of opium to all our *pectoral mixtures* or *cough medicines* is further evidence of its high popularity. Whatever be the nostrum or panacea that is heralded in the newspapers as an infallible and speedy cure for a cough or a bad cold, it will be found almost invariably to contain this medicine in one shape or another. Even those recommended with the peculiar specification that there is not in them a particle of opium, do, after all this proclamation, contain laudanum, or paregoric elixir, or a salt of morphia. And, in truth, the irritation of a severe cough often demands the use of opium; and it will be salutary if preceded by an emetic, or the lancet, or by local depletion. Sometimes, too, it may be beneficial even if not so preceded, provided the mixture act freely on the skin, or by the kidneys. These are redeeming qualities that save the system from the pernicious influence of opium.

It is not necessary to enumerate the various *external* uses of opium. These are almost without number, and are often of great value. As an addition to eye-washes or collyria, or as entering into the formation of poultices and liniments for the relief of painful and indurated tumors, we frequently find opium to be a very useful external remedy. We may mention here, particularly, the signal relief sometimes afforded to women suffering severely from *after*-pains, by the application of anodyne or opiate liniments or cerates to the enlarged mammary glands. A twofold end is attained by this expedient, and the measure is vastly preferable to the common practice of giving from twenty to forty drops of laudanum. The soft cerate or bland and soothing liniment not only arrests the pains of the uterine region by sympathetic action, but the breasts, more or less indurated or tense, or both, are tranquilized and softened. To make the cerate, we add from a half-drachm to a whole drachm of finely-powdered opium to half an ounce of simple cerate, which may be softened yet more by the addition of a little sweet oil. Rub the whole intimately, and the opiate cerate is formed. The anodyne liniment can be made more speedily by mixing sweet oil and laudanum, equal parts, or two of laudanum with four of oil, and shaking the bottle frequently. The cerate or liniment should be applied on soft linen or flannel twice or thrice a day.

A novel use of opium to allay the irritation of *catarrh* is fur-

nished by Dr. Lombard, of Geneva. He directs a metallic plate to be heated over a spirit-lamp, a few grains of powdered opium to be sprinkled on it, over which the patient is to hold his head so as to inhale the fumes. He must make efforts to have full inhalations of the anodyne vapor. The distressing sense of weight and pain in the frontal sinuses is speedily annulled, and the patient can sleep comfortably. If fever call for attention, a teaspoonful of sweet spirits of nitre may be given every hour or two.

Before we speak of the *vice of opium eating* and the *poisonous* action of opium, together with the treatment proper for such poison, it is desirable to premise a few remarks that cannot be so fitly introduced anywhere else.

No practitioner should prescribe any preparation of opium for a stranger until inquiries are made in order to ascertain whether or no he has been accustomed to the medicine, and what doses he has employed on former occasions. It is obvious that such knowledge is essential to the right exhibition of opiate medicine, and should never be overlooked. Suppose the person be an opium eater, and you know not the fact, and now you are consulted touching some very painful affection demanding relief by some means fitted to abate or control pain. Would a dose of opium touch such a case? I think not. But the man will die if he be not soon relieved. His pains are insupportable. Presently the truth comes out, and you learn that he has long been in the habit of eating, at one bite, five times as much opium as you ever gave to any patient at once. What will your opium do in such a case? You may give it, but there is nothing in his stomach or system on which it can act. Your ingenuity is taxed, and a substitute is found, and possibly you save your patient. The importance of the inquiry we have suggested is therefore manifest.

But I desire to express my opinion in reference to the administration of opiates to *infants;* and I mean to do so emphatically. I take the position that an infant under a year old never requires this medicine internally, if at all. It should never be given to such tender subjects on any pretext whatever: first, because it is not necessary to their health or comfort; and, second, because it is truly a poison to their tender tissues. Children without number have had their physical frames ruined by the perpetual exhibition of Godfrey's cordial and the like, to relieve lazy nurses from the task of amusing and quieting the helpless creatures confided to their care. And if the secret history of more than half the cases of dyspepsia that prove so troublesome in after life could be written out, one of the darkest pages would reveal the fact of the gradual but certain poisoning of the mucous coat of the stomach in this way. The foundation is thus laid, deep and

broad, of innumerable ills that make the child and the youth and the full-grown man a miserable invalid. The babe cannot sleep, and the poison is at hand to force what nature is not ready for. There is some flatulence in the course of the alimentary canal, and the infant cries almost incessantly. At any time that would be unwelcome; but at midnight it is insufferable, and the dose is plied again and again till the cries are subdued. And yet all this and more could be controlled by a warm bath, or by frictions to the spine with the hand, or a soft flannel, or a mixture of sweet oil and a few drops of the oil of cinnamon; or, at all events, by throwing up the rectum an ounce or two of the milk of assa-fœtida, and repeating this several times until the desired end is reached.

It is bad enough to acquire the habit of taking opiates in adult life, without forcing the terrible habit in early infancy. There can be no doubt that many persons, under the plea of using opiates to allay pain, cherish the habit and fix it almost indelibly. Much more opium is thus consumed than the actual state of disease calls for, and this merely because the article is more and more relished every day as the effect of habit. It is on this principle that we can account for the facts recorded of women affected with cancer consuming three pints of laudanum daily, besides solid opium taken at intervals. It is hardly possible that the worst cancer could require so large an amount of a narcotic medicine; and we are forced to the conclusion that the love of the brandy in the tincture and the relish for the opium acquired by long use constitute the most fitting solution of the problem. There is a case on record of a woman who swallowed *two hundred pounds* of opium in the course of thirty-three years.

These remarks bring us to the consideration of what has been very properly styled the *vice of opium eating*. A vice it is, indeed, and terrible are its consequences. We earnestly entreat all persons who have doubts on this point, and who are possibly themselves in danger, to peruse a small volume entitled *Confessions of an Opium-Eater*. The statements, written by the sufferer himself, are so truly graphic and so exquisitely to the life, that they force the most skeptical to admit that they are sober realities. Not a doubt can be entertained in relation to the entire history by any one who has witnessed a case of long-continued and excessive opium eating. The reality is so terrible that no array of words can make the description fully true to life. Language is too barren for such a task. It is a vice that hurls from the loftiest elevation the most towering intellect, dissipates into thin vapor the solid lore of ages, transforms the giant into the veriest pigmy, sinks lower than the brute the

being made in the image of his God. And thus works this horrid vice.

The author of the *Confessions* declares that he took one hundred and thirty grains of opium per day, not by accident or mistake, but as a habit. But large and monstrous as this may seem to be, I have known the vice to be carried further. I knew a man—a physician, a professor, an author of renown, who finally perished on the altar of opium—who took one hundred and sixty grains a day, and was not satisfied. But even this was under the maximum, and possibly we may never find it. Russell tells of a Turk who was in the habit of swallowing daily one hundred and eighty grains, and even increased the dose.

Let it not be imagined that we are to restrict our censures touching this vice to one sex. The evil is far from being confined to males, as many can testify who have long kept retail apothecary shops in large cities. At twilight, and sufficiently disguised to prevent recognition, ladies of highly respectable families have been known to sally forth to procure the wished-for stimulus. They obtain it, not by the ounce, but in the bottle that will hold a pint at least, and thus prevent too frequent repetition of their visits. To what extent this pernicious habit obtains among the softer sex I cannot venture to say. There is good reason, however, to fear that it is not retrograding.

It has been said that some persons who eat opium appear to enjoy good health. But the health is not real nor permanent, and is not a matter of enjoyment at all. If there be any joy in the case it is sadly mixed, so as to make it very difficult to say which preponderates, the bitter or the sweet. We know that a constitution naturally vigorous may sustain many and very severe shocks, but the hardest and the stoutest cannot always brave the storm. The native excitability will wear out, the stamina cease to have an energy-imparting power, and the melancholy end will at length come.

All opium eaters acquire a deadly pale or sallow aspect, with tokens of emaciation, sooner or later. The evacuations from the bowels cease to be regular, until at length there is scarcely an inclination for days together, and even for weeks. The tone of the stomach is more and more enfeebled, the appetite fails, is exceedingly capricious, hemorrhoidal tumors harass, the neck of the bladder becomes highly irritable, urination is painful, and the discharge very small. It requires but a slight inspection to detect the fact that the man is wretched, and the more so from the failure of all his efforts to make his friends think otherwise. If you hint your suspicion of the cause, his denial is as firm and fixed as his broken-down constitution will permit. An occasional reflection begets a momentary apprehension for his safety, and

the drug is laid aside for a brief season, to give place to all the modes of using tobacco, to brandy, wine, and every kindred stimulus, each in its turn, and all to excess, until it is manifest to those around that the man is becoming a sot. He suspects the reality, and feels it too, and now makes another turn in the winding lane of his erratic life; but it lands him in the vortex of his former habit.

An individual of my acquaintance was addicted to these frightful alternations in the phases of this vice for more than twenty years. The advance, during the first eight or twelve years, was so gradual that many of his acquaintances failed to detect it. In later years it made sad havoc with his frame, till, at length, the being of fifty, (for he had ceased to be a man in the real sense of the term,) deeply imprinted with all the insignia of threescore years and ten, fell into a premature grave. For several years prior to his death he was rarely known to take a regular meal. He ate by fits and starts; was peevish and fretful to the last degree, and, although never conspicuous for decision of character, lost entirely what of firmness he had ever possessed; was vacillating as the weathercock; his vital forces wasted to a point, and a mere speck of animated existence left as the sad memento of what he had been. On the last day of his sad career he snatched the brandy glass as with a death gripe, carried it to his lips by an extra effort, drank it off unmixed, and then, like a driveling idiot, sobbed and cried for more.

For several months before the decease of this individual took place, his skin looked more like old parchment than anything else, and had, in fact, little more about it to indicate vitality; his stomach and bowels lost all their sensibility; his pulse was like a thread, and his mind had well-nigh ceased to be.

Terrible as are the ills that follow in the wake of this vice, it is possible for an *opium eater* to be cured. The book named already is proof unanswerable. The author of the *Confessions* was moved to write his little volume chiefly by the happy reflections suggested by his own rescue. He felt his miserable condition deeply, and, ere it was too late, sought and obtained relief. He was advised to take the *ammoniated tincture of valerian* as a substitute for his opiate stimulant; he obeyed the instructions of his physician, and was saved.

The principle involved in this mode of curing the vice of opium eating is very simple. It is the same that runs through the whole practice of physic—the substitution of one stimulus for another. The medicine prescribed for the author of the *Confessions* was a combination of stimulants, and all of them capable of exerting a considerable influence on the nervous system. Chardin tells a story that forcibly illustrates the same principle.

Some Turks were taken prisoners, and were at sea so long that their stock of opium was exhausted. As a consequence of the lack of a long-familiar stimulus, made by the force of habit almost essential to life, they sickened and became very ill, were wretched and despairing. The captain of the ship having no opium on board, at length fancied that his wine might possibly be of some service to the poor sufferers. He tried it, and the experiment was successful.

So long as the Turks were able to repeat the opiate potion they realized more or less of its stimulation. Its total abstinence made indirect debility unavoidable. Body and mind felt the shock together; deep depression and anguish followed, and would have augmented to a fatal issue if some other stimulant had not met the emergency. Wine accomplished the purpose, and alcohol would have done the same in any form, and so would stimulants and tonics of various grade. The tincture or the milk of assafœtida would be very useful in such a case, just as they have often served to protect a reformed drunkard from serious injury who had suddenly abandoned his cups.

The duty of physicians in reference to opium eaters is very plain. If their sensibility be not wholly gone, warn them faithfully of the danger of their position, urge them to break away at once and forever, at all hazards, from the deadly habit and all its associate evils. Persuade them to try the compound infusion of calumbo or gentian, the milk or the tincture of assafœtida, very frequently in the day, and every day; let the bowels be kept in a regular state, the food be simple, easily digested, yet sufficiently nutritive, and urge them to eat a little whether they relish it or no. It may be needful to exhort and urge them over and over again; but if a moderate share of resolution can be inspired and continued, they will be saved. In some cases it may be proper, before the use of tonics and stimulants is attempted, to administer an emetic or two of mustard or chamomile, in order to rouse the latent energies of the stomach and to improve its mucous membrane.

Opium, under more favorable circumstances, is often a source of mischief. Even when administered by physicians, it has occasionally done harm and no good. Thus, a man is suffering severely from colic. The pain must be relieved at all risks, and dose after dose is administered. So long as the remedy was the antagonist of the pain it did no injury; but more has been taken by the patient than the pain called for. The *cumulative* quality of the poison is soon developed, and the man dies of coma. Such a case is reported in the *Edinburgh Medical and Surgical Journal* for October, 1834.

The usual effects of an overdose of opium are headache, ver-

tigo, delirium, stertorous respiration, stupor, pale and cadaverous countenance or a countenance deeply suffused, fixed pupils, relaxed muscles, the lower jaw fallen, skin cold, &c. &c. In respect of the quantity that can induce all these results, and finally kill, there is no rule, and there can be none. A woman desired to get rid of a useless husband laboring under a disease regarded as incurable. She managed to make him swallow twenty grains of opium at one dose, and yet was most grievously disappointed. A tremendous perspiration came on, followed by a very profuse urinary evacuation, and he was cured. Others have taken immensely large portions of opiate medicines at times when under the highest pressure of mental excitement, and were not destroyed. A medical student in Germany took twenty-five grains of acetate of morphia, and was not seen till ten hours had elapsed, and yet he recovered by active treatment. His mind was in a terribly excited condition, but little removed from actual insanity, and this proved a counterpoise to the dose which, under other circumstances, would probably have destroyed him.

But the *Annales de Hygiène* for January, 1845, furnish a more remarkable case. An apothecary's assistant, aged twenty-four, swallowed at noon fifty-five grains of acetate of morphia in two ounces of gum-water. He then sent a letter to his master informing him what he had done. The master came in half an hour, and administered with difficulty, and without effect, two grains of tartar emetic in an ounce of water, followed by an ounce or two of sweet oil. Up to this time the chief symptom was slight giddiness, which soon vanished, and the man went out with some companions and drank half a bottle of beer. At the end of an hour and a half he complained of more giddiness, a peculiar feeling in the limbs, and a tendency to sleep. At the end of two hours he was taken to the hospital, put to bed, and made to take three grains of tartar emetic and twenty-four of ipecacuanha, in two doses, with an interval of half an hour. Vomiting could not be effected without the aid of an irritant to tickle the throat, and then it was too slight to do good. The aspect of the case grew more and more alarming, till at length he fell into a profound sleep, and seemed like a drunken man. During all this the breathing continued quite natural. A pound of blood was taken from the arm, soon after which the patient rallied a little, and complained of difficulty in swallowing. The pulse, which up to this time was soft and frequent, became full, hard, and slow, and there was troublesome itching of the forehead, nose, and lips. Various external irritants and agitation of the whole body were resorted to in vain. The face was distorted, the eyes dull and sunken, the entire surface of the body of an icy coldness. At the end of three hours, iodine and hy-

driodate of potash were administered, and vomiting ensued. Strong coffee frequently given had a like effect. At the end of five hours, a third bleeding was performed, strong coffee pretty freely taken, and two blisters applied to the chest. From this time he began to improve, and conversed a little. At the end of six hours, he inquired whether he was not very ill, and wondered that he had survived the monstrous dose of fifty-five grains of acetate of morphia. In two or three days he was well.

In the above case there is no evidence of any high mental excitement to counteract the poisonous dose, and it is altogether strange that recovery did ensue, especially as the poison was not early dislodged by vomiting nor neutralized by an antidote. It presents the largest opiate dose ever taken with comparative impunity. Allowing only four grains of opium as the equivalent of a grain of the acetate of morphia, the man took more than two hundred grains of opium.

Very much depends on the actual state of the body and mind, as to the result in cases of over-dosing, although we may not be able to see and appreciate that state, for this we cannot always do. Something may be due, also, to the quality of the anodyne or narcotic preparations as to relative strength, and this may not always be known. A few drops will kill a child that may have taken a larger dose on some previous occasion, or one that never took the medicine before. Laudanum or paregoric may be poured from a bottle containing a good deal of sediment, which may also be poured out and so augment the strength of the dose. A child five and a half years old was thus killed by a very small portion of paregoric elixir, probably not half a teaspoonful. (See *Edinburgh Medical and Surgical Journal*, 1844.) I attended a child to whom four drops of laudanum were administered, as had been done before with no obvious injury, and with great difficulty was the poisonous action controlled by the frequent exhibition of emetics. We infer not only that the altered quality of the usual dose may be influential, but that a good deal depends on the actual sensibility of the stomach at the time when the hurtful dose was swallowed. The fullness or emptiness of the stomach is also a matter of great importance in this relation. An ounce or two of laudanum, taken by a man immediately after a full dinner, might do very little mischief, and yet the same man might be killed in a week afterward by half an ounce taken on an empty stomach.

It is asserted in the *Edinburgh Medical and Surgical Journal*, 1846, that three grains of the acetate of morphia mixed with bran and water did not in the least degree affect a rabbit; and yet three children were so badly poisoned by sucking *unripe poppy-heads* that two of them died. (See *Ranking*, vol. i. p. 322.)

There are various modes of ascertaining whether a patient is under the influence of this drug, apart from the usual symptoms before adverted to. If you inspect the breath carefully, you may detect the peculiar opiate smell; and if a post-mortem examination be made, the same smell may be further manifest. The common chemical expedient depends on the reaction of a persalt of iron upon the meconic acid in opium, a deep-red color being struck. Having filtered the contents of the stomach, add to the clear liquid some solution of the sugar of lead. This will give rise to meconate of lead, if opium be in the solution. Separate this precipitate and decompose it by the addition of a few drops of sulphuric acid passed down a glass tube to the precipitate, which is covered with water. The meconic acid is instantly set free, and by passing down the tube a very little of a solution of persalt of iron, you strike the red color instantly. This test is not applicable to the usual salts of morphia, because they contain no meconic acid.

There are probably few articles possessed of true antidotal power on chemical principles in respect of opium. It has been said that iodine and chlorine will decompose all vegetable products that contain hydrogen, and thus destroy their essential nature, but this wants confirmation. Orfila proposed the solution of potash and soda to neutralize the salts of morphia, by throwing the alkaloid down as an insoluble precipitate. *Tannin* is more truly an antidote than any other agent; and though best administered in its pure form, can be well given in the shape of very strong coffee. This fact explains the successful action of strong coffee long before tannin was discovered or much talked of. Facts in abundance could be adduced in this respect.

The stomach-pump, emetics of the prompt kind, as sulphate of copper and sulphate of zinc, flagellation, dashes of cold water on the naked body, rubefacients, the actual cautery, galvanism; all these have proved effectual, and all have failed.

In Turkey, if a person happen to fall asleep in or near to a poppy field, so that the fumes exhaled shall come in contact with his body, he becomes gradually narcotized, and would die if the country people, who are well acquainted with these matters, did not carry him to the nearest stream and duck him in it, or pour pitcher after pitcher of water on his naked body.—*Graves's Clinical Lectures*, p. 37. This well-established fact proves conclusively the efficacy of the *cold dash* in this and other cases of narcotic poisoning.

Not unfrequently patients can be saved by early and copious vomiting, followed by free draughts of diluted lemon-juice or vinegar, to restore the lost tone of the stomach. In regard to the stomach-pump, it is well to give a caution, in order to pre-

vent its disuse because one effort fails. Mr. Wakely, in a paper published in his *London Lancet*, declares that after several failures, he has at last succeeded with it in extracting a ropy fluid containing considerable portions of the opiate poison.

It is also well to know that deep narcotism may remain after the freest evacuation of the stomach, and that too at an early period. A girl, aged nineteen, took an ounce and a half of laudanum. In a little more than an hour she was put under treatment. Full doses of the sulphate of zinc were given, and the stomach-pump was also employed. The stomach was doubtless emptied, and yet the narcotic effects of the poison not only remained, but actually increased in intensity. She was saved, however, by being kept in constant motion by two waiters, pinched severely, and put under the irritation of mustard plasters. Another case is reported in the *Edinburgh Medical and Surgical Journal* for 1838, as follows:—A young man, aged twenty-five, took a large quantity of laudanum and soon became insensible. The stomach-pump and other expedients were of no avail, and the case became nearly hopeless. At length it was agreed to make the experiment of *artificial respiration*, as the action of the lungs had nearly ceased. A common pair of bellows served the purpose of inflation, the mouth being closed to augment the effect. This device was perseveringly employed for more than an hour, aided by turpentine injections. The man recovered.

Several cases are reported in which, after failure by the usual means, the action of a small galvanic battery addressed to the spine and epigastrium proved effectual. M. Erichsen, in the *Edinburgh Medical and Surgical Journal* for January, 1845, reports the case of an infant poisoned by a few grains of Dover's powder, and saved by the action of an electrical machine, after cold dash, counter-irritants, &c. had failed. He directs the shocks alternately to the epigastrium and spine.

In Christison *On Poisons*, and kindred works, cases of *compound poisoning*, as they are called, may be found, which possess considerable interest. Thus, thirty grains of opium mixed with sixteen of sugar of lead were swallowed by a seaman in mistake. He had an ulcerated leg, for which the preparation was intended. At 8 P.M. the dose was swallowed, and at midnight the man felt a little unwell and vomited. He rested badly, yet without a sign of narcotism, and on the next day felt about as well as usual.—*Edinburgh Medical and Surgical Journal*, 1841. In the same journal is another case. A patient took sixty grains of opium with twenty of sugar of lead in mistake. In half an hour the error was discovered, and an emetic was administered. No serious consequence followed.

When we call to mind the almost universal employment of opiates in families as a merely domestic medicine, the frequency of its exhibition by medical men and quacks, the facility with which it can be procured, even by servants black or white, as a means of self-destruction, we wonder, not that it kills so many individuals, but that it is not the occasion of a thousand more fatal results than have ever been attributed to it. What could the world employ as a substitute? How could mankind tolerate its annihilation.

To guard against accidents, every preparation of opium should be so distinctly labeled that no one could be mistaken for another; and to this end the plainest English terms are decidedly better than the purest technicalities in Latin. Everybody can understand the words *opium*, *paregoric*, *laudanum*, &c. more certainly than any other terms that medical men recognize as synonyms. This may seem to many an unimportant kind of advice, but in my judgment it is of sufficient value to commend itself to the serious attention of every true philanthropist; and for this reason I am solicitous that it may have a salutary influence on the professional mind, and thence make its impress on the community.

Oxygen Gas.—In these days of inhalation-notoriety and marvel, it cannot be out of place to introduce to the notice of our readers a remedy that once had high repute as a part of the *pneumatic medicine* of Beddoes and his cotemporaries. Oxygen gas is as essential to life now as at any former period, and will be so to the end of time; and this fact creates a basis for the conjecture, at least, that its judicious employment as a remedial agent may be salutary. It is not easy to perceive how even the *infinitesimal* practitioners could object to its administration in small doses, when they and all their patients are compelled to take it in very large portions or die. They make a show, at least, of imitating Nature so far, that to oppose her established law in this respect would savor not a little of inconsistency; a feature, it is true, so fashionable among professional men as scarcely to excite remark.

The grand, prominent, therapeutic quality of this gas is *stimulant*, and though absolutely essential to animal life, may destroy it, and hence it is sometimes called a *narcotic* or *poison*.

Various articles can be made to yield this gas copiously; but the purest is obtained by exposure of the chlorate of potash to an elevated temperature. In fact, absolutely pure gas cannot be procured easily from any other source. A common elastic or oiled silk bladder, furnished with an ivory mouthpiece, is all that is necessary for the inhalation of this gas, which may be

employed pure or mixed with variable quantities of atmospheric air, as the occasion may suggest.

In one of the early volumes of *Silliman's Journal* there are recorded some interesting cases of *pulmonary consumption* cured by the persevering inhalation of this gas. With all due allowance for possible error in diagnosis, and the probable absence of real tubercular phthisis in the cases reported, there can be no doubt that the remedy employed very materially relieved the condition of the lungs, whatever may have been their pathological state; and viewed in this light merely, the inhalation is entitled to favorable notice. In Chaptal's *Chemistry*, edited by the late Professor Woodhouse, the reader may find cases of a like character treated in the same way. But the most copious notices of the remedial value of oxygen gas are to be seen in Dr. Hill's volume on the *medical uses of oxygen*, published in England in 1800. *Asphyxia*, *dyspnœa*, and other difficulties in the respiratory organs are named as successfully treated by this agent. Some of the foreign journals inform us that the inhalation of oxygen gas and its injection into the veins were tried in cases of *Asiatic cholera*, and sometimes with marked success. It has very recently been announced in the *India News* that Dr. Macrae has employed this gas very successfully in the hospital at Howrah. Fifteen patients in the last stage of cholera were treated by this article, and all recovered. The inhalation induces a long and refreshing sleep, from which the patient awakes in an enfeebled state.

There can be no doubt (for, in fact, the doctrine has been avowedly made the basis of the practice) that the idea has extensively prevailed that in many diseases a deficiency in the oxygen of the system, and especially of the blood, was the secret yet efficient source of the existing evil. The gas was therefore resorted to as a certain expedient, to compensate for a defect either imaginary or real. The grand difficulty lies in the certainty or uncertainty of the premises, and the power of control necessary to guard the remedy from inflicting a worse evil than it was designed to remove.

We are told in McKenzie's *One Thousand Experiments* that a lecturer on chemistry was nearly asphyxiated by the accidental inhalation of carbonic oxide gas, and very speedily relieved by the use of oxygen gas. We know also that persons almost destroyed by breathing an air made foul by the fumes of burning charcoal have been resuscitated by the same expedient.

As this gas is confessedly a stimulant in its primary action, it should invariably be administered on the same principles that regulate the use of other stimulants. That it may have done good, as is stated, in *low typhus* and other diseases of prostra-

tion, we can readily understand and believe, while, on the other hand, we could expect only unfavorable results after its exhibition to a highly excited system.

Tilloch's *Philosophical Magazine* contains a number of interesting statements touching the remedial powers of oxygen gas, that may be consulted with profit.

PALLIATIVE TREATMENT.—There are patients who cannot be cured. Laboring under organic disease or malformations which make it certain they must die, or being in the advanced periods of disease that we know will destroy life, our professional aid can avail nothing in respect of cure. We see the end, but cannot stop the march of the malady. But we may palliate, mitigate, render comparatively comfortable, and this is often very desirable. To soften the last agonies, to smooth the passage out of life, by the administration of the most agreeable prescriptions, is a duty that devolves on every practitioner, the faithful discharge of which will often secure for him the most abiding friendship and confidence. It is not needful to enlarge on this point, as every case must indicate its appropriate management in this respect. A judicious physician will not be slow to devise fit expedients for each emergency.

PANACEA.—This term means literally *a cure-all;* and so the people, and especially the whole race of quacks would seem to regard it. To such an extravagant length has the mania on this subject extended, that our newspaper literature may be pronounced truly to be a *panacea-literature*, to a very large extent. This unblushing impudence stains more than two-thirds of the newspapers of the country, and the evil is on the increase. We suppose the solution is not difficult, but can be found readily in the semi-omnipotence of cash, which has the wonderful facility of speaking all languages while it is the conservator of human motives to an almost unlimited extent. The common sense of a man of ordinary intellect revolts from the idiotic nonsense of a panacea, because he knows and feels that such a thing never existed and never can. A moment's reflection will satisfy any one that human diseases are even more dissimilar than human faces, for the plain reason that no two constitutions are precisely alike. Every well-instructed physician knows that during the prevalence of a powerful epidemic that controls and modifies all other diseases for the time being, there are no two patients in whom all the features of the epidemic are alike; and the same great principle runs through the entire range of morbid action. How absurd, then, is the effort to practice on the community the palpable fraud of a panacea that is to cure everybody, even of the same disease! And how ineffably ridiculous is the course so often adopted by clergymen in certifying the success of a cure-

all in any disease, and more especially in one of whose nature and existence they know no more than does an infant nine days old of the physical geography and population of the moon!

We fear that the conduct of many who profess to have more than ordinary intelligence touching this matter may be traced to recklessness and want of system on the part of medical men. Did physicians eschew all specifics and habitually adapt their remedies to the circumstances of each case, they could not fail to exert a good influence on the common sense of mankind. Such a course, practically enforced, would lead to a more correct public sentiment in reference to the action of medicines; and then it would only require the influence of a little more honesty to exclude the very idea of panaceas from all intelligent society.

As apt illustrations of the doctrine herein reprehended, we name pulmonary consumption and cancers. The papers are flooded with certificates of clerical and other quacks, touching the omnipotence of this and the other trashy compound to cure the diseases just named. These mountebanks assume that they are judges in the premises, when, in fact, they have no better diagnostic acquaintance with either pulmonary consumption or cancer than the most hopeless lunatic in our insane hospitals. They delude hundreds and thousands, by the influence of their position in society, touching a matter about which they are most profoundly ignorant, to the manifest detriment of the regular medical profession, whose gratuitous services they look for as a matter of right when too sick to be relieved even by their own miraculous panaceas. The time has fully come when such men should be made to feel the folly of their own ingratitude, in the refusal of medical men to serve them day and night, without the reward even of thankfulness for such unmerited philanthropy.

Pareira Brava. *Cissampelos Pareira.* Native of the West Indies and South America.—The plant is known in Jamaica under the name of the *walnut leaf* and *ice vine.* It grows abundantly in the mountain districts, attaining to great size, and covering the tallest trees with its velvet foliage. It was first noticed particularly by Margrave and Piso, who spoke of the root as used by the natives of Brazil for bowel and urinary diseases. The root is about as thick, ordinarily, as a finger, but sometimes is seen as stout as an arm, from two to four feet long, cylindrical, contorted, forked, and coated with a thin, smooth, brown bark. Within, it is ligneous, yellow, porous, inodorous, nauseous, and having a taste blending the bitter and sweet. The Portuguese employed it in the year 1680 for diseases of the bladder and kidneys. It fell into disuse, and was for a long time scarcely talked of. Subsequently it was revived, and acquired popularity as a remedy for the same affections to

which it had been previously applied. Some have called it a *lithontriptic*, because of its action on the urinary organs and calculous deposits. It has been tried, with various success, in *dropsy*, *leucorrhœa*, *jaundice*, and *rheumatism*.

Dr. Betton, late of Germantown, in Pennsylvania, has reported some interesting facts touching its exhibition in cases of *irritable bladder*. (See *American Journal of Medical Sciences*, vol. xvii.) Mr. Thompson, surgeon of Westminster Hospital, gave similar facts in one of the foreign journals in 1839. He combined eight ounces of the pareira decoction with two drachms of phosphoric acid, and gave his patients an ounce twice a day. In addition to the power of the medicine to allay irritability of the bladder, Mr. T. regards it as a good *tonic*. He combined it sometimes with opium or extract of henbane, if the patient suffered severe pain.

In Brazil this article has long been employed to avert the evils likely to flow from the wounds of *poisonous serpents*. The bruised leaves of the plant are kept constantly on the bitten part, and a vinous infusion of the root is administered internally. The dose of the powdered root is from thirty to sixty grains for adults. The dose of the infusion, made by digesting a half-ounce of the leaves or root in a pint of hot water, is two fluidounces three times a day. The decoction is not made quite so strong, because the process of boiling augments the power of the medicine. A watery extract has also been employed, in doses of from ten to twenty grains.

The article is not much known to the profession at large, though it can be had in many of the principal drug stores.

Paullinia. *Paullinia Sorbilis.*—This is comparatively a new article, and is identical with what has been called *guarana*. It is a native product of Brazil, and was first obtained by the Indians. The word *guarana* is from the semi-savage people who extract it from the plant, and have long valued it both as diet and medicine.

In order to prepare the article, the clean seeds of the plant are bruised in a mortar, then roasted on an earthen plate, and the powder so furnished is moistened with water and set aside for the night. The soft mass is next made into cakes weighing one pound or a little more, and these are well dried in the sun or by means of a fire. The latter process gives them a black aspect, and hardens them. The cakes are called the *extract;* and it is really an extract, and may be kept for years, if well surrounded with leaves and otherwise guarded against moisture. The specific gravity of this substance is 1.3. It swells and becomes softer by the action of water on it. Its taste is somewhat rough, not unlike rhatany, although nearly void of bitterness.

The Indians carry these cakes with them when about to undertake a journey. When they wish to partake of them, a fish-bone is rubbed smartly on the cake to reduce it to powder, and the addition of sugar and water converts the mass into an antifebrile and refreshing drink. They add the powdered cakes also to chocolate, in order to increase its tonic and nutritive qualities, without materially affecting its taste. The roots of the plant are employed by the Indians in decoction and infusion for the cure of fevers.

Although the extract is very slightly astringent, Gomez tells us it is efficacious in *dysentery* and *urinary diseases* attended with relaxation, and is so employed in Brazil. The dose is from twenty to seventy-five grains in a wineglass of water.

While guarana is used identically with paullinia, that name is given to a vegetable alkaloid obtained from the extract by several chemists. Garelle, who frequently employed both the extract and alkaloid in the Brazils, sent some of both to France, where it proved equally medicinal. These preparations were exhibited in *chlorosis*, *palsy*, the *diarrhœa* of phthisis pulmonalis, *headache*, tardy *convalescence*, &c. &c.

The tonic powder of the paullinia depends chiefly on the tannate of caffeine, which abounds in it. It is said that alcohol readily takes up the active properties of this plant, and therefore we can make a tincture as well as an alcoholic, or, rather, a hydro-alcoholic extract. A syrup is readily made also from the extract, and is a good mode of exhibition. It has also been employed in the shape of ointment.

So far as I can learn, this medicine has not been much employed in this country; but it is quite possible it may prove to be a valuable auxiliary.

PELLITORY OF SPAIN. *Anthemis Pyrethrum.*—This root, well known to the ancients, is a native of Africa, whence it was introduced to Europe. It has no odor, but an acrid, pungent taste, causing a flow of saliva. The active principle is soluble in alcohol and ether, and is a volatile oil. The properties are those of an irritant and sialagogue; and it has been employed chiefly in toothache and palsy in consequence of those qualities. Very seldom in use now.

PEPSIN, or *pepsine.*—This is from the Greek word meaning *to digest*, and denotes a substance found in the gastric juice, and on which its energy depends. It is a modification of albumen, and seems to act like a ferment.

As this article has attracted the notice of the profession everywhere as a remedical agent, especially in cases of impaired digestion, and as spurious samples are now sold, it is deemed advisa-

ble to give the following brief note on *true* and *false* pepsine, as furnished by Mr. Squire in the *Lond. Lancet* for July, 1857.

"I propose to point out the characters by which the genuine article may be recognized, and likewise those presented by the counterfeit; and also to describe the chemical tests by which they may be distinguished from each other.

"I have taken as the normal type the preparation originally introduced by Mons. Boudault, the manufacturer in Paris, as described by him in a paper read before the Academy of Medicine. The process employed consists in digesting the mucous membrane of the rennet-bag in distilled water, precipitating the pepsine by acetate of lead, and decomposing this precipitate by sulphureted hydrogen. A solution of pepsine, nearly pure, is thus obtained, which is evaporated at a gentle temperature to a syrup; it is then mixed with starch in such proportion that fifteen grains of the resulting mixture shall possess the power of digesting one drachm of *dry* fibrin. The preparation generally used contains, in addition, a small proportion of lactic acid. The article sent into the market by Mons. Boudault presents the appearance of a light fawn-colored, somewhat cohering powder, possessing a peculiar odor and taste. When treated with cold distilled water and filtered, an amber-colored fluid passes through, while the starch remains behind. The spurious article, however, is a coarse white powder, without either taste or smell, and, when treated with cold distilled water, partially gelatinizes, filters with great difficulty, and yields a solution perfectly colorless. The insoluble matter which remains behind, when examined by the microscope, consists apparently of a mixture of starch and animal membrane, which may be readily separated by washing with water, the starch remaining in suspension, the membrane caking together and sinking to the bottom.

"Let us now examine these solutions with different re-agents. I shall, by way of distinction, call Mons. Boudault's preparation true pepsine, the other false:—

True Pepsine.	Test.	False Pepsine.
Abundant precipitate . . (Peptate of lead) Ditto.	Acetate of lead .	Slight cloudiness.
(Tannate of pepsine) . . .	Tannin	Ditto.
Precipitates of pepsine . .	Alcohol	No effect.

"The solution of true pepsine is strongly acid to litmus, while the false is so only in a slight degree; but, more than all, Mons. Boudault's preparation does what it professes to do: fifteen grains digest its drachm of dried fibrin, while the spurious compound is entirely destitute of this property."

This article has the power of speedily dissolving animal

matters out of the body and reducing them to a soft pulp. Hence its use as a remedy to augment the natural power of the stomach to digest food. It is kept on sale in the drug stores, and can be used in pill, in doses of three grains to twenty, several times a day. It is perfectly safe.

We refer the reader to part xxxv. of *Braithwaite*, p. 298, for details of the successful use of pepsine in various forms of dyspepsia, &c. &c.

PERCUSSION.—This is a comparatively modern aid to the physician in the investigation of disease, and is most frequently applied to the chest. It is effected by striking with the ends of two or three fingers, or a small round stick, over various portions of the chest. The philosophy of the sounds thus heard is precisely of the same nature as when we strike on an empty barrel, and then on a barrel full of liquid. In the former we get a clear, and in the latter a dull sound. We learn by this aid whether the chest contains effusion of any kind, or whether there is no impediment of this sort to the detection of the natural sounds of healthful respiration.

PHLORIDZINE. *Phloos* and *ridza—root of apple-tree.*—The original source is thus indicated, although it has been prepared from the root bark of other fruit-trees. The French, German, and Polish physicians have spoken highly of this new medicine as a substitute for the different forms of cinchona. It is extracted from the bark of the roots of the apple, plum, and wild-cherry trees, and may be obtained thus:—The bark of the recent roots is boiled, with water sufficient to cover them, for half an hour. The fluid is poured off, and as much more poured in for a second boiling. This, with the other portion of liquid, being placed in a clean vessel and set aside to remain undisturbed for at least six hours, will furnish the new article. The phloridzine falls pretty copiously, in the form of a deep-red velvety-looking matter. To make it as nearly white as possible, the mass is to be boiled with animal charcoal in a sufficient quantity of pure water, and afterward to be well washed and dried. It is slightly bitter, but not astringent; dissolves in alcohol, but is nearly insoluble in water.

Boullier, who first prepared it, sent parcels to several distant physicians for trial, and all reported favorably. M. Lebandy, editor of the *Journal des Connaissances Medico-Chirurgicales*, says, "Its efficacy is so decided that we cannot hesitate to class it with the most powerful febrifuges; and it has this advantage over sulphate of quinine, that it never induces gastralgia. The adult dose is from ten to twenty grains, given in pill or powder."

Phloridzine may be distinguished from salicine by its not yielding a red solution with sulphuric acid. When moistened with

ammonia and exposed to the air it absorbs oxygen and becomes blue, and if then dissolved in ammonia the solution yields a red powder on the addition of acids.

PHOSPHORUS.—This article was formerly much employed in practice, but is at present seldom exhibited. It is obtained from phosphoric acid by the decomposing energy of charcoal. The question is often asked, Whence comes the large quantity of phosphorus found in the human structure, in the urine and bones? This has been answered, in part, by a writer in the *Medico-Chirurgical Transactions*, vol. x. He says that phosphoric acid exists largely in many vegetable and animal matters that enter into our daily food. Mr. Barry, in experimenting on pharmaceutical extracts, *in vacuo*, found this acid present in all the extracts in a soluble state; he found it also in most esculent vegetables.

The color of fresh and pure phosphorus is nearly white, with a faint tinge of yellow. When exposed to the light a good while it assumes a darker color. Its rapid combustibility, even by the slightest friction, renders it necessary to preserve it in water. Though insoluble in water, it dissolves in alcohol, ether, and oils.

The *ethereal solution* has been more commonly employed than any other preparation. It is made by adding to an ounce of sulphuric ether a drachm of phosphorus, cut into very small bits. The bottle must be kept well closed. The dose varies from ten to forty drops, and is best administered on sugar. As the *stimulant* effect, though real, is liable to pass off soon, the dose should be often repeated.

The solid phosphorus has not often been administered, and rarely in doses larger than an eighth of a grain, which may be gradually augmented. It is best given in the form of pill, being easily enveloped by conserve of roses, or mucilage, or soft extract. A single grain, taken at a dose, destroyed life. A French chemist determined to test the power of phosphorus in his own person, and took a grain, with a good deal of sugar, for his first dose. On the next day he tried two grains, and on the next, three. Violent vomiting soon came on, with inflammation of the bowels, delirium, spasms, &c., and although vigorous measures were adopted, he perished, a victim of his own folly. The *London Lancet* for 1843 reports a fatal use of phosphorus, as a medicine, in much smaller doses. And in the *American Journal of Medical Sciences* for October, 1843, may be seen an article showing the poisonous action of lucifer matches, made, in part, of this substance. Those who have examined, however slightly, the article sold in tin boxes to kill roaches and rats, must have detected the presence of phosphorus in the mixture. It is added to render the *exterminator* more certainly poisonous.

Several cases are furnished by Mr. Taylor, surgeon in Nottingham, (England,) showing the pernicious effects of phosphorus on the workmen in manufactories of lucifer matches. Necrosis of the maxillary bones, followed by exfoliation, is attributed to this agency. This effect has been ascribed to the constant respiration of phosphoric vapors, which became acidified, and acted chemically on the bony structure. The operation appears to have been very gradual. (See *London Lancet*, March, 1850.)

The same injurious action is noticed by Mr. Simon, in a lecture on clinical surgery. He says the constitution suffered serious deterioration, calling for tonics and occasional anodynes in addition to the proper local treatment.

The pervasive influence of phosphorus was noticed very early in the history of its medical administration. On making a full dissection of a dead body after either the directly poisonous or remedial use of the article, the entire lining of the abdomen has been found quite luminous, and other parts in like condition.

When large portions have been swallowed with intent to kill, or by accident, we find the usual symptoms of poisoning by the mineral acids, and the same general treatment is proper. A controversy was started some years ago in this city, to decide whether the fatal action of phosphorus, taken into the human stomach, depended on its power to corrode that organ, or on the irritant quality of the phosphoric acid generated there. The obvious impracticability of determining such a point was so apparent that the disputants became ashamed of it, and the matter ended.

The external poisoning by phosphorus is very severe, tedious, and difficult to manage. There is not only a burn inflicted, but a burn of special character. It is a *phosphorus-burn* and a *phosphorus-ulcer* that create the difficulties in the matter of healing. Having had quite enough personal acquaintance with this feeling in reality, I can with truth declare that no pain is so peculiarly distressing as that inflicted by the combustion of phosphorus on the skin. The ulcers are exceedingly slow to heal; at least such was the nature of this thing in my own person.

As the most certain expedient for obtaining a little relief from the burning sensation immediately after an accident of this sort, I feel confident that nothing can compare with ice-cold water, renewed and continued for hours. The lime liniment, spoken of under the article *Calx*, is one of the best applications that can be made to the ulcers left after the inflammatory action has nearly subsided.

The earliest notice of the remedial use of phosphorus is in Haller's *Collection of Theses*. Cases are there detailed showing

the successful use of the medicine in *chronic diarrhœa*, the last, or *typhoid stage of bilious fever, malignant catarrhal fever*, &c.

In the *English Quarterly Journal*, vol. xiii., Dr. Miller reports success in the treatment of *jaundice* with phosphoric acid in balm tea; but he omits to name the dose. The previous treatment consisted of a cathartic of calomel and jalap, which was repeated if necessary. The phosphoric mixture was given till free diuresis came on, and the urine made perfectly clear. In three or four days the yellow tinge of the skin entirely disappeared.

Phosphorus has been employed successfully by an English physician, in the advanced stage of cholera, usually regarded as hopeless. In 1833 he published his experience with this medicine in the *London Lancet*, and in the same journal for February, 1850, he reiterates the same views. His reliance has been chiefly on the following prescription:—

℞.—Phosphor. ℈ss;
Cer. alb. ʒss.

With the aid of enough water to avoid combustion, rub these articles well together, divide the mass into ten pills, which should be kept in a small bottle containing pure water.

In far-advanced cases, these pills were the only reliable medicine. One was given every ten minutes, followed by a little water. Three pills usually sufficed to arrest the cramps, the vomiting and purging. In milder cases, the first medicine given was as follows:—

℞.—Nit. acid fort., from three to five drops;
Tinct. opii, four to eight drops;
Syrup croci, a drachm;
Aquæ, an ounce and a half.

Mix for a draught, which very frequently answered the end in view. If this failed, the pills were administered as above stated.

Some six or eight cases are detailed to show the value of this practice. (See *London Lancet*, February, 1850.)

A considerable number of cases reported by Dr. Wolff, in 1793, would seem to show the good effects of phosphoric ether in low fevers attended with delirium, tremors, feeble pulse, petecchiæ, &c. Five drops of a very strong solution were given every three hours. The pulse improved after a few doses had been given, and equable heat pervaded the system, a pleasant moisture covered the skin, and the delirium subsided. Much testimony of a similar nature could be adduced; and there can be no doubt that salutary results have followed in judicious hands. It is true, however, that much mischief was apparent, as the consequence of the indiscriminate employment of the article, in the days of its greatest celebrity.

Dr. Rowbotham has an article in the *London Lancet* for September, 1857, on the efficacy of phosphorous acid in *asthma*. An ounce of the acid was added to a pint of spring-water, and of the solution two ounces were taken three times a day. In three days the symptoms were decidedly improved, and in a short time the patient resumed his trade.

The editor of the *Lancet* regrets that Dr. R. forgot to give his formula for preparing the acid.

My own experience in its use has been limited; but I feel very much inclined to the belief that it is one of the medicines that could be dispensed with.

Dr. R. M. Glover, who appears to be very partial to the use of phosphorus, gives some sensible hints touching the safest mode of exhibiting the remedy. He says he has given the article, in the shape of a solution, in chloroform and also in cod-liver oil. Chloroform dissolves one-fourth of its weight of phosphorus, the solution being incombustible. Four or five drops of the solution, shaken with a drachm of sulphuric ether or a wineglassful of old port, were given twice a day in cases of *typhoid fever*, with obvious benefit, the forces of the system being thus sensibly rallied. The solution in the oil is made by cutting the phosphorus into very small bits (under water of course) and adding half a grain to the ounce of oil. The bottle must be dipped in hot water and shaken gently, so as to effect solution. In *scrofulous affections* this solution has been very useful.—*London Lancet*, Jan. 8, 1853, and *Braithwaite*, p. xxvii. p. 246.

PHYTOLACCA DECANDRA. *Pokeweed. Porkweed. Portphysic. Pokeroot. Red Weed. Red Night-shade. Coakum. Pigeon Berry.*—All these names, and perhaps as many more, are given in various parts of the United States to a plant or weed that is most undesirably prevalent almost everywhere. It grows in waste grounds, by the roadside, along old fences, and in decayed stumps, and anywhere else if permitted to live. Its purple stalk, of six or eight feet high, and its loaded bunches of black berries, strike the eye almost in every direction in the fall of the year. And if robins or pigeons are plenty in the vicinity, they may be seen feasting there luxuriously. The flesh of those birds is often tinged in every fibre with the deep color of the juice; and yet the game is not thrown away on that account, but eaten in large quantities.

Every part of the plant is said to be medicinal; but the root and the berries are the portions employed most generally. The roots are often obtained as large as two and a half or three inches in diameter, and it is by reason of the vegetable energy there accumulated and acted upon by the genial warmth of early spring, that our markets abound with the beautiful pink and

white shoots that greet us so early in the season and furnish so palatable a variety of greens. The shoots start up in a single night to the length of several inches; and if only the whitish pink sprouts be taken, they afford a desirable esculent that is relished by most persons. If the shoots are taken after they lose this delicate color and are actually green, they are less wholesome. The juice of the old root fresh dug from the earth is quite acrid when applied to an ulcer, and acts roughly on the bowels in doses of an ounce or two.

Besides the slight escharotic action of a strong decoction of the root applied to an ulcer on the leg, a peculiar effect is sometimes noticed in the face, which is deeply suffused in an instant, more or less fullness of the head being at the same moment induced. A strong decoction applied to an erysipelatous sore on my leg, in 1819, gave both the results just named.

The juice expressed from the full-grown leaves of the poke-weed, and slowly inspissated in the sun, furnishes an excellent extract for ordinary *scaly tetter*, such as often affects the joints of the fingers. A few applications night and morning, preceded by proper evacuants of the stomach and bowels, will frequently prove effectual. The remedy is a very old one, and well known to the common people in various sections of our country.

A decoction of the roots as strong as it can be made is a valuable remedy for many *affections of the skin*, and especially such as are associated with a troublesome itching. It is always necessary in such cases to correct the state of the digestive organs, which can often be suitably done by one or more doses of an emeto-cathartic, as calomel and ipecacuanha. I have treated the *itch* in this manner with marked success. I was one of the attending physicians of the *Children's Asylum* many years ago, when it was located in Southwark, and found it impracticable to cure the disease by the sulphur ointment, which is so fashionable an expedient everywhere. The difficulty of keeping the clothing clean when that article was employed, and other objections, induced me to substitute a bath of the poke decoction, made in quantity sufficient to fill a barrel two-thirds full. The children, entirely naked, were placed in the barrel, kept there and well rubbed for the space of ten minutes; on being removed from the bath and wiped dry, a fresh suit of clothing was put on, and the cast-off garments carried to the washhouse. If there was much abrasion of the skin, the decoction gave some pain and always more or less uneasiness; but it was rarely necessary to repeat the bath more than once.

The juice of the berries, a tincture of the berries, and the dried fruit have been employed from the earliest history of America, in the treatment of *rheumatism*, particularly the

chronic variety. A tablespoonful of the juice with half as much brandy is a common dose. The tincture is very little different from this dose. The best mode of preparing it is to fill a bottle with the ripe berries, loosely packed, and to pour in as much brandy or alcohol as the vessel will hold. A tablespoonful of such a tincture is the customary adult dose. I am opposed to either of these preparations, because of their aptitude to create or perpetuate a love of strong drink; and if the berries be really medicinal, they can accomplish the desired objects apart from alcohol. From ten to twenty of the dried berries, taken four or five times a day, are supposed to exert an *alterative* agency, and are taken by rheumatic patients, with salutary results. From five to ten grains of the powdered root, with from three to five of ipecacuanha, taken every three hours, will answer about as well.

An over-dose of the powdered root proves emetic and cathartic; and if still larger, it may act as an irritant or narcotico-acrid poison. An infusion of the leaves or root made with hot water acts kindly as a remedy for *piles*, frequently applied to the parts.

The Italians are reported to have employed with great success the following preparation in *scrofula* and *syphilis*. Boil half a bushel of pokeroot in a bushel of water to two gallons Of this very strong decoction a teaspoonful was considered a dose, which was given every hour till vertigo was induced. The medicine was supposed to act very much like veratria.

Thatcher, in his *Modern Practice*, states that the early hunters of Missouri found an effectual remedy for the bites of rattlesnakes in pokeroot boiled to a soft pulp and laid on the wound in the form of a poultice.

PILULÆ. *Pills.*—Next to powders, the pill form may be regarded as the best mode for exhibiting medicine internally. And yet we find persons who cannot, or think they cannot, swallow a pill. Those individuals have no difficulty in gulping down whole cherries, several at once it may be. In the season of cherries, therefore, squeeze the stone gently out and slip the pill in, and thus it can be taken.

Pills can generally be so prepared as to conceal any unpleasant taste. They may be coated with wafer, or with silver or gold leaf, or rolled in liquorice root powder, or fine starch and sugar mixed well together.

Pills are sometimes preferable to powders, because gradually soluble in the stomach and less likely to irritate that organ. Many substances can not be given in solution, and often a tincture is objectionable. In such cases, pills are to be preferred.

It is sometimes important to exhibit hard and very dry pills. An irritable stomach will receive an old opium pill when it rebels

under the irritation of one just made. The former is very slowly acted on and dissolved, the latter speedily; hence the diversity in operation. A dry, hard pill is occasionally important because of its indigestibility. The common beeswax has been exhibited in pill form, in *chronic diarrhœa*, with good effect on this account. It proves a perpetual but mild stimulant to the mucous membrane of the bowels, and passes out unchanged.

To keep pills from running together and cohering, they should be well prepared, and then kept in boxes containing a sufficient quantity of fine starch, or calcined magnesia, or fine powder of liquorice root.

Pills made of vegetable matters should not weigh over five grains, because they would be too bulky. If composed of metallic and ponderous matter, six or more grains may not be too much. Magnesia and calomel are very opposite in regard to specific gravity, and may serve as illustrations, although the first is not a vegetable matter. For making some of the metallic salts into well-formed pills that will retain their shape, I know of no article so proper as the soft extract of quassia or gentian.*

We present the following prescriptions for pills that will be found useful to the practitioner:—

Pills of Aloes and Iron.

1. ℞.—Aloes spicat. ʒiss;
Myrrhæ opt. pulv. ʒij;
Extract gentian, ℈iv;
Ferri sulph. ℈ij;
Mellis, q. s.

To make one hundred and twenty pills. The dose for an adult is from two to four a day.

2. ℞.—Ferri sulph.
Sub. carb. pot. āā ℈i;
Pulv. myrrhæ, ʒi;
Pulv. aloes, ʒss.

Mix, and divide into thirty pills. Two or three at bedtime will be a proper dose.

Alterative Pills.

1. ℞.—Mass pill. hydrarg.
Cal. ppt. āā ℈i;
Sapon. Cast. ʒss;
Ext. taraxaci, ʒiij.

Mix well, and divide into sixty pills, of which take two or three twice a day.

2. ℞.—Rad. scill. grs. vi;
Fol. digital. grs. xij;
Cal. ppt. grs. vi;
Pulv. myrrhæ, ℈i;
Rub well together, and add
Gum fetid, ʒss;
Ext. gentian mol. q. s.

To make twenty pills, one to be taken morning, noon, and night.

Anodyne Pills.

1. ℞.—Pulv. camph. grs. iij;
Nit. potass. grs. vi;
Ext. hyosciam. grs. iij;
Sulph. morph. gr. ¼;
Syr. limon. q. s.

To make three pills, to be taken at bedtime.

2. ℞.—Pulv. opii, ʒss;
Ext. hyosciam. ʒiiss;
Sapon. dur.
Pulv. rad. glycirr. āā ʒi.

Mix well, and divide into sixty pills. One to three make a dose.

* The hardness of pills is often an objection to their exhibition with success. To prevent this, M. Thibault advises the use of honey in the preparation of pill masses. He says they will keep soft no matter how long on hand.—*Bulletin de Therapeutics*, 1857.

3. ℞.—Ext. lactucar. ʒi;
Ext. hyosciam. ʒss.

Mix to make thirty pills. Two make a dose.

Anodyne and Aperient Pills.

1. ℞.—Pulv. ipecac. grs. x;
Ext. colocynth. ʒi;
Ext. hyosciam. ʒss;
Mass hydrarg. ℈i;
Sapon. Cast. grs. x;
Ol. caryoph. ♏v.

Rub well together, and divide into thirty pills, of which from two to five will be a dose.

2. ℞.—Pulv. Doveri, ʒi;
Ext. hyosciam. ʒij;
Ext. colocynth. comp. ʒi.

Rub well together, and divide into sixty pills. From one to four will be a dose.

Alterative Antimonial Pills.

℞.—Pulv. antimon. tart. grs. v;
Flor. sulph. ʒij;
Pulv. camph. ℈i;
Ext. taraxaci, ʒiiiss.

Mix well to make a mass, and divide into a hundred pills. Two or three may be taken three times a day.

Compound Aperient Pills.

1. ℞.—Mass hydrarg. cœrul. ʒi;
Pulv. aloes opt. ʒij;
Pulv. gamboge, ʒss;
Pulv. myrrhæ, ℈ij;
Ol. caryoph. ♏v.

Mix well, and divide into sixty pills. Take from one to three twice a day.

2. ℞.—Pill. mass hydrarg. ʒi;
Pulv. antimon. tart. grs. v;
Ext. jalap, ʒij;
Sapon. Cast. ℈i.

Rub intimately, and divide into sixty pills. Take from one to three twice a day.

Antispasmodic Pills.

1. ℞.—Gum fetid, ʒij;
Gum ammoniac,
Gum myrrhæ,
Pulv. camph. āā ʒss;
Tinct. opii acet. ʒi.

Mix well, and divide into sixty pills. Dose, from one to three.

2. ℞.—Pulv. camph. ʒi;
Nit. potass. ʒss;
Pulv. digital. ℈ij;
Sulph. quin.
Ext. hyosciam. āā ʒi;
Syr. simp. q. s.

To make sixty pills. From one to three will be a dose.

Compound Pills of Nitrate of Silver.

1. ℞.—Argent. nitrat. grs. iv;
Ext. belladon.
Ext. glycirrh. āā ʒi.

Rub well, and divide into forty pills. One to three for a dose twice a day.

2. ℞.—Argent. nitrat. pulv. grs. v;
Pulv. opii, grs. x;
Pulv. camphor,
Nucis moschat. āā ℈ij;
Pulv. gum Arab. ʒss;
Syr. simp. q. s.

To make thirty-six pills, of which from one to three may be taken three times a day.

3. ℞.—Argent. nitrat. pulv. grs. v;
Sulph. quin. ℈ij;
Sulph. morph. grs. iv;
Cons. rosar. q. s.

To make forty pills. Dose, one every four hours for diarrhœa in low fever.

Arsenical Pills.

℞.—Acid arsenious, grs. ij;
Pulv. opii, grs. viij;
Sapon. Cast. grs. xxxvi.

Mix, and divide into twenty-four pills. Dose, one three times a day.

Compound Arsenical Pills.

℞.—Acid arsenious, grs. ij;
Sulph. cupri. grs. xij;
Sulph. quin. grs. xxiv;
Cons. rosar. q. s.

To make twenty-four pills. Dose, one three times a day.

Compound Fetid Pills.

1. ℞.—Gum fetid opt. ʒi;
Sulph. quin. ʒss;
Sapon. dur. ʒss;
Ol. pulegii, ♏x;
Syr. simp. q. s.

To make forty-eight pills. Take three or four night and morning.

2. ℞.—Gum fetid,
Pulv. valerian, āā ʒss;
Gum camph. grs. x;
Ol. cajeput. q. s.

To make thirty pills. Take two or three for a dose at bedtime.

3. ℞.—Gum fetid,
Pulv. valerian, āā ʒi;
Ext. aconiti, grs. vi;
Pulv. scill. grs. x;
Carb. ammon. grs. xv;
Syr. zingib. q. s.

To make forty-eight pills. Two to four make a dose.

Compound Camphor Pills.

1. ℞.—Pulv. camph. grs. iv;
Nit. potass. ℈ij;
Antim. tart. grs. ij;
Pulv. glycirrh. ℈ij;
Mellis, q. s.

To make eighteen pills. Dose, one to three, three times a day.

2. ℞.—Pulv. camph. grs. iij;
Pulv. ipecac. grs. vi;
Ext. hyosciam. ℈ss;
Syr. simp. q. s.

To make five pills. Two make a dose.

3. ℞.—Pulv. camph. grs. xv;
Nit. potass. ℈ij;
Antim. tart. gr. i;
Cons. rosar. q. s.

To make ten pills. One to be taken every four hours.

Cathartic Pills.

1. ℞.—Pulv. gamboge,
Pulv. aloes,
Pulv. scammon.
Pulv. rhei, āā ʒi;
Oxymel scillæ, q. s.

To make sixty pills. Dose, two to four at bedtime.

2. ℞.—Ext. colocynth. comp. ʒi;
Pulv. aloes opt. ʒss;
Ant. tart. grs. iv;
Sapon. dur. ℈i;
Ol. caryoph. ℈i.

Rub well together, and divide into sixty pills. One to three make a dose.

3. ℞.—Ext. juglan. cath. ʒij;
Ext. colocynth. comp. ʒi;
Pulv. ipecac. ℈ij;
Pill. mass hydrarg. ʒi.

Rub intimately, and divide into eighty pills. From one to three may be a dose.

4. ℞.—Cal. ppt. ʒi;
Pulv. jalap, ʒss;
Pulv. rhei, ʒi;
Ant. tart. grs. iv;
Cons. rosar. q. s.

To make sixty pills. Take from two to four at bedtime.

5. ℞.—Pill. mass hydrarg. ʒij;
Ant. tart. grs. v;
Sapon. Cast. ℈i;
Pulv. aloes opt. ʒi;
Gum fetid, ʒss.

Rub well, and divide into sixty pills. Dose, from one to three at bedtime.

6. ℞.—Ol. croton tigl. ʒss;
Pulv. opii,
Pulv. ipecac. āā grs. x;
Cons. rosar. q. s.

To make ten pills. Dose, one every four hours.

7. ℞.—Ext. colocynth. comp. ʒiv;
Cal. ppt. ʒi;
Ant. tart. grs. v.

Mix intimately, and divide into sixty pills. One to three for a dose.

Pills of Blue Vitriol and Opium.

℞.—Cupri. sulph. grs. vi;
Pulv. opii opt. grs. iv;
Pulv. tragacanth, ℈i;
Muc. gum Arab. q. s.

To make twelve pills. Take one three times a day, in chronic diarrhœa.

Deobstruent Pills.

1. ℞.—Hydrarg. cum creta, grs. xvi;
Sodæ carb. exsiccat. ℈i;
Ext. taraxaci, ʒi.

Mix well, and divide into twenty pills. Take two or three every night.

2. ℞.—Ant. tart. grs. v;
Sapon. venet. ʒij;
Pulv. gum Arab. ʒi;
Mass pill. hyd. ʒss.

Mix intimately, and divide into forty pills. Take three, morning and evening, for cutaneous eruptions.

3. ℞.—Cal. ppt. grs. vi;
Ant. tart. gr. i;
Ext. taraxaci, grs. x.

Mix well, and divide into four pills. Take one night and morning.

Diuretic Pills.

1. ℞.—Pulv. scillæ, grs. ij;
Pulv. digital. gr. i;
Pill. mass hydrarg. grs. vi;
Ol. juniperi, ♏iv;
Pulv. ipecac. grs. vi.

Mix well, and divide into four pills, of which two will be a dose at bedtime, followed by some warm mild drink.

2. ℞.—Potass. bi-tart. ʒi;
Sodæ bi-bor. ℈iss;
Pulv. rad. seneg. ʒi;
" colchici, ℈ij;
" scillæ, grs. xvi;
Ext. taraxaci, ʒiij.

Mix carefully, and divide into one hundred pills. The dose will be three, three times a day.

Emmenagogue Pills.

1. ℞.—Pulv. aloes soc.
" myrrhæ, āā ʒiss;
" gum ammoniac, ʒi;
" sodæ bi-bor. ʒiss;
" ferri sulph. ʒss;
" ferri carb. ℈i;
" rhei, ℈ij;
Ol. sabinæ, ℈i;
Sapon. q. s.

To make one hundred and twenty pills. Dose, two or three, three or four times a day, in feeble habits.

2. ℞.—Ferri lact.
Ferri sulph.
Ferri carb. āā ʒi;
Ext. taraxaci, ʒij;
Pulv. canthar. grs. xx.

Rub well together, and divide into one hundred pills. Dose, one, three or four times a day, for feeble habits.

Pills of Iodide of Iron.

℞.—Ferri iod. ʒss;
Pulv. croci, ʒi;
Sacch. alb. ʒiij;
Muc. gum Arab.

To make ninety pills. Take one, two, or three, several times a day.

Pills of Nux Vomica.

1. ℞.—Ext. nucis vomic. ℈ss;
Gum fetid, ʒiss;
Syr. simp. q. s.

To make thirty pills. Take one two or three times a day.

2. ℞.—Ext. nucis vomic. grs. ij;
Morph. acet. gr. i;
Ol. olivar. grs. x;
Dissolve, and add
Ext. helleb. nig. ℈i;
Pulv. glycirrh. grs. viij;
Mellis, q. s.

To make twelve pills. Take one, two or three times a day, for chlorosis and amenorrhœa.

Sugar of Lead Pills.

1. ℞.—Plumbi acet. grs. viij;
Pulv. opii, grs. iv;
Cons. rosar. q. s.

To make eight pills. Dose, one, two, or three, according to circumstances.

2. ℞.—Plumbi acet. grs. iv;
Pulv. digital. grs. vi;
Pulv. opii, grs. iij;
Cons. rosar. q. s.

To make six pills. Dose, one three times a day.

3. ℞.—Plumbi acet. grs. xij;
Acet. ext. colchic. grs. xv;
Pulv. opii, grs. iij;
Muc. gum Arab. q. s.

To make twelve pills. One for a dose, to be repeated as occasion may require.

Compound Pills of Squill.

1. ℞.—Pulv. scillæ, ʒss;
" gum ammoniac,
" succ. glycirrh. āā ʒi;
" ant. tart. grs. v;
" nucis mosch. ℈i;
Syr. limon. q. s.

To make fifty pills. Two or three may be taken three times a day.

2. ℞.—Pulv. scillæ,
" zingiber, āā ʒi;
" ipecac. ʒss;
Sapon. Cast. ʒiss;
Ol. juniperi, ♏xxx.

Mix, and divide into forty pills.

Aperient Tonic Pills.

1. ℞.—Quin. sulph. ʒi;
Ext. gentian, ʒij;
Pulv. aloes,
Pulv. myrrhæ, āā ʒi;
Syr. simp. q. s.

To make one hundred and twenty pills. Take two or three, three times a day.

2. ℞.—Quin. sulph. ℈i;
Pulv. aloes, ʒss;
Ext. gentian, ʒi.

Mix, to make twenty-four pills. Dose, one three or four times a day.

3. ℞.—Ferri sulph.
Quin. sulph. āā ʒi;
Ext. gentian,
Pulv. aloes, āā ʒiss;
Syr. simp. q. s.

To make eighty pills. Two, three, or four will be a dose.

4. ℞.—Quin. sulph.
Pulv. aloes, āā ℈ij;
Ext. quass. ʒiss;
Syr. simp. q. s.

To make fifty pills. Two or three for a dose.

Tonic Copper Pills.

℞.—Cupri. sulph. grs. x;
Pulv. rhei, ʒi;
Ext. quass. ʒij;
Syr. simp. q. s.

To make forty pills. One to three for a dose in leucorrhœa, gleet, &c.

Tonic Zinc Pills.

℞.—Zinci sulph. ℈i;
Ext. gentian, ʒi;
Quin. sulph. ʒss.

Mix, to make forty pills. Take two three or four times a day.

Compound Zinc Pills.

1. ℞.—Zinci sulph. grs. xij;
Pulv. myrrhæ, ʒi;
" ipecac. grs. xviij;
Ext. hyosciam. ℈ij;
Syr. simp. q. s.

To make thirty pills. Dose, from one to four a day.

2. ℞.—Zinci sulph. grs. xij;
Pulv. ipecac. grs. vi;
" myrrhæ, ℈ij;
Lactucarii, ʒi;
Syr. simp. q. s.

To make thirty pills. One three times a day.

Pimenta. *Pimento. Myrtus Pimenta. Jamaica Pepper. Allspice.* The berries of the plant.—The tree grows abundantly in the West Indies, and especially in Jamaica. As everybody knows what allspice is just as well as we do, and perhaps better, a description is not desirable. Ground or powdered allspice alone, or united to other spices, and made into infusion or decoction, will be found a good fomentation, and is *rubefacient*. Internally, the powder and infusion are employed as a *stimulant* and *carminative*. The habitual chewing of the article, though a better practice than tobacco eating, is often pernicious to the right performance of the digestive function.

Piperis Nigri Baccæ. *Black Pepper. The berries.*—The plant is largely cultivated in Java, Sumatra, &c., whence the berries, known as pepper, are largely obtained. We need not attempt a description of that which every one has seen and tasted a thousand times.

Black pepper is among the most ancient remedies for ague and fever; but in order to be successful it has been said that you must swallow nine whole grains at once, for nine days in succession. The proximate principle, *piperine*, has had considerable repute in the same disease, sometimes alone, but more frequently combined with sulphate of quinine. I have employed it, chiefly in low fevers of a typhoid aspect, in union with the quinine salt. The ordinary dose is from five to ten grains, which prove *stimulant* and *diaphoretic*.

Dr. Hartle, of the West Indies, speaks in high terms of piperine in *intermittents*. As soon as the sweating stage was established, he gave three grains of piperine every hour until eighteen grains were taken. On the next day, during complete intermission, he gave the same dose every three hours. He affirms that this practice was always successful. After the disease was arrested, he gave a pill every morning, noon, and night, composed of a grain of blue mass, two grains of piperine, and two of the sulphate of quinine, mixed with a small portion of syrup. This completed the cure, by correcting any derangement of the liver and by the continued action of the antiperiodic. I have no doubt that the practice would be efficacious in preventing a relapse if rigidly adhered to until midwinter.

An infusion of black pepper in vinegar and ardent spirit is frequently employed as a gargle for the relief of *sore throat*. A poultice of bread and milk, with fine powder of pepper, is a very good discutient.

Pistacia Lentiscus. *Mastic.*—This article has been introduced to our notice as a *hæmostatic* of great worth. Dr. Frankland Terzer, a Vienna dentist, has used it in epistaxis and other hæmorrhages following the extraction of teeth. These are often alarming, and demand prompt attention. The tincture is applied by a hair pencil to the bleeding part. Leech-bites often bleed profusely, and this application promptly arrests the flow of blood. The tincture may be made by digesting an ounce or two of the mastic in a pint of alcohol or strong brandy.

Pix Liquida. *Liquid Pitch* or *Tar*. Obtained from the *Pinus sylvestris*, or *Scotch fir*.—What is called *black pitch* is merely inspissated tar. Liquid pitch or tar is prepared by a kind of distillation of the wood of the fir, cut into small billets, and piled in a heap covered with turf, which is set on fire and burned slowly, a very small quantity of air being admitted. During the process the tar runs off at the bottom of the pile and is collected in barrels.

Tar-water has long been in use, though very variously estimated. The simplest mode of preparation is to pour half a gallon of boiling water on half a pint of tar. The water acquires an empyreumatic odor, a slightly-yellow tinge, and may be drank without restriction.

The *London Lancet* for January, 1843, gives the following as the best mode for making strong tar-water:—Take three ounces of tar, a drachm and a quarter of carbonate of magnesia, mix them together and add a pint of boiling water. Shake, and then boil for a few minutes, filter, and add forty-five drops of vinegar.

Tar-water is *diuretic*, *diaphoretic*, and *expectorant*, when drank freely and for some time. It is probably always safe, though

not quite entitled to all the encomiums heaped on it by Bishop Berkley, who regarded it in the light of a panacea.

Mr. Duhamel gives a formula for tar beer in the *American Journal of Pharmacy*, vol. vi., as follows:—

Put one quart of bran,
one pint of tar,
half-pint of honey,
three quarts of water

into a new pipkin, simmer over a slow fire for three hours, then cool, and add half a pint of yeast. After standing for thirty-six hours, strain, and it will be fit for use. The dose is a wineglassful before each meal. This beer is said to be much more highly charged with the volatile principles of tar than the *aqua picis*.

Tar ointment is sometimes employed alone, or with sulphur, as a remedy for cutaneous eruptions.

The water has long been resorted to by females to prevent the *nipples* from being made sore by the sucking of the infant. For this end the nipples are washed, and also a considerable part of the breast, three times a day for three months before expected delivery.

A plaster of tar as large as the injured spot is an old remedy for *burns* and *scalds*.

PLUMBUM. *Lead.*—This is not employed in the metallic state, except in the form of sheet-lead, as a dressing to *ulcers*, and as a means of making pressure on *tumors*. Its specific gravity is 11.5; it melts at 600°; is soft, flexible, ductile, and malleable. All the compounds of lead are poisonous, and some of them useful as medicines.

The preparations of lead most generally known, are the semivitrified oxide or *litharge*, the *carbonate*, *acetate*, and *subacetate*.

The basis of all the salts of lead is the protoxide, composed of one equivalent of oxygen and one of lead. It may be formed by exposure of the film that collects on fused lead to a heat sufficient to give it a uniform yellow color, and is then known as *massicot*. When the heat is pushed further, so as to fuse the yellow matter, it is changed into a scaly substance, having a mixture of red and yellow, owing to the formation of a little red oxide. The product is what we call *litharge*. This substance enters into the composition of lead plasters, Goulard's extract, &c. &c.

Litharge, intimately mixed with sweet oil, forms a liniment that has been very successful in the management of *itch*. Dr. Lison, of the hospital of *Donzi*, speaks in high terms of it. The proportions are an ounce of litharge to four ounces of oil, which should be slowly heated over a moderate fire and frequently stirred, until the mass acquires a blackish tinge. A half-ounce should be smartly rubbed on the hands, feet, and arms night and

morning. If the parts are very much abraded, there is danger of this application, unless the bowels be kept regularly open every day.

What has been called subacetate of lead is made thus:—Mix and boil two pounds of litharge and a gallon of diluted acetic acid to six pints, taking care to stir constantly; and when the articles are thoroughly incorporated, set aside to settle, and then filter the liquor. The solution is also called diacetate of lead, because it contains two equivalents of protoxide to one of acid. Others have called it the triacetate, and some prefer the terms subacetate and *Goulard's extract* of lead. It has a pale-yellow color, and of a darker tinge if made of colored vinegar.

We have given the terms subacetate of lead and Goulard's extract as synonymous, and so they are generally regarded; but the latter is, more properly, the former diluted with distilled water. Both present good sedative and astringent applications, and are employed externally. The degree of dilution is to be regulated by the particular case to which it is to be applied. A pint of pure water and half a drachm of the subacetate will make a good wash for many purposes. The strong solution of the subacetate is sometimes employed in making cerates, as the *compound lead cerate*. Thus:—

Take of subacetate of lead, two and a half ounces;
Yellow wax, four ounces;
Olive oil, nine ounces;
Camphor, half a drachm.

Mix the melted wax with eight fluidounces of the oil, and, having removed the vessel from the fire, add slowly the solution of subacetate of lead, constantly stirring with a wooden spatula until the whole is cold; lastly, mix the camphor dissolved in the balance of the sweet oil.

A good cerate may be formed by rubbing a little of the subacetate with simple cerate; or by rubbing with the cerate some fine powder of sugar of lead.

The common *lead plaster* is made thus:—Take of fine litharge five pounds, sweet oil a gallon, water a quart. Boil these over a gentle fire, stirring constantly, till the ingredients acquire the consistence of plaster. This is the basis of several useful plasters known to the profession. The common *adhesive* plaster is made by melting half a pound of powdered rosin with three pounds of lead plaster. It is spread on linen or sheepskin for use, and has been found a good application to *burns and scalds*, by excluding the air from the very sensitive surface.

The Goulard's extract named above has been recommended as an application to small, non-pulsating *nævi materni*. It is applied cold, by means of compresses dipped in the solution and bound

to the part. The cuticle soon separates, cracks, and falls off, after which the application is to be renewed. In about four weeks the cure is complete.—*Edinburgh Medical and Surgical Journal*, April, 1843.

Carbonate of lead, *cerusse*, *white lead*, *subacetate*, *carbonate of protoxide of lead* are names given to the same article, which may be formed in several ways. The commercial white lead is prepared by exposing coils of sheet-lead to the vapors of vinegar, as they issue from pots placed in tan and other matters capable of heating the vessels moderately. The lead is oxidated, and the oxide absorbs carbonic acid from the atmosphere, so forming the carbonate. The white coating of the lead is scraped off into vessels containing water, and being insoluble, falls to the bottom.

The carbonate is sometimes applied in very fine powder to excoriated surfaces, and although it may do good it may also do mischief. It is hardly a safe application, and should never be employed unless the bowels are kept in rather a loose state. It is used also in the shape of white-lead paint, which is a sort of liniment of the carbonate, as an application to *piles*, and we are assured with good results. A drachm of dry white lead and an ounce of lard or simple cerate make a mixture very little different.

It is the carbonate of lead that most usually induces that obstinate and often fatal disease called *lead colic*, *colica pictonum*, *painter's colic*, &c. &c. Painters make very large use of white lead, not only to paint white, but as the basis of other colors; and Professor Cozzè has shown that the lead, as a salt or oxide, enters the blood.—*Edinburgh Medical and Surgical Journal*, October, 1844. The surest preventive of lead poison is the free use of oleaginous matters, as sweet oil and sulphuric acid-lemonade, (see *Acid*, *sulphuric*,) by those who work in the metal or its salts.

We named the use of the carbonate as a remedy for piles, and now suggest the following:—

Take of carbonate of lead, ℥ss;
Sulphate morphia, grs. xv;
Ung. stramon. ℥i;
Sweet oil, q. s. to form an ointment.

A piece as large as a nutmeg should be applied to the tumors at bedtime, after washing with soapsuds.

An ointment, made by rubbing the dry white lead with lard, has long been in use as a remedy for burns and scalds. Professor Gross speaks favorably of the common white-lead paint for the same purpose, yet I am of opinion that we have less questionable resources. A case is given by Dr. Kunkler, of Madison, Indiana, in the July number of the *North American Med.-Chi-*

rurg. Rev., showing that lead colic was induced by treating a case of scald with this remedy. Prof. G. observes (in notice of the case) that it is the first of the kind he has heard of, and that all the symptoms so induced can be readily removed by the free use of the elixir of vitriol.

The most important preparation of lead is the well-known *acetate*, or *sugar of lead*, or *saccharum saturni* of the old writers. It has been called *superacetate*, though improperly. This salt, composed of one equivalent of acetic acid and one of protoxide of lead, is made by dissolving the protoxide in distilled vinegar and boiling the solution. The operation should be carried on as long as the acid will take up any portion of the protoxide. The solution is then to be filtered and evaporated until a pellicle appears and the liquor cools; crystals of sugar of lead are deposited. These crystals have a sweetish styptic taste, and the mass looks a little like white sugar. The crystals are readily soluble in water, which is apt to make the solution turbid, because of the presence of carbonic acid in the water. If the water be well boiled the solution will be clear.

The *incompatibles* of sugar of lead are alkalies, alkaline earths, acids, alum, borax, sulphates, muriates, soaps, sulphurets, emetic tartar, solutions containing carbonic acid, &c. &c.

Some practitioners employ a mixture of sugar of lead and alum in watery solution, supposing thereby to have a powerful astringent. But the mixture is decidedly incompatible, and the medicinal power of both ingredients is lost. For the same reason, sugar of lead and white vitriol are incompatible. And this doctrine helps us to meet poisoning by sugar of lead very completely, for we cannot employ a better antidote than sulphate of magnesia. The meeting of the two salts gives rise to an insoluble and inert sulphate of lead. The magnesian sulphate dissolved in water should be exhibited copiously. It has been said that creosote has a decided power in controlling the poisonous action of sugar of lead; but I should prefer the Epsom salt.

The principle of incompatibility referred to makes it wrong to give our patients diluted elixir of vitriol when they are under treatment by sugar of lead, because we risk the destruction of this salt and the formation of an insoluble sulphate. As a safe rule, no sort of drink should be allowed, excepting cold water or vinegar and water.

Acetate of lead is extensively employed as a *sedative*, and as an *astringent*, externally and internally. We apply it to inflamed surfaces in watery solution, or in form of *lead-water poultice*. This is made by soaking fine crumb of bread in a strong solution of the acetate, or a solution containing at least a drachm of the salt in a pint. About five grains dissolved in an ounce or

two of rose-water will give a good wash for inflamed eyes, which may be weakened or made stronger as circumstances may suggest. Similar solutions are made for the treatment of *gonorrhœa*, but they are often so strong as to induce *hernia humoralis*, or swelled testicles.

A physician in Georgetown, District of Columbia, treated *chilblains* with a mixture of sugar of lead, citrin ointment, &c. Thus:—

℞.—Acet. plumb. ʒij;
Ung. citrin, ʒi;
Spt. terebinth. ʒij.

Mix the sugar of lead and turpentine well together, add the citrin ointment, and rub the whole so as to make a homogeneous mixture. Anoint the parts night and morning with this ointment, making use of smart friction. It is stated that the itching and burning soon subside.

Dr. McFadzen, of Edinburgh, found sugar of lead very efficacious in the treatment of *tinea capitis*. The head having been shaved and well washed with soapsuds, he applied a large compress of lint wet with a solution of three grains of sugar of lead in an ounce of water. The lint was wet three times a day, and the whole covered with an oiled-silk cap.

In *hemorrhages* of almost every variety, sugar of lead has long been employed, sometimes alone, but often with the addition of opium, and it is held to be a very valuable medicine. The late Prof. Dewees was highly instrumental in establishing the safety and success of the remedy in *uterine hemorrhage;* but it was introduced, as we learn from vol. iii. of the *Medical Transactions of the London College of Physicians*, by Dr. Reynolds, in the year 1780. The dose may vary from two to ten grains every half-hour, or every hour, and it need not be conjoined with an opiate unless spasm of the stomach or some other contingency should occur to make it proper. In that case a grain of opium or a quarter-grain of the acetate of morphia might be added occasionally.

Dr. Nasse, a German, employed the acetate in the disease called *dothinenteritis*, a fever of low type, attended with follicular ulcerations of the small bowels, the same affection that is often designated as *typhoid fever*. He says he succeeded in seventeen cases, with doses varying from a half to a third of a grain from three to six times a day. In eight very debilitated patients he combined the acetate with carbonate of ammonia. Another German physician cites fifty cases in which he employed the acetate of lead with great success.

To all this presumed success of sugar of lead in the disease named by Dr. Nasse, we take the liberty of entering our *caveat*.

Not that we mean to deny the fact that so many of the doctor's patients recovered, for that is quite probable; but we demur, when it is taken for granted that a state of the bowels existed in the patients the proof of which never was made, and never can be, save by the knife. The patients named got well, however, and of course dissection was not made a test; and we affirm that there is no other. You may conjecture, but not a symptom nor a collection of symptoms can infallibly prove the presence of *dothinenteritis* during life.

In a paper published in the *Edinburgh Medical and Surgical Journal*, vol. xxvi., Dr. Burke affirms that a solution of sugar of lead and laudanum was very salutary in his hands in the treatment of *dysentery*, when fever was wholly absent, and the patient worn out by bloody discharges and tenesmus. The prescription was as follows :—

℞.—Acet. plumb. grs. iv;
Tinct. opii, ʒij;
Aquæ, ʒij.

Mix, and give half an ounce every four hours for a dose.

In the last stage of dysentery such practice might be proper, for the continued evacuations and the whole treatment often leave the bowels in a relaxed condition that may justify the treatment, while it could only do harm in the early stage.

In *diarrhœa*, sugar of lead has been used a great while. And probably an article not very unlike it was employed before this medicine was known to the profession. Mothers knew that shot boiled in sour milk gave to the liquor a quality that fitted it to check infantile diarrhœa. Two grains of the acetate three times a day, with or without opium, have frequently cured obstinate diarrhœa after the most potent astringents had failed. I employed it many years ago (1824) in *cholera infantum*, as may be seen by reference to my paper in the *North American Medical and Surgical Journal*. The dose, to a child of a year old, was an eighth of a grain morning and evening, sometimes alone, and occasionally with a fraction of a grain of calomel. In *Asiatic cholera* the acetate has been a good deal employed, and not unfrequently with success. The usual dose is from five to ten grains combined with a grain or two of opium; but some physicians have exhibited thirty-grain doses with manifest advantage.

A writer in *Braithwaite*, part xxiv., says he has not found any means so successful in cholera infantum as acetate of lead and opium. To an infant six months old he gave one-twelfth of a grain of opium, with a sixth of a grain of the acetate, after each discharge, up or down.

Prof. Ebbling, of Hamburg, reported a case of what he called

pulmonary catarrh, in a woman aged sixty, cured by doses of a quarter of a grain of sugar of lead mixed with a scruple of sugar and given every third hour. Six powders arrested the disease, which, at the end of nine months, reappeared, and was again cured by three powders. This statement, which was republished in the *New York Medical Repository* for 1813, seems to be deceptive. We cannot perceive on what principle such minute doses of the acetate could have so promptly met such a case.

A much more rational practice is given by Dr. Fauquier for the arrest of the *night sweats* of phthisis pulmonalis. Twelve grains of the acetate of lead administered at bedtime had the desired effect.

The employment of sugar of lead in *chorea* and *epilepsy* is of ancient date. The late Prof. Rush reports success in young epileptics with this medicine, and Prof. Eberle has given a similar case.

A case of *hydrophobia* is reported by Dr. Smith in the *New York Medical and Physical Journal*, 1826, as cured by very large doses of acetate of lead. The patient had taken freely of calomel, and was salivated without much benefit. He was then put on the use of sugar of lead, and in four days took three hundred and twenty grains, besides the application to the bitten part of four ounces of Goulard's extract. The lead induced paralysis, and Epsom salt was administered, probably to neutralize the power of the medicine. The paralysis passed away, however, and complete recovery followed.

It is to be presumed that the mercurial treatment partially, and the lead treatment more perfectly, antagonized the poison of the disease, and that the result was due to that principle of therapeutics.

Iodide of lead has been employed by the French in the treatment of scrofulous and scirrhous tumors. They regard it as better than iodine or hydriodate of potash. The iodide of lead is made by adding a solution of acetate of lead to a solution of hydriodate of potash. A yellow iodide falls, which must be well washed and dried on a filter. It is employed in form of ointment.

Tannate of lead.—When a solution of sugar of lead is added to infusion of oak bark, a precipitate falls, which should be collected on a filter and dried. This is bi-tannate of lead, a white substance, possessed of decidedly astringent properties. Dr. Tott, of Germany, employed it in cases of low fever, with sloughing of the soft parts in consequence of long confinement. Two drachms of the salt, rubbed with an ounce of rose ointment, constituted the unguent of Tott. Any simple ointment would answer equally well, and a few drops of essential oil to give a

pleasant odor. The ointment is to be spread on old linen and laid on the parts affected. The gangrenous action is arrested, and the ulcers soon healed. (See *American Journal of Pharmacy*, vol. iii.)

Our concluding remarks on lead and its preparations relate exclusively to the *poisonous* action so often developed, and recorded in the journals.

Many of the more important toxicological facts in relation to lead are too little known to the profession; and there are many physicians who do not appear to be aware that much of the dyspepsia and bowel disease prevalent in our country is fairly attributable to the agency of this metal, as connected with various processes of cookery. The poison may be very largely diluted, and its operation may be slow, yet the final certainty of the pernicious result is no less real.

So many and so various are the applications of lead in domestic economy that it is wonderful so few accidents have followed its use. Even in the metallic form it may do mischief; and the oxides as well as the salts of lead, both by accident and design, have been the means of destroying many lives.

Among the simplest forms of lead poison, we notice those seen in plumbers, printers, and others, who work in the metal either in its pure state or blended with other metals. In large cities, where plumbers are numerous, lead colic is very common, although these persons handle lead pipe and other forms of the simple metallic matter. Now and then, however, they are exposed to the vapors of the metal in a state of oxide formed by heat. To guard against the pernicious effects, master-workmen give sweet oil to their apprentices, and feed them a good deal on fat broths, to sheathe the stomach and bowels.

Dr. Brice reports, in the *London Lancet* for December, 1842, a very interesting case of severe lead colic induced by swallowing, at short intervals, not less than three ounces of *leaden shot*, taken for the cure of *a boil on the side*, according to the custom of the country. Under the use of active cathartics, and the occasional employment of henbane and the warm bath, the patient got well.

It appears to have puzzled the physician to account for the effects, inasmuch as metallic lead has been affirmed to be incapable of doing harm. It is also stated that the shot did not pass off, as such, in the fecal discharges. We are told, however, that the patient drank freely of cider, and the acid matter in that drink, and other acid matters present in the stomach and bowels, had, we doubt not, the power to oxidate the lead at least, if not to convert it into a salt. We see nothing wonderful in the history. Indeed, it would surprise us to be otherwise affected, could we

be so void of common sense as to swallow deliberately two or three ounces of metallic lead.

Almost from time immemorial the formation of a crust on lead, over which water has passed, has been frequently noticed, and its deleterious tendency guarded against by statutes prohibiting the use of leaden pipes of conduit. Yet it is equally notorious that leaden pipes have been employed without imparting to water any sort of pernicious quality. This has been known for many years in the city of Philadelphia, where repeated examinations have failed to detect lead in solution.

These diverse facts led to many experiments, from which it is inferred that water free of the salts usually found in spring-water is soon contaminated; while the presence of such salts destroys the capacity of the water to corrode the lead. Distilled water was charged by Guyton de Morveau with sulphate of lime, and it failed entirely to display any action on the pipes.

It is matter of history, however, that *lead colic* was not known in Amsterdam until after the introduction of lead-roofing for the houses; then it raged with violence. In 1814 many thousand feet of lead pipes were laid to conduct the waters of Tunbridge Wells to the different houses. In the next year the lead colic was very prevalent, and, on examination being made, the water was found to hold lead in solution. On the same principle it is supposed, and correctly, we think, that the *dry bellyache* of the West Indies is caused. The roofs in that region are frequently painted, and the water falling on the surface charged with lead, and thence collected in tanks, constitutes the common drink and is employed in domestic economy.

In vol. xix. of *Medical Commentaries*, we are informed of the production of a violent lead colic, on board a packet bound to the East Indies, from the use of water kept in a leaden cistern and furnished with a stop-cock. On arriving at St. Helena and obtaining wholesome water the hands gradually recovered.

In the cases cited, there was doubtless a lack of the saline matters commonly found in spring-water, and hence the lead was acted upon. The investigations of Christison and others make it pretty certain that in proportion to the purity of water and the presence of carbonic acid gas in it, will be the corrosion of the metal. In all cases of the contamination of water by means of leaden vessels, we may show the presence of the metal in solution by the sulphureted hydrogen gas. It strikes a brownish color, and a precipitate finally settles at the bottom.

To show most conclusively the effect of leaden pipes under some circumstances, and those not unusual by any means, the following account, given in Lambe's *Essay on Spring-Water*, will be found very important. "Lord Ashburnham's family, in

Sussex, was supplied with spring-water from a considerable distance by means of leaden pipes. Every year the servants were tormented with colic, and some of them died. The water at length was examined by Dr. Higgins, who reported that it contained an unusual amount of carbonic acid, which acted on the lead and formed a carbonate. In consequence of this discovery, the leaden pipes were taken up and wooden ones put down, after which the family had no particular complaint in the bowels."

From what has been said, we conclude that although water, in some regions, may be carried in leaden pipes without injury, yet, on the whole, seeing that this metal frequently exerts a deleterious agency, it would be well if it were excluded entirely from this use, and either iron or wood or glass employed as substitutes. Could an accurate chemist be always found to determine the presence of saline matters in spring-water, the lead pipes might be safely resorted to. Dr. Christison tells us that rods of lead kept in the waters of Airthrey for thirty-five days were unchanged, and of course the water as pure as ever. These waters contained a seventy-seventh part of their weights of sulphates and muriates. But as it is not practicable at all times to procure the services of an able analyst, the safer course is to avoid the hazard by making use of agents that are not capable of doing harm.

If water tolerably pure may be acted on by lead so as to be deleterious, we need be at no loss to conceive how various kinds of food and drink may be contaminated by the same means. Thus cider (which, of course, contains malic and acetous acids) may be converted into a source of mischief, apart from its intoxicating power. A gentleman had a quantity of cider on hand rather too sour for his use, and he supposed it might be remedied by boiling it with a little honey in a brewing vessel the rim of which was capped with lead. All who drank of the liquor thus rectified were seized with colic of greater or less violence. A servant, who perhaps drank most freely of it, died very soon, in convulsions, and several others of the family were greatly distressed for a long time. The master of the family never recovered his health, but died miserably after languishing for three years, under disease supposed to be caused by the lead poison.—*Medical Transactions*, Lond., vol. i.

The *Transactions of the Provincial Medical and Surgical Association* (England, 1842) tells us that lead colic, or *Devonshire* colic, is now extinct in the city and neighborhood, unless in painters or those accidentally exposed to the vapors of lead. The abandonment of the use of leaden cisterns or vessels in the manufacture of cider has been followed by the disappearance of

the disease, which can no longer be called with propriety *Devonshire* colic.

Even milk has been injured and made to acquire insalubrious properties by being kept in leaden pans for the use of the dairy. Mr. Parkes, author of a work on chemistry, expostulated with some persons in Lancashire who were in this habit; but, governed by selfish motives, they replied "that leaden milk-pans threw up the cream much better than vessels of any other material."

Dr. Darwin relates the case of a farmer's daughter who, being fond of cream, was in the habit of taking it from the edge of the milk kept in leaden vessels and licking it from her fingers. She was attacked with severe lead colic, afterward with paralysis of the hands, and died of general exhaustion.

That lead can act on milk and impart its peculiar properties to it there can be no doubt; hence the old practice of experienced mothers, many years ago, of giving milk, in which shot had been kept for some days, as a cure for looseness of the bowels. It has been supposed that a small portion of acetate of lead was thus formed, and that this medicine was the curative agent.

Next in order we notice the poisonous influence of the *oxides of lead.* These result from the union of metallic lead with oxygen, and this is effected by a high temperature and exposure to the air. *Litharge* and *red lead* are familiar to most general readers as oxides of lead. These prove poisonous accidentally, as in the common lead plaster employed for medical purposes; in various processes of cookery, in which earthen vessels, glazed with the oxides of lead, are employed; and sometimes by design, the oxide being intentionally added to some article of food to destroy life, or to some kind of beverage to improve its taste. To these we may subjoin with propriety the fact that oxides, as well as the carbonate of lead, are largely employed by painters, and induce in them the true *colica pictonum*, or *painter's colic.*

A man took three hundred grains of carbonate of lead in mistake for chalk, as a remedy for heartburn. He was soon seized with burning at the pit of the stomach and obstinate vomiting. M. Schubert saw him in twenty-four hours after the mistake happened, and found him in great agony; the face swollen, tongue dry, great thirst, belly tumid, and its pain relieved by firm pressure. Sulphate of magnesia, freely given and followed by opium, cured him. (See *Edinburgh Medical and Surgical Journal*, 1846.)

There can be no doubt that a great deal depends, in respect of the poisonous operation of lead, on peculiarity of constitution; as some painters, plumbers, and printers work regularly for years

without realizing any serious inconvenience. The *lead plaster* has been long known as a good application to ulcerated surfaces, and has been employed a thousand times without damage to the patient. But sometimes it is not so. The *Med. Gazette* of Paris, for 1838, gives a case of lead colic induced by this very agency. A man aged forty-one had an ulcer on the left leg, extending almost from the ankle to the knee. After trying many expedients, the lead plaster was applied in strips, with obvious advantage. During this treatment, a violent attack of colic supervened, having all the symptoms of colic from lead. The plaster was discontinued, and the disease did not appear again. Five months after this, the patient, of his own accord, tried the lead plaster again, and with the same pernicious result. His physician calculated that, in eleven weeks, the man had used forty-four square feet of the plaster, each foot of which contained one hundred and fourteen grains of oxide of lead. It followed that, in all, ten ounces three and a half drachms of the oxide had been in contact with the denuded surface. Every one knows that the workmen in lead factories, where oxide of lead is constantly blended with the air, are subject to colic; but in those cases the poison enters the system very much by the mouth, although the surface, often wet with perspiration, is equally exposed.

The glazing of earthen vessels is composed partly of oxide of lead; and hence it results that many articles of food are exposed to a poisonous influence, for nothing is more common in domestic economy than earthen-ware. Vinegar corrodes these vessels readily, and thence we have certainly an oxide, and often an acetate of lead, which finds its way into the entire contents of the vessel. It has often been a matter of astonishment that a pie of any sort, baked in a tin or earthen vessel and not eaten until the next day, should be a source of disquiet to a whole family. In hot weather, all such matters run quickly into the acetous fermentation, and the lead in the solder or glazing, with the arsenic in the tin, give a clue by which the mystery may be unraveled. In this case, however, it should be remembered that the animal and vegetable matters may undergo some unknown change that may give them a deleterious quality; and although the protecting power of tin over lead, by reason of galvanic agency, may be argued against the existence of any lead poison in such a piece of cookery in a soldered tin pan, yet the fact of poisoning from this source is beyond doubt.

Some persons make a kind of *preserve*, that has just sugar enough in it to insure the acetous fermentation and the formation of vinegar, and this in glazed earthen vessels. The con-

sequence is the production of acetate of lead, or certainly the oxide, and the *preserved* fruit is *poisoned*. Hundreds of persons have been seriously diseased from this cause.

It is on the same principle, precisely, that apple-butter and pear-butter, and similar preparations, put away for safe keeping in earthen jars coated with lead glaze, are so frequently deleterious. Kept in well-made *stone* jars, no inconvenience follows. This kind of vessel should always be preferred for keeping pickles in vinegar.

It will rarely happen, we suppose, in a land of plenty, that *butter* will be a subject of adulteration with lead. We are told, however, that Gaubius detected white lead in butter in Flanders at a time when there was a dreadful mortality among cattle, and this article, as a consequence, was very scarce. Much more frequently is cheese poisoned with lead, a fact sufficiently well known, and therefore not calling for special notice at this time. I will say, however, that lead is not always the cause of poisonous effects from the use of cheese. Some years ago, in Frankford, Pennsylvania, many persons were sickened by a cheese the appearance and taste of which were of the first order. All who ate of it suffered. A part of the cheese was sent to me for examination, and two gentlemen in Philadelphia performed a similar service. We sought for lead and other poisonous agents, but nothing could be detected by the most delicate tests. The opinions entertained were, that the milk was probably taken from a cow laboring under *milk-sickness;* that the source of the mischief was some unknown vegetable; or that some spontaneous change had passed upon the cream which was not tangible by any known means of investigation.

The *Bulletin of Med. Science* for Sept. 1843, furnishes two interesting cases of *poisoning* by the use of Maccabau *snuff*, to which a preparation of lead had been added. We do not know that the world would lose much if every form of tobacco were served in the same way.

Sugar may be poisoned, either accidentally or by design, with lead in the form of oxide or salt of lead. A very interesting account is given by Dr. Jackson, in the *Medical Magazine* for June, 1835, of the poisoning of many persons in this way, in the town of Calais, in the State of Maine. Upward of one hundred persons were affected with all the symptoms of colica pictonum; three died, and others suffered more or less from paralysis of the extremities. That the sugar was the source of the evil was manifest from the consideration that several persons who dispensed entirely with sugar wholly escaped, while those suffered most who, from peculiar fondness for the article, consumed it most liberally.

Chemical examinations were made by several individuals, and the presence of lead fully established. How it got into the sugar could not be ascertained. The conjecture was, that the juice of the cane must have been evaporated in leaden reservoirs, where a salt of lead resulted from the oxidation of the metal, and the union of the oxide with a vegetable acid present in the cane-juice. The means employed to detect the lead in this instance will be noticed hereafter.

A case somewhat similar to that reported by Dr. Jackson is contained in the *Transactions of the Medical Society of London*, vol. i. "Every member of the family was seized with lead colic, and two of the number died. What was remarkable was the fact that a good deal of sugar, taken from the same barrel, had been sent to some friends, who were not at all injured by it. The symptoms of the sick were so obviously those of lead colic that not a doubt could be cherished. Every vessel and article about the house was searched in vain for the cause of all this mischief. At last it was discovered that the barrel containing the sugar had formerly been full of dry white lead, and that the present to the friends came from the centre, while that which had poisoned was taken from the outer portion, in contact with the white lead." This history is important, as it may serve to aid in ferreting out the true cause of poisoning in cases which, at first sight, may seem to be involved in great mystery.

The July No. for 1842 of the *American Journal of Medical Sciences*, has an article from a foreign journal on poisoning with *flour* containing lead. Six members of a family were seized suddenly with obstinate constipation, vomiting, colic, &c., followed by spasms and pains of the hands and feet, emaciation, paleness, and anxiety. One of the number had dilated pupils, paralytic rigidity of the limbs, retraction of the abdomen, livid complexion, and great emaciation. The source of the poison was a box-full of shot in the cupboard where the flour was kept. The box was cracked, and it was believed that the flour acted on some of the shot that escaped by the cracks so as to be poisoned by it in turn. The flour gave traces of the presence of lead. The patients recovered under the use of calomel, opium, and other medicines.

One of the most wicked uses of the oxide of lead is its addition to sour *wines* to make them of a better taste. This is done sometimes merely from selfish considerations, under the impression that the lead employed is too small in quantity to do harm. But it is also added with a full understanding of its pernicious effects, and the practice is highly reprehensible. The liquor in its best condition is, one might suppose, sufficiently hurtful to the morals and manners and health of the commu-

nity; but the cupidity of an avaricious man is not gratified with the sale of what he calls "sound wines," but he must turn to account those that are actually *spoiled*, himself being the judge, and in order to *save* them he adds a more *noxious poison*.

It is true that the relative quantity of lead in a cask of wine may be small; but every one knows that the long-continued use of poison in small portions will often destroy life in the end. Hence the wisdom of a remark made by Dr. Gregory on intoxicating drinks, viz., "That the daily use of them, even in moderate quantities, was often much more hurtful to the system than an occasional drunken frolic." Accum has, therefore, said most truly, "That wine adulterated with the smallest quantity of lead becomes a slow poison."

But not satisfied with litharge, as a means of arresting the acescent state of wines, some sophisticators add the acetate of lead. In the *Vintner's Guide*, page 67, the author directs a lump of sugar of lead, as big as a walnut, to be added to forty-two gallons of muddy and sour wine to *cure* it.

Wine may be poisoned by the addition of a few shot, as will be seen presently. It is a very common device to put shot into wine bottles that have bi-tartrate of potash adherent to their sides, and, by frequent shaking, to detach the latter. In the *Philosophical Magazine* (London) for 1819, we find the following statement:—"A gentleman who had always enjoyed apparent good health, and who was in the habit of drinking half a bottle of Madeira after dinner, was taken ill (three hours after thus enjoying himself) with a severe pain in the stomach, attended with violent colic, which gradually yielded to appropriate treatment. On the day following, he drank the remaining half of his bottle of wine, and in two hours was attacked with most violent pains, headache, shivering, and general distress. The apothecary who was called to prescribe for the case, suspected the wine as the cause of these symptoms. The bottle was produced by a servant, and, as it slipped out of his hand, a row of shot was observed wedged forcibly into the angular, bent up circumference of it. On detaching the shot for inspection they crumbled into dust. The wine had gradually produced this change, and suffered itself in consequence; as lead and arsenic, entering the composition of the shot, were both present in the wine."

It would be well, in all countries where wine is consumed as largely and as ruinously as in America, if the decree of the Duke of Wurtemberg, made in 1690, could be enforced. He made it a capital offence, punishable with death, to add litharge to wine.

Six individuals, after drinking cider for a few days, were

seized with the usual symptoms of lead poisoning, viz., violent colic, obstinate constipation, pains in the limbs, trembling, &c. They got well under the usual treatment. On examination, it was found that the cider had been for two days in a reservoir lined with lead. The salt of lead thus formed was the malate, although that has been held to be insoluble. (See *Edinburgh Medical and Surgical Journal*, October, 1842.)

A Mississippi paper of October, 1842, has the case of a family poisoned by eating peaches that were dried on a roof painted with white lead. Two of the family died. It is probable the acid matter of the peach acted on the carbonate of lead and formed a more soluble salt.

Not a little mischief has grown out of a well-known property of sugar of lead, that leads to its employment in the laboratory of the chemist. I mean its power to obliterate or throw down coloring matters. On this principle syrups are sometimes clarified with sugar of lead, and various chemical preparations are treated in like manner. Now, although the addition of this salt in exactly the right proportion would insure the precipitation of all its oxide of lead along with the coloring matter, and so prevent injury, yet that is an affair too often left to the carelessness of hirelings to make the practice at all safe. Hence syrups and the finer chemicals are sometimes adulterated with the lead poison, and may, of course, prove deleterious from that cause alone.

The poisoning of painters, plumbers, and other workmen much employed in the use of lead or its preparations, has been adverted to. The effects are sometimes so suddenly produced, and the fatal issue occurs so unexpectedly, as to make it necessary to determine satisfactorily the cause. It is important, therefore, to be aware of the power of habit in these matters, and to be acquainted with facts that are not very common, but which may be repeated. Thus the poisonous action of the lead has been detected, satisfactorily, in a partial palsy induced by sleeping for two or three nights in a room newly painted with what is called a "dead white." The detention of a spectator in a lead factory, by mere curiosity, for an hour or two, has resulted in the usual symptoms of an attack of lead colic. The laborers in the establishment, spending nearly all their time in the fumes of the metal in various stages of chemical action, escape unhurt for years, simply by living chiefly on fat broths, fat meats, the use of oleaginous fluids, and the like.

It is stated in Mackintosh's *Practice of Medicine* that bathing the feet in a strong solution of sugar of lead, to correct a fetid perspiration, induced the usual symptoms of lead poisoning.

It is not within our power to say how much of any given pre-

paration of lead may be swallowed and fail to exert a decidedly-poisonous action. The reasons for this assertion are already known in reference to other poisons. The case of the Irishman with a sore leg who swallowed nearly an ounce of sugar of lead by mistake, is fresh in our memories. But we find in the *London Medical and Physical Journal* for 1803 a most extraordinary case, reported by Dr. A. Hunter. It is in substance as follows:—An apprentice lad living near to some calico printers, who make large use of sugar of lead, procured a lump as big as his fist, weighing not less than a pound, intending to mix some of it with a poultice which had been ordered for an inflamed ulcer on his leg. The lump was carelessly deposited on the kitchen table, and the mistress of the house, old and near-sighted, coming in with some cabbages picked for dinner, laid them on the sugar of lead and cut the whole into scraps without noticing the salt. The mess, together with some potatoes, entered a pot of water, and the process of ebullition quickly digested the whole. The master and mistress, a daughter and her husband, and two apprentices, consumed the meal.

The dinner having been disposed of, the lad set about the preparation of his poultice, but, lo! the sugar of lead was missing. It was remarked that the food had tasted somewhat strangely, and the discovery was soon made that their stomachs had been the receptacle of the lost article, and of course the family exhibited marked signs of alarm. Dr. Hunter soon arrived, and gave an emetic to all the persons who had eaten the meal save one, who, feeling no inconvenience, refused to take the medicine. Those who took the emetic were gently vomited, and there the matter ended.

In this case about sixteen ounces of sugar of lead were allotted to six persons, as they swallowed the entire meal of cabbage and potatoes. But was the sugar of lead there, or did the coloring matters, or anything else in the vegetable substance, entirely decompose the salt, throwing down an insoluble oxide, which might have been emptied out of the pot unnoticed by an old half-blind woman? This may have been the result, although we only conjecture about it at this remote period. If the salt did not experience this change, and the whole was actually held in solution, the case presents the largest portion of sugar of lead swallowed without injury that history has recorded.*

* A young girl of good constitution, in a moment of despair took an ounce of sugar of lead in solution. Almost immediately she was seized with collapse and syncope, and afterward with vomiting and convulsions. Sugared water, sulphate of magnesia, and sulphate of soda were given, but she died in twenty-five hours. She voided a large quantity of urine, which, on careful examination, was found to contain a sensible quantity of lead.—*British and Foreign Medical Review*, July, 1841, page 249.

The late Professor Barton was in the habit of teaching that excessive doses of sugar of lead sometimes purged profusely, and in that way protected the system from its poisonous quality; but in the case just quoted we find nothing of that sort.

The usual action of large doses of sugar of lead is evidence of its *irritant* properties, and hence it is classed with *irritant* poisons.

But if it be introduced gradually into the system, it brings on, as we have seen, that painful and often fatal form of disease called *lead colic;* and when this does not terminate in death, it is frequently followed by partial or more general palsy, and these by apoplexy. The chronic operation would seem to be evidence of *narcotic* poisoning, while the blue line running across the lower gums strongly indicates the deep fixidity of the poison, for the significant token is seen long after the poisonous manifestations began.

When acetate of lead, or the carbonate of lead, applied to an abraded surface, brings on colic pains, as often happens in young children, they do so without inducing any obvious local irritation, but appear to impress the bowels through the medium of the nerves. This use of lead preparations in children is, therefore, not quite as safe as some may imagine. I have known the mere dusting behind the ears with dry white lead, in order to relieve a discharge from the part, to be followed in a short time with severe colic.

It is often said that sulphate of lead is perfectly insoluble, and therefore cannot be poisonous, but such is not the fact. It is soluble in acetate of ammonia, and this salt is contained in the perspiration. Thus the sulphate, when substituted for carbonate of lead in some works at Paris, proved fatal to the foreman, who died of colic. M. Flandin found that it poisoned a dog when rubbed into the skin as an ointment.—*Headland's Action of Medicines*, page 93.

In addition to our casual notices of the mode of *detecting the presence of lead*, it is proper to devote a little further attention to the subject.

The old-fashioned *wine test* answers very well for showing the presence of lead in wines. As it is easily prepared, we quote, from Accum, the usual recipe. Mix equal parts of finely-powdered sulphur and slaked quicklime, and expose the whole to a red heat in a common sand crucible for twenty minutes. Thus we get sulphuret of lime, to thirty-six grains of which add twenty-six grains of bi-tartrate of potash, (cream tartar.) Put the mixture in an ounce bottle, and then fill with water that has been boiled and allowed to cool. Shake well repeatedly, and let the dregs settle, after which pour the clear liquid into another

vial, into which about twenty drops of muriatic acid have been previously dropped. It is then ready for use, care being taken to keep the bottle well corked. If some of this liquid be added to wine containing either lead or copper, a dark-brown or black will be struck. If water be saturated with *sulphureted hydrogen gas* and acidulated with muriatic acid, it is a better test, and should be preferred. It gives a black precipitate, which is sulphuret of lead, and is an extremely delicate test.

To be assured that this is truly sulphuret of *lead*, and that lead was certainly present, collect the precipitate on a filter and dry it. Then place it in a small cavity formed in a piece of charcoal, and pass the flame of a blow-pipe directly on it. The compound is speedily decomposed, its sulphur flies off, and the metal appears. If this be detached and again heated by the blow-pipe, traces of the yellow and red oxide of lead will be seen.

Sulphuric acid and the *sulphate of soda* form a white precipitate with lead that is insoluble in nitric acid. Thompson says the sulphate will give a white precipitate in water containing one hundred-thousandth of its weight in lead.

The *neutral chromate of potash* gives a beautiful yellow precipitate when added to a fluid containing lead in solution. This is chromate of lead.

The *hydriodate of potash*, added to a lead solution, gives a yellow precipitate of hydriodate of lead.

When the lead poison is mixed with solid matters, the plan pursued by Dr. Jackson and others is proper. Thus the poisoned sugar, formerly spoken of, was burnt to a cinder in a platina crucible. The ashes were digested in nitric acid, evaporated to dryness, and the dry mass dissolved in water. To the filtered solution, placed in a flask, sulphureted hydrogen gas was added, and a copious black precipitate of sulphuret of lead was the result. Every five hundred grains of sugar were thus found to contain two-thirds of a grain of oxide of lead.

In *addition* to the *symptoms* already detailed as resulting from the poisonous action of lead, we name an astringent, metallic, and sometimes sweetish taste in the mouth; pain in the stomach, and, after vomiting, obstinate constipation; contraction of the abdominal muscles; these are succeeded by a pallid countenance, tremors, occasionally delirium. In the chronic form paralysis is developed.

The *morbid appearances* rarely amount to more than a stricture about the colon, or a general contraction of that intestine. But there are seldom any signs of inflammation.

The *treatment* requires the ejection, if possible, of all the poisonous matter, either by the stomach-pump or by means of an

active emetic, as the sulphate of zinc. Sulphate of magnesia should be administered copiously to form an insoluble sulphate of lead, which is harmless, and also to act as a cathartic for the dislodgment of foreign matters. If this fail to purge, let castor oil be given in repeated doses, accompanied by purgative clysters. The warm bath is an important remedy to soothe the system and to relax spasm, and so favor the due evacuation of the bowels. The *sulphuric acid lemonade* spoken of in the article *Acid sulphuric*, should certainly be tried. The testimony in its favor is strong and the practice rational. The free use of mucilaginous drinks is also important; and if the irritation of the stomach be considerable after free evacuations, denude the surface on the epigastrium to the size of a dollar, and apply a grain of the sulphate of morphia. Sometimes it is necessary to reduce morbid action by venesection and leeches.

When paralysis of the extremities follows colica pictonum, the best treatment consists in small doses of the acetate of strychnia, and occasionally galvanic shocks. One-tenth of a grain of the strychnia is a sufficient dose to begin with, very gradually augmented until tetanic spasms are visible.

The agency of sulphuric acid in decomposing *sugar of lead*, and so destroying its poisonous character, will be seen in the following case, extracted from the *Journal de Chimie Médicale* for June, 1839.

A girl about twenty-one years of age, quite feeble and delicate, was brought to the hospital by two police officers, on the 20th of May. She had swallowed the poison about a half an hour before. Her distress was extreme, face pale, a black circle round the eyes, the lips livid and dry, skin hot and moist, pulse feeble, threadlike, and she had hiccough.

Having ascertained what sort of poison had been swallowed, an injection was thrown into the stomach by means of the stomach-pump, containing about a pint of the compound infusion of roses. It was expected that the sulphuric acid of this infusion would decompose the acetate of lead and form an insoluble sulphate. Shortly after, the contents of the stomach were removed, the patient put to bed, hot fomentations applied to the thighs and feet, and several doses of camphor and ether administered. In an hour after this an ounce of castor oil was given which operated copiously.

Next morning the patient had high fever, and severe pains at the pit of the stomach. To relieve these the saline mixture was ordered, leeches and a blister applied to the cardiac region. These remedies gave great relief, and she soon recovered.

The occasion of this attempt at suicide was disappointment in a love affair. The girl bought twopenny worth of sugar of

lead at a druggist's, for the purpose, as she said, of killing mice. On going home she swallowed the whole, being probably an ounce.

It may be proper to say that this notice of the poisonous action of lead was first published by the author of this work in the *Western Medical and Surgical Recorder* for 1842.

POLYGALA SENEGA. *Seneka Snakeroot*—sometimes called *Rattlesnakeroot*.—This plant is perennial, with twisted roots, having branches which shoot out nearly as thick as a finger, covered with an ash-colored or gray bark. It is a native of North America, growing abundantly in Pennsylvania, Ohio, Kentucky, Tennessee, &c. &c. It is met with on hillsides and in dry woodlands, flowering in June, July, and August, in different locations. The root has not much odor; and when chewed it leaves a rather bitterish, warm, pungent taste, exciting a peculiar tingling sensation in the fauces, which remains after the root is spit out.

The watery infusion has a pale-yellow color, a feeble smell, and tastes very much as the root. The addition of sulphate of iron effects no alteration in its color, and hence there is no incompatibility. Gehlen detected a peculiar proximate principle, to which he gave the name of *senegin*. Peschier obtained another, and to it he assigned the term *polygaline*. But they are identical.

Seneka snakeroot is *stimulant*, *sudorific*, *expectorant*, and *emetic;* to which we may add its alleged quality of *emmenagogue*. In full doses the emetic effect is sometimes followed by a cathartic action, while in smaller doses the nauseant operation makes it an expectorant.

Being a *stimulant*, it is not proper in the first stage of inflammatory disease; but when that has passed, or been reduced by any suitable means, the gently-stimulant action results in a favorable diaphoresis.

We are indebted to Dr. Tennent for some information that sheds light on the connection between the skin and the organs of the chest under the action of the seneka snakeroot. He tells us that the Indians employ the root extensively to cure bites of the rattlesnake, (hence one of its names,) and that when it acts favorably in regard to the poison of the reptile, it induces obvious symptoms of pleuritic or pneumonic inflammation. Dr. T. thence inferred that the medicine might be useful in *pneumonia*. He made trial of it, and with benefit. We presume he premised the use of the lancet, as that would seem to be a necessary preliminary. After depletion, the seneka may be useful by promoting expectoration and relieving tightness of the chest.

In severe *coughs* and *colds*, the decoction of the seneka snake-

root with liquorice root and rock-candy will often afford relief. An ounce of each is added to a pint of boiling water, to digest for two hours. The dose is a wineglassful every hour or two. It proves expectorant and diaphoretic.

Dr. Joseph Hartshorne, of Philadelphia, was the first person, so far as I know, who placed much confidence in the *emmenagogue* powers of this medicine. He regarded it as very effectual for the relief of *amenorrhœa*, and I have found it a very good remedy in the same form of catamenial derangement. The saturated decoction should be drunk to the extent of a pint in twenty-four hours, commencing a few days prior to the expected discharge, and repeating daily. It is advisable in most cases to precede the use of the decoction with two or three doses of calomel and jalap, or rhubarb. I have been very much pleased with this treatment of young girls, who feared the approach of pulmonary consumption, because of suppression of the discharge, and some chest disturbance at the same time.

The more common decoction (an ounce to a quart of boiling water) is an excellent medicine for the relief of hoarseness, and loss of voice, or *aphonia*. It should be used as a gargle very frequently.

In *dropsy*, *rheumatism*, and *asthma*, this root has been a useful medicine. Dr. Bree speaks well of the decoction in the *asthma* of old persons, while he found it injurious to young patients, because too stimulating.

It was once held in estimation in the treatment of *croup*, especially when combined with calomel. The late Dr. Samuel P. Griffith, of this city, was very partial to this treatment. The seneka alone is too feeble, and demands the powerful aid of the mercurial in the inflammatory or membranous form of that fatal disease.

The dose of the powdered root is from ten to thirty grains; of the common decoction, from one to three ounces three or four times a day.

Polygonum Hydropiper. *Water Pepper. Arsesmart.*—This American plant is well known to the common people, especially in the West, where it is prized for its agency on the uterine system. I have read a good thesis on its remedial powers, furnished by a candidate in Ohio. The late Professor Eberle highly valued it in *amenorrhœa*. Dr. Ogier published a paper in the *Southern Journal of Medicine and Pharmacy*, lauding it in very strong terms. He says he knows of no medicine that has so decided an action on the uterus. He made a tincture of the stem, leaf, and flower, which may be called a saturated tincture. The dose was a teaspoonful three times a

day in sweetened water. It is regarded as an *emmenagogue* and *diuretic*.

Polypodium Filix Mas. *Male Fern.*—The powdered root of this plant has long been celebrated for its *vermifuge* powers, and particularly for its efficacy against *tænia*, or tapeworm. It entered the famous anthelmintic specific of Madame Nouffer. Two drachms of the powder make an adult dose, which may be repeated, and followed by a brisk cathartic.

Potash. *Oxide of Potassium.* Formerly called *vegetable alkali*, *fixed alkali.*—These alkaline terms grew out of the fact that the substance was readily obtained from vegetable matter, and that it was not a *volatile*, but a *fixed* or permanent product. The decomposition of potash by the galvanic battery, and the metallic base thus procured, fixed its real nature; and we now call it an oxide, although it has the peculiar qualities assigned to an alkali.

Pure potash is exceedingly *caustic*, and is, in fact, the best kind of *caustic potash*, or *common caustic*, in contradistinction from *lunar* caustic. It is employed as an *escharotic* by surgeons, who sometimes style it the *potential* cautery. It is very deliquescent, and must therefore be kept in very close bottles. The purest kind is formed by the combustion of potassium, which yields the oxide. It is obtained usually by the following process:—Take of the aqueous solution of potash, three pints; fresh quicklime, a pound. Boil the solution of potash to a pint, and add the lime, (being first slaked,) and mix them thoroughly. The pure lime takes the carbonic acid from the potash, and carbonate of lime is formed, as well as pure potash. In order to detach the pure alkali, the whole must be digested in alcohol, which takes up the potash and leaves the carbonate of lime. The alcoholic solution being poured off and distilled, yields the pure potash, which is called *pure potash by alcohol.* If the solution of pure potash be evaporated to dryness, and the mass be fused with heat gradually augmented, till it flows like oil, and is then poured into moulds, it forms the well-known *lapis infernalis*, or common caustic of the shops. As it becomes cold in the moulds it contracts and is readily separated.

A quantity of this caustic, suspected of being partially carbonated by exposure, can be purified by admixture with quicklime, just as it is needed by the surgeon. The whole being in form of paste, is thus made to possess very decided escharotic power. Applied to the surface, and prevented from spreading, it soon forms an eschar, and finally establishes an issue or drain. This is done in cases of diseased spine, the caustic being applied on both sides of the spinal column. To insure the confinement of the paste, a circular hole is cut in a piece of adhesive plaster,

spread on thick sheepskin, of the size of a fifty-cent piece. The plaster is applied warm to the spot and the circular space filled with the paste, and then another piece of the adhesive plaster is laid over the whole. After the application has been made some three or four hours, it is to be taken off, and a soft bread and milk poultice applied to detach the eschar and open the drain. Dr. H. Bennet has succeeded in preparing a solid caustic potash in the stick form that does not deliquesce, and can be applied as conveniently as lunar caustic. He has employed it in uterine diseases, and thinks it will prove equally valuable in general surgery. The details are not given.—*Lond. Lancet*, June, 1850.

Dr. Jones, surgeon to the South London Dispensary, treated between sixty and seventy cases of external *hemorrhoids* very successfully, in the year 1849, by the application of caustic potash. This article was applied every four days, and by three applications the tumors were completely removed. The patients realized considerable burning, which sometimes continued for an hour. (See *Braithwaite's Retrospect*, part xx.)

The ordinary potash of commerce is obtained from the ashes formed in the combustion of ordinary firewood, a ley being first made by the action of water on the ashes. This ley is the impure potash, which is separated by boiling, and then allowing the mixture to stand undisturbed. It is called *pot*ash to distinguish it from the fact of the process being conducted in large *pots*. It is an impure article, compared with *pearl*ash, which is the same thing substantially, the chief difference consisting in its greater purity and pearly whiteness.

The ley spoken of and the impure potash, by combination with fatty matters, give rise to the various kinds of *soap* so largely employed in domestic economy. Both the ley and solution of potash are exceedingly *poisonous* when taken by accident into the stomach, and should be speedily dislodged or neutralized by oils or vegetable acids administered liberally.

It will be seen that the poisonous action is very much like that of the mineral acids, although they are opposed in their chemical relations. The latter are more prompt in the work of disorganization, and hence they kill in a shorter time. The alkalies seldom destroy life before twelve hours have elapsed from the occurrence of the accident.

The following cases are so important that I quote them at length:—On the 2d of November, 1818, I was called, says Mr. Dewar, in *Edinb. Med. and Surg. Journal*, vol. xxx., to visit a little boy who had drunk about three ounces of a strong solution of carbonate of potash, (equal to a very strong ley.) I saw him an hour after the accident. The tongue, gums, and fauces were shockingly destroyed; the cuticle appearing as if seared with a

hot iron, while the inside of the cheek, roof of the mouth, and velum were entirely inflamed. He complained much, and vomited incessantly. Every attempt to swallow gave him great pain. Nevertheless he was encouraged to drink vinegar and water, of which he swallowed a good deal; but it was instantly rejected. He took also occasionally a mouthful of linseed tea. No remedy was of the least service, and in twelve hours from the occurrence of the accident he was a corpse.

The examination after death presented the appearances in the mouth already noticed. The mucous membrane of the pharynx and œsophagus was almost entirely destroyed. Blood was everywhere extravasated between the muscular and pulpy mucous coats. The stomach was generally inflamed, but especially along the great curvature. In two places, about the size of a shilling, the mucous membrane was destroyed, and the injured surface was covered with clotted blood. The stomach contained a small quantity of a bloody fluid. The peritoneal covering was not affected, nor were any of the other viscera injured.

One or two remarks may be properly made on this case. And, in the first place, it is probable that no remedy was tried until an hour had elapsed after the accident, and sufficient time had then been allowed for the poison to do irremediable mischief. Nothing could have saved the patient. In the second place, the administration of diluted vinegar at a late period in the case, when the highest degree of gastric irritation prevailed, was entirely wrong. It could not then neutralize so as to undo what had been done; but it could not fail to augment the existing irritation, and hence we are told that it was instantly rejected.

Another case is given by Mr. Dewar, which illustrates a principle several times adverted to, viz., the power of circumstances to modify the action of poisons. A female, who had been sucking at the whisky bottle nearly all the day, drank by mistake a wineglassful of a strong solution of carbonate of potash. In a note, we learn that this woman had been a drunkard for nine years, that she was intoxicated for six weeks without intermission, drinking every day during that period a half-gallon of whisky, and sometimes a larger quantity. Here was a system under the influence of the poison of alcohol for so long a time as to prevent the ordinary operation of another poison. This, however, is just what we ought to expect. A case has been stated in this work, of a woman whose stomach so completely lost its susceptibility of impression from alcohol in every shape that she resorted to aqua-fortis, and partook of it with satisfaction,—that is, the satisfaction of a drunkard.

In the case before us, enough of the alkaline carbonate was swallowed to have displayed its wonted symptoms under ordi-

nary circumstances. But here, the facts are otherwise. The poison was swallowed at five o'clock on Sunday evening, and at eleven of the next morning little pain was realized, the night having been passed without much uneasiness. Pressure on the epigastrium gave some uneasiness and excited a disposition to vomit. The mouth and fauces were now coated with a dirty brown slough, which rendered the whole surface insensible to the touch. Swallowing was difficult, and fluids taken in were quickly ejected. During a month, large portions of tough matter, adherent like leather, were brought up by coughing, hawking, or vomiting. I have no doubt that the animal texture had been greatly disorganized by intemperance, and that the alkaline poison spent its force in augmenting that condition of the general system, instead of displaying its energy, as is most common, in a more local manner. The sufferings of the patient were protracted to nearly six months, and were of such a nature as to impress the mind most forcibly with the sentiment that the noxious influence of alcohol laid the foundation for all the peculiarities that marked the case. Dissection revealed such a condition of the gullet and stomach, such extensive strictures and ulceration, as to account for the starvation spoken of by the narrator, and which no doubt ultimately killed her.

It usually happens, in temperate persons, that the accidental swallowing of potash in any form, so as not to kill promptly, proves fatal at last by the starvation caused by utter inability to swallow anything. We are informed by Mr. Charles Bell that he had a patient who lived twenty years after the accident, which in that case was from soap-lees, yet death was attributed to the permanent stricture, caused originally by the local action of the poison, and which finally effected absolute starvation.

The following case is specially interesting, on account of the rapid recovery of the patient:—Mr. D., aged thirty-five, drank, instead of wine, a quantity of water of potash. Soon perceiving the error, he complained of severe pains in the epigastric region, and nausea, and, in the course of a quarter of an hour, of general coldness; face pale, presenting the appearance of intense suffering. A solution of tartaric acid was administered, (four drachms to the pint of water,) and given at short intervals. Sinapisms were applied to the feet, and emollient fomentations to the abdomen, with frequent enemas. In a short time the symptoms abated, and he began to grow warm; a slight perspiration continued for two hours, followed by a black stool. Two days after, the tongue and back part of the mouth threw off a very thick and tough membrane. The patient took small quantities of broth, and shortly recovered his health.—*Gazette Médicale de Paris*, November, 1836.

Soap has been employed very successfully in the treatment of *burns* and *scalds*. The simplicity of the remedy, and its presence everywhere as a domestic article, commend it to popular favor. Dr. Williamson, physician to the Leith Dispensary, employs it in the following manner:—He makes a thick lather in a large shaving-box, and applies it to all the burnt surfaces, repeating as soon as the first coat begins to dry or the pain returns. The latter should be repeated through the day, when the patient complains of pain. The benefit to the patient is immediate, and the result highly satisfactory; for in superficial burns vesication is prevented, if the soap be applied early. Even when burns are deep, the application is useful, the patient deriving great personal comfort from it. (See *Braithwaite*, part iv.) Some persons have used common brown soap, by spreading it on old linen and covering the entire burnt surface.

Liquor potassæ is a watery solution of pure potash, and was formerly much employed as an *antacid* and *lithontriptic*. In *calculous affections*, with preponderance of uric acid, this solution was much esteemed, and is yet employed. It is made by detaching carbonic acid from a solution of carbonate of potash by means of quicklime. A pound of the carbonate, half a pound of lime, and a gallon of boiling water are to be mixed, and, after cooling, the solution is to be filtered through a cotton strainer. A pint of the liquor potassæ so made should weigh sixteen ounces, and the solution should be quite clear and without tinge. The taste of this solution is quite acrid and highly alkaline. It destroys the texture of animal and vegetable matters rapidly. The dose is from ten to fifty drops in sweetened water or bitter infusion. Dr. Mulock, of Dublin, gave this solution, with almost immmediate success, in *strangury*. The dose was thirty drops, in a half-wineglass of water, every hour. (See *New York Journal of Medicine and Surgery*, Nov. 1844.)

This and all other alkalies are used when there is excess of acid in the system, whatever that acid may be. Alkali should be present to neutralize it, for it is unnatural to have an excess of acid in the secretions, or any excess in the blood. Alkalies thus administered restore the blood to its proper state, in respect of acidity, and hence they are called by some restoratives. These remedies are not always excreted, but whether excreted or no they tend to render the secretions neutral and alkaline by increasing the quantity of basic matter in the system.—*Headland's Action of Medicines*, p. 143.

Carbonate of Potash. Subcarbonate, kali preparata, sal absinthii, salt of tartar.—Strictly speaking, there are but two varieties of this salt, viz., the *carbonate* and *bi-carbonate*, employed in medical practice. We have seen already that the

common pot and pearlashes are impure carbonates. A purer kind is made by decomposing cremor tartar by means of a strong heat. The salt should be kept in a well-stoppered bottle, because of its aptitude to absorb atmospheric moisture. The *oleum tartari per deliquium* has been accidentally formed by exposing a bottle of the carbonate of potash to the air for a long time. Carbonate of potash may, and does, sometimes, contain lime, which can be detected by adding a little oxalic acid to a watery solution. A white, dense precipitate of oxalate of lime is seen instantly. We determine the real alkaline strength of this article by the neutralizing power, or its ability to take up a certain quantity of acid. The larger the quantity of acid thus disposed of the greater is the alkaline strength of the solution of potash employed.

The incompatibles of the carbonate are the acids and acidulous salts, borax, sal ammoniac, acetate of ammonia, Epsom salt, lime-water, nitrate of silver, calomel, corrosive sublimate, acetate of lead, tartar emetic, sulphates of zinc, copper, and iron.

The carbonate has long been employed in practice. One of the oldest remedies for *pertussis* is the popular mixture of this salt, cochineal, and sugar; the cochineal being added simply as a coloring, and the sugar not exerting any very special agency, the benefit has been ascribed to the carbonate. A more general use of the salt has been in the preparation of *saline* and *effervescing mixtures*. A mere *saline mixture* is readily made by adding a teaspoonful of the carbonate to two or three ounces of water. This will not only neutralize acid matters in the stomach, but is very apt to excite a free perspiration, if repeated in tablespoon doses every hour. It is, therefore, *diaphoretic* as well as *antacid*.

The *effervescing mixture* is very extensively employed, and is almost indispensable. We can form it in a moment by mixing a solution of the carbonate and lemon-juice, or vinegar. This can be done out of the body, the mixture being swallowed instantly; or, the alkaline solution having been taken first, the acid should follow without delay. On the meeting of the two, chemical action ensues, carbonic acid gas is copiously evolved, and effervescence thus established.

The following mixture has been exhibited by Dr. Bayles, to arrest vomiting and irritability of stomach, with great success :—

℞.—Carb. pot. ℈i;
Aq. menth. pip. ℥i;
Tinct. catechu, ℥i;
Syrup simp. ℥ij;
Tinct. opii, ℈ss.

Mix.

Dissolve eighteen grains of citric acid in an ounce of water, or have in readiness a tablespoonful of lemon-juice. Let the patient swallow the mixture of the carbonate of potash, and then the acid solution or lemon-juice. The effect is immediate, and often proves salutary.

The carbonate is sometimes administered in doses of from ten to twenty grains, in dyspepsia dependent on acidity. Here it acts purely by its neutralizing power.

Fifteen grains of citric acid, or four drachms of lemon-juice, will decompose twenty grains of the carbonate. The product is a true *citrate of potash*, and is equivalent in its remedial agency to the salt sold as citrate of potash. It is often a very useful article in febrile affections, and if taken in the effervescing state will generally allay irritability of stomach.

In regard to the synonyms named above, it may be well to say a word or two. I have seen several bottles, side by side, on the shelf of an apothecary shop, labeled *carbonate of potash*, *sub-carbonate of potash*, *sal absinthii*, *sal tartari*, as though they were really different in any essential point. They do not differ, excepting in coloring or smell, and that is designed to keep up the notion of a difference. The sal absinthii, or salt of wormwood, is carbonate of potash containing enough oil of wormwood to disguise it.

Bi-carbonate of potash contains twice as much carbonic acid as the carbonate, and hence it is sometimes called *super*-carbonate. The additional carbonic acid very much alters the qualities of the salt, its appearance, &c. It is obtained in regular crystals, which do not deliquesce, and its taste is more agreeable than that of the carbonate. It is very soluble in cold water, but insoluble in alcohol. Hot water decomposes it, and expels carbonic acid. One hundred and one grains of crystallized bi-carbonate of potash are decomposed by seventy-five of crystallized tartaric acid, or by seventy-six of crystallized citric acid. The bi-carbonate is more costly than the carbonate, but far more pleasant for irritable stomachs, whether in powder or in effervescence. The incompatibles do not differ from those of the carbonate.

Nitrate of potash, nitre, or saltpetre, is a very useful salt, and ranks among the remedial appliances denominated *anti-phlogistic*. It is composed of one equivalent of nitric acid and one of potash, and is called a neutral salt. It may be formed by the direct action of nitric acid on carbonate of potash. It has been found largely as a natural production, but has been extensively manufactured from heaps of compost, as in the times of the American Revolution. Lime was thrown into those heaps, and the nitric acid, formed by the union of nitrogen evolved from the decomposition going on with atmospherical oxygen, gave

rise to the nitrate of lime. This being separated by the formation of a ley, by addition of potash, gives birth to nitrate of potash, which is separated and procured by an easy process.

Nitre is soluble in seven parts of water at 60°, and in its own weight at 212°. It is insoluble in alcohol. The aqueous solution, fresh made and instantly employed, is decidedly *refrigerant*, for the solution in water causes a reduction in temperature. It is obvious, however, that if the solution be allowed to stand an hour of two before it is swallowed or applied to the surface, it will not be a refrigerant, because it has no longer a reduced temperature. The taste of the nitrate of potash is rather saline, and yet it is cooling, with some pungency. Its *incompatibles* are alum, Epsom salt, sulphuric acid, and sulphates of copper, zinc, and iron.

Owing to some resemblance to Glauber's salt, in respect of the external aspect, nitrate of potash has been swallowed in mistake for the purging salt. A fellow-graduate was nearly destroyed by such a blunder, committed a few days prior to the commencement for conferring degrees. He should have known the difference in taste, for that is sufficiently obvious to serve as a guide: the purging salt being much more alkaline and unpleasant than the nitre. The two salts are acted on very differently by red-hot coals. The nitre deflagrates and augments the combustion; whereas the Glauber's salt tends to extinguish the fire by reason of its great quantity of the water of crystallization, and it never deflagrates. Heated sulphuric acid decomposes the saltpetre, but does not affect the Glauber's salt at all. The young doctor fortunately made this experimental error in his own person, and learned very thoroughly how to avoid a repetition in any who might be his patients. He was saved by active vomiting, and the subsequent use of emollient and mucilaginous drinks, with opiates, and external irritants to the epigastric region. He took a full ounce of the saltpetre. Twice as much has been taken in mistake, and the patient got well. (See *Memoirs Lond. Med. Society*, vol. iii.)

The *Philadelphia Medical News* gives the case of a man who took over two ounces, in mistake for Epsom salt. In five minutes he had severe burning pain in the stomach, and was inclined to vomit. A mustard emetic was given, and this followed by carbonate of magnesia and opium. The patient was soon well.

There can be no doubt that very great doses of this salt fail to poison, in some instances, because they are antagonized by existing disease, just as tartar emetic is neutralized by acute pneumonia.

Nitrate of potash is largely employed in fevers, and has been called a *febrifuge*. Given in five or ten-grain doses every hour or two, it not only reduces arterial action, but is also *diuretic*.

The dose is best given in a wineglass of cold water. To increase the whole effect, the well-known formula of Rush is among the best that I have employed.

℞.—Nit. pot. ʒi;
Ant. tart. gr. i.
Mix, and divide into twelve powders.

Each dose, as above, contains five grains of nitre and a twelfth of a grain of tartar emetic. Besides reduction of febrile symptoms, there is both a diuretic and diaphoretic result, if the powders be repeated every hour or two hours until all are exhibited. To the above mixture enough calomel may be added to give a grain to each powder, when it is desirable to induce gentle ptyalism very speedily.

I learned, while in Kentucky, that saltpetre was employed as a popular medicine in the treatment of *calculous disease*, such as the common people designated by the term *gravel*. There can be no doubt that the remedy operated very much by augmenting the urinary discharge, and thus conveying the calculous matter out of the system. An ounce of saltpetre is boiled for a few minutes in a quart of new milk, and a tablespoonful is taken every hour, the repetition being continued for days and weeks. It is quite easy to calculate that each dose contains nearly eight grains of the salt.

The nitrate has been administered in very large doses in *hæmoptysis*, evidently of what the writers call the *active* or *acute* form. M. Guadinan employed the salt as follows:—Fifteen scruples (300 grs.) were dissolved in one hundred and twenty scruples of gum-water, sweetened with fifteen of syrup. Two mixtures of this kind were consumed in twenty-four hours, making six hundred grains of saltpetre. It is said that this quantity never impaired the digestive apparatus in any perceptible degree. It succeeded in the most alarming hemorrhages, after general and local bleeding and astringents had been unavailing. (See *Provincial Medical Journal*, 1842.) It is stated in Villard's *Clinical Repertory* that half-ounce doses have been given, for the relief of hæmoptysis, with marked success and no bad results. These facts teach us that the objection raised to the use of potash as an antidote for nitric acid, on the ground of forming a poisonous salt, is purely ideal.

Dr. Carlyon, physician to the Cornwall Infirmary, speaks favorably of the nitrate of potash as a remedy for *purpura hemorrhagica*. He says it does best when given with an equal quantity of sugar in cold water, in doses of from ten to twenty grains, every two or three hours, or more frequently if the case be urgent. (See *Braithwaite*, part xix.)

The same medicine has been exhibited in large doses, also, in *acute rheumatism*, and may be regarded as part of the eliminating treatment advocated by Dr. Todd, and noticed elsewhere in this volume. (See *Elimination*.) Eight drachms have been given in twenty-four hours, or twenty grains per hour continuously. Copious perspiration and increased flow of urine were prominent results of this practice, and the reduction of the arterial force was a necessary consequence. The remedy is affirmed to be most successful when administered very early in the attack. The *London Lancet* for 1843 offers an explanation of the operation of these large doses of the nitrate; but we suppose it to depend on a principle already named, viz., the antagonism of poison and disease. It is on the same principle that immense doses have been safely given in *inflammatory diseases* of high morbid action, as reported in the *Medico-Chirurg. Rev.* for 1844. This bold use of nitrate of potash can be traced back to the time of Dover, (original proprietor of *Dover's powder*.) He treated acute rheumatism in athletic persons with copious bleeding and six hundred grains of nitre daily. The salt was added to water-gruel, in the proportion of two drachms to a pint. (See *Coxe's Esculapian Register*, July, 1844.)

The largest doses of nitre ever given in regular practice have been referred to already. *Villard's Clinical Repertory* has informed us that half-ounce doses were given for relief of hæmoptysis. In a foreign hospital, ascites was treated, recently, with the same remedy carried so far that almost an ounce and a half was the amount consumed in twenty-four hours. The effusion soon disappeared, and the appetite and strength were restored. No other medicine was administered. We gather the facts from the *N. Amer. Med.-Chir. Rev.* for May, 1857.

Nitrate of potash has also been employed as a remedy for *incontinence of urine*, a result that does not seem to accord with the action of the medicine in acute rheumatism. Dr. Young reports, in the *American Journal of Medical Sciences* for 1843, decided success with ten-grain doses, every three or four hours, given in flaxseed tea. The remedy is to be continued for five or six weeks, and has succeeded in congenital cases as well as in others. Dr. Young thinks the medicine acts by increasing the irritant properties of the urine.

Cigars, made of paper saturated with nitrate of potash, have been employed with some success by *asthmatics*. The cigars are smoked by the patient, or allowed to burn in the chamber. As a mere change of expedients, it may be well enough, and deserves a trial.

We may very profitably add nitrate of potash to infusions of uva ursi or buchu; the diuretic effect is very greatly increased. For

this end, two drachms may be added to a pint of infusion. We sometimes add it also to spiritus mindereri, to augment the antiphlogistic powers of the mixture.

The most novel therapeutic property assigned to nitre is given by a physician of Leipsic. He says that from a scruple to a drachm, given daily in any bland fluid, as gum-water, will promote the catamenial flow, and he therefore calls it an *emmenagogue*. We presume, if the statement be correct, that the doctrine of *elimination* will serve for a solution, as the conveyance out of the system of irritant matter relieves the ovaries from undue excitement, and so enables them to do their appropriate work.

M. Mangenot, in the *Bulletin de Thérap.*, recommends the application of nitrate of potash for the cure of *nævus*. The moistened finger is dipped in the powder and the nævus gently rubbed with it. A small bulla, as observed in herpes labialis, is formed, and the tumor shrinks away, so that one other application may suffice for its entire suspension. This was the result in four cases of nævi in the face. In a fifth case, in which a nævus, four centimetres in diameter, existed on the shoulder, the same treatment removed it in a month.

Sal prunelle of the books is simply melted nitre poured into small moulds. The water of crystallization is expelled in the process, and hence the greater hardness of the salt. It has no special properties to make it valuable.

Tartrate of potash.—The combination of tartaric acid gives rise to salts differing in medicinal properties, according to the relative quantity of their acid. Hence we have the neutral or soluble tartar, and the comparatively insoluble cremor tartar, with the acid in twice the quantity that exists in the former. The one is *tartrate*, the other *bi-tartrate* of potash. As the tartrate is made of the bi-tartrate, we shall notice the latter first.

Cremor tartar, or bi-tartrate of potash, (or *supertartrate*, as some call it,) exists in the crude tartar of commerce, in union with the coloring matter of wine and other impurities. This crude tartar is formed in the process of wine-making, and is deposited on the inside of wine casks, because not soluble in the fluid as it becomes older and more decidedly alcoholic. Large quantities of this crude deposit are thus obtained, and by long ebullition with wood-ashes and the addition of albuminous matter the pure cremor tartar is separated, as a white pulverulent mass, having a harsh, rough feel when pressed between the thumb and fingers. It requires one hundred and twenty-five parts of water for solution, at 60° Fahrenheit, and thirty parts at the boiling point, or 212°. The salt is decidedly acid to the taste, and promptly reddens litmus paper. As the watery solution

tends to spontaneous decomposition in hot weather, it should be prepared only as it may be needed. Vogel discovered that borax rendered cremor tartar much more soluble in water, and he imagined that this was a great acquisition. It would have been so, probably, if the mixture had not so modified the therapeutic qualities as to lessen the value of the medicine. The compound is far less diuretic than is the cremor tartar alone. It acts better on the bowels, but affects the kidneys very little if at all.

The alkalies and alkaline earths are incompatible with this salt, and so are all the mineral acids. The first two change it to soluble or neutral tartrate, while the latter decompose it and form new salts. The bi-tartrate decomposes the bi-carbonates of potash and soda, and hence they are sometimes combined for the purpose of making effervescing purgative draughts. The bi-tartrate is also employed in preparing the tartrate of potash and iron, tartar emetic, and Rochelle salts.

A fraudulent use is made of cremor tartar by the bakers, who resort to the grocers' cream of tartar for the purpose of making bread very white. This is a compound of cremor tartar, alum, and whiting. (See Bailey's *Report on Adulterations.*)

Cremor tartar is not often used as a cathartic by itself, but more commonly with flowers of sulphur, jalap, &c. The mixture of equal parts of cremor tartar and sulphur, and as much molasses as will make a sort of treacle or syrup, is very frequently given to children in the spring to *purify the blood* and clean off the skin. A teaspoonful or two every morning proves a gentle laxative, and is readily taken, because it is a comparatively pleasant dose.

The combination of jalap and cremor tartar is much more effective. Ten grains of the former and twenty of the latter make an ordinary adult dose, which, repeated three or four times a day, will induce copious watery or thin discharges. It has therefore been denominated a *hydragogue* cathartic, and is useful in some dropsical affections. The dose may be taken in syrup or sweetened water.

A very pleasant drink may be made, partly of cremor tartar, that will be found grateful to most persons in warm weather, and possessing slight cathartic powers. To make it,

Take cremor tartar, ℥ss;
Half a lemon;
Honey or sugar, ℥ij;
Boiling water, a quart.

Mix these thoroughly, after squeezing the lemon, and drink as often as may be desirable.

The *tartrate* can be made by adding sufficient potash to cremor tartar and water, in a state of ebullition, to neutralize the excess

of tartaric acid. The whole is to be evaporated and set aside to allow of a separation of the tartrate, which from its ready solubility in water is called *soluble tartar*. The watery solution is liable to spontaneous change in hot weather, and it should not be kept in solution at all.

The neutral tartrate, like the bi-salt, is quite white; but the former has not the rough feel of the latter. It is not an unpleasant medicine, and acts very gently on the bowels in half-ounce doses. It is well suited to delicate females, and should be better known to the profession.

The incompatibles are magnesia, barytes, lime, acetate of lead, nitrate of silver, the acids, acidulous salts, tamarinds, sub-acid fruits, &c. The last two neutralize part of the potash, and so make the whole a bi-tartrate. Hence it would be improper to give soluble tartar in acid drinks that might detach part of the potash and so destroy the cathartic quality of the salt.

We may add soluble tartar to infusion of senna with good effect, as it takes away the griping property of the latter and renders it more efficient. Joined to powder of rhubarb, calcined magnesia, and a few grains of ginger or cinnamon, it constitutes a convenient and pleasant purgative. The following is a good formula, when we use the senna infusion:—

Take of senna leaves, half an ounce;
Ginger, a drachm;
Boiling water, twelve ounces.

Macerate these for one hour, and strain through a clean cloth. Add to an ounce of the liquor three drachms of soluble tartar and two drachms of cinnamon-water, and take the dose an hour before eating. The following is also a good cathartic:—

℞.—Pulv. rhei, ℈ss;
Tart. pot. ʒi;
Ol. menth. p. ♏iij.

Mix the powder thus formed in sweetened water or in syrup.

Dr. Bence Jones has found two drachms of *tartrate potash*, dissolved in four ounces of water, to render the urine alkaline in thirty-five minutes. Of course the salt must be decomposed in the circulation or elsewhere, before it can furnish free alkali to accomplish this result. Other salts of the alkalies act in like manner.—*Headland's Action of Medicines*, p. 143.

Sulphate of potash has been named as an ingredient in Dover's powder. The only reason assigned is its great hardness, which calls for long and active trituration, and this secures the proper mixture of the opium and ipecacuanha. As the nitrate of potash is much more medicinal than the sulphate, some physicians prefer to add it to the opium and ipecacuanha;

when this is done, more trituration is necessary in order to secure a perfectly homogeneous result.

Acetate of potash was, perhaps, the first saline diuretic ever employed, and it was known by the name of *sal diureticus*. It is now rarely exhibited in this country, and can well be dispensed with. Those who desire to use a convenient substitute have only to add vinegar or acetic acid to a solution of carbonate of potash until effervescence ceases. The mixture will both purge and act on the kidneys. Two drachms of the carbonate and as much acid as will decompose this much of the salt will suffice for one or two doses.

There are some cases in which it will occur to the practitioner that an alkali as well as an eliminative medicine may be called for, and then the old-fashioned *acetate of potash* will be found preferable to a free alkali. *Skin diseases* have been successfully treated with this salt, as well as some cases of *rheumatism*. In both instances it acts as a *diaphoretic*, and so it may correct a too acid state of the perspiration, and then pass off as an alkaline excretion. In rheumatism it acts as a *diuretic*, and may also counteract the too acid quality of the urine. These facts merit a little careful reflection.

Dr. Golding Bird has found the acetate superior to the nitrate of potash, as a depurator or eliminator, in cases of dropsical disease. He usually gave a drachm every four hours in a tablespoonful of camphor mixture, followed by ten grains of Dover's powder at bedtime.—*Lond. Lancet*, February, 1851.

Chlorate of potash is a more valuable medicine than the one last named, and too little appreciated. One of the latest medical dictionaries speaks of it as an *alterative* and *antiscrofulous* medicine, but adds, "it is of little value." This, for a work of 1848, is a little behind the age.

This salt is obtained by passing chlorine gas into a solution of fifteen parts of carbonate of potash in thirty-eight of cold water until no more can be absorbed or combined. The solution is then exposed for a few days to the air, shaking it occasionally to get rid of the chlorine odor. The crystals that are formed must be redissolved in pure boiling water, the solution evaporated and set aside to crystallize again. The chlorine is converted into chloric acid by decomposition of some water, and the acid thus formed combines with the potash to make the chlorate.

This salt was at one time much employed in the treatment of *pulmonary consumption*. Dr. Kolen, of the Berlin Hospital, gave it with a pretty liberal hand, and was one of its most sanguine admirers. His favorite prescription was as follows:—

℞.—Chlor. pot. ʒi;
Aq. distill. ℥iv;
Syr. althæa, ʒi.

Dissolve the first two, and add the syrup named, or any simple syrup. The dose is a tablespoonful four times a day.

Some physicians in this country made repeated trials of the chlorate in various forms of the same disease, but not with sufficient success to warrant us in reposing much confidence in it as a means of doing service to consumptive patients. It is decidedly stimulant, and may have done harm in many cases. I think it has been the occasion of hæmoptysis frequently.

There can be little doubt that a chemico-medical philosophy first led to its use in the disease above named, which by many persons was supposed to be dependent on very defective oxygenation of the lungs and whole system. The chlorate being a salt of high oxygenized qualities, seems to be exactly suited to the state of the case, and hence its frequent exhibition.

In many cases of *scarlatina*, however, the chlorate is a valuable medicine. I allude, now, not to the simple form of that disease, for there little is to be done, but to those cases in which there is a manifestation of the typhoid element that seems to lay the foundation of a fatal malignancy that resists all ordinary efforts. In such cases, Dr. Watson, then of King's College, London, tried the following formula:—

Take of chlorate of potash, ʒij;
Muriatic acid, ʒij;
Aquæ, ℥ij.

Mix the acid and water, and then add the salt. Put the whole into a close bottle and keep it in a dark place. Two drachms of the solution mixed with a pint of distilled water constitute the proper chlorine medicine for use. The dose is a tablespoonful, or two, according to age. Children of from four to eight years old may take the doses named two, three, or four times a day, or oftener if the symptoms be very alarming.

This medicine, by its happy stimulation and disinfectant qualities, seems to be well fitted to counteract the typhoid tendency of the disease. The throat is cleansed and the foul odor removed, and patients improve rapidly under the treatment.

Additional testimony has been given by several foreign practitioners in favor of chlorate of potash in the treatment of membranous formations, and ulcerations of the mouth and thorax, as we learn from extracts from a French journal, in the *North Amer. Med.-Chirurg. Rev.* for May, 1857. Its happy effects in some cases of scurvy, and in malignant scarlet fever, show pretty clearly that it makes a deep impression, and a good one, too, on the blood.

This medicine has come into use also as a remedy for *croup*. It was tried, at first, after the usual means had been carried pretty far, and the patient evidently not much better and greatly reduced in strength. Several cases are given in point, in neither of which, more than a drachm and a half had been consumed. As Pereira states that this salt is found unchanged in the blood, it might be inferred that no oxygen had been furnished to the system by it. He was of opinion, however, that a partial decomposition did ensue; otherwise, the change of color from a dusky leaden hue to the rosy tint of health could not be accounted for.—*Med. Times and Gazette*, July, 1852.

Phagedenic erosions of the cheeks, sometimes called *cancrum oris*, have been most signally benefited by the chlorate of potash. We have already noticed the disputed origin of this state of the mouth and cheeks of children, and need not repeat. It is more to our present purpose to say that from three to five scruples of the salt, given in sweetened water, in the course of twenty-four hours, will prove the very best remedy. Experience has abundantly tested this fact, no matter what may be the theory of the case.

The same salt has been employed with good results in the treatment of unhealthy ulcerations in adults also. The principle of action is the same in all cases, most probably. (See the *London Lancet* and *Medico-Chirurgical Review* for 1843.) It is not impossible that the vital forces may eliminate oxygen from the salt, or separate its chlorine in such a manner as to make the one or the other available.

M. Ricord has reported very favorably of the use of chlorate of potash in *mercurial salivation*. Not only does it check the salivation, but it has appeared to prevent the mercurial action altogether, when given very early, so as to merit the title of *prophylactic* as well as curative.—*Bull. de Thérap.*, Nov. 1856.

Ferrocyanate of Potash. Prussiate of Potash.—This salt has been employed by M. Lombard, of Geneva, as a substitute for hydrocyanic acid. He affirms that it possesses all the advantages of the acid, and so obviates the necessity of a resort to it. He dissolves from one to five grains in an ounce of distilled water, and gives a teaspoonful to an adult for a dose.

The same physician employs an ointment of the ferrocyanate in the management of *neuralgia*, the proportions being three grains of the salt to an ounce of lard.

Robiquet advises what he calls the *medicinal hydrocyanate of potash* as a substitute for hydrocyanic acid. To prepare this substitute it is necessary first to make the cyanuret of potassium, which, having been obtained, is dissolved in eight times its weight of pure water, as a consequence of which it is converted into

medicinal hydrocyanate of potash. This article is employed as follows:—

Take of medicinal hydrocyanate, ℥i;
Pure water, lbi;
White sugar, ℥iss.
Mix, and give five drachms night and morning, as a *pectoral.*

A syrup has been made for the same end by adding a drachm of the medicinal hydrocyanate to a pound of simple syrup. Mix, and gently simmer over a moderate fire. The dose is a tablespoonful night and morning.

We are not disposed to catch at every novel suggestion. But in respect of so troublesome a disease as *diabetes*, we think it desirable to give the profession all the helps that are accessible. This is not the place to speak of the varieties and nature of diabetes particularly; yet these points must be studied well, in order to a wise treatment. We call attention to a new article, viz., the *permanganate of potash*, formed by the union of permanganesic acid and potash. Mr. Sampson speaks very confidently of the value of this remedy. Two or three grains make the usual dose, which may be gradually augmented. A patient is named who took eleven grains three times in a day and got well rapidly. The safe rule is to increase the dose until it appears to disagree with the stomach.

In patients treated for months in the ordinary way, without relief, this medicine induced a happy change in one week. It not only reduces the quantity of urine to its normal state, but removes the painful thirst attending this disease.—*Lancet*, Feb. 1853.

Potato. *Solanum Tuberosum.*—This important vegetable, known almost as *the* staff of life to millions of the race, is also entitled to our attention in other relations. The tissue of the potato is cellular, and each cell contains about twelve grains of starch, and this may account for the result of variable degrees of boiling the vegetable. Carried to a certain point, the whole interior is mealy or starchy, but pushed too far, it is watery and pasty. The constituents of potatoes are *starch*, a *starchy fibrin*, *albumen*, *gum*, *acids*, *salts*, and *water*, and the relative proportions of these vary a good deal with season and culture. *Solanina*, the proximate principle of the poisonous *bitter sweet*, (*solanum dulcamara*,) has also been detected in the potato, and especially in the bud and twigs of the plant. Otto supposes this to be the cause of disastrous results to cattle and men who have eaten of the germinated potatoes. Latham and Nauche have obtained a peculiar extract from the leaves and stalks that was decidedly poisonous; and although Dr. Worsham appears to have reached a different result, the testimony is in favor of the poison-

ous development, and is confirmed by the previous experiments of Otto. (See *Journal de Chimie Médicale*, vol. vii., and *London Medical Transactions*, vol. i.) May it not be that the *potato disease* has proved injurious partly by the development of *solanina*, or the poisonous matter referred to by Nauche? The investigations into the essential nature of that disease are not, to my mind, at all satisfactory, and call for further research.

A man, with a large family and no means of support, went to some deserted fields to dig small potatoes left in the ground from the fall gathering, and rejected by the farmer as unfit for use. The potatoes had been frozen, and exposed to the light and occasional mid-day warmth, so that their original nutritive properties were lost and baneful qualities acquired. They had a very bitter taste, and the owner supposed the man was gathering them for pigs to eat, hardly thinking them good enough for that purpose. The crop thus procured constituted the aliment of the family for more than six weeks previous to December, 1832, and in that time they had but one meal of any other sort, once in eight days.

Mr. Peddie, who reports the case in the *Edinburgh Medical and Surgical Journal*, vol. xxxix., says that in a very few days after using them the whole family complained of severe griping pains in the bowels, followed by diarrhœa of a green, watery kind. The children were less sorely afflicted, because they partook less of the potatoes, getting occasionally a crust of bread from some of the neighbors.

Although the irritation of the bowels might seem to render the poison an *irritant* one, yet the ultimate action was decidedly *narcotic*. The system was depraved, the solids and fluids vitiated, gangrene of the face and general dropsy supervened, of which two of the family died.

The importance of the sound potato as a means of preventing *scurvy*, and of curing it after being developed, very greatly enhances its value. It is now known that, in consequence of the acid ingredients and other qualities of the potato, it will effectually prevent attacks of that disease, and even more certainly if combined with vinegar or other vegetable acids. Sound potatoes should be taken to sea whole, and also put up in slices in the strongest vinegar. We have dwelt sufficiently on the use of acids elsewhere, and need not now repeat.

The anti-scorbutic power of the potato, used as food, has been hinted at elsewhere in these pages. It is undoubtedly very important. Dr. Baly, physician to the General Penitentiary at Milbank, (Eng.,) affirms that the preventive quality is not impaired by a boiling heat, as some have asserted. In 1840, scurvy

was a frequent disease among the military prisoners, while it was not seen among the convicts. The exemption of the latter was owing to the fact that their weekly diet included five pounds of potatoes. The military prisoners were then allowed two pounds weekly in the first three months, three pounds in the second three months, and four pounds after the expiration of six months. Not a single case of scurvy occurred among them afterward.

The presence of citric acid in the potato merits special notice, as on it most probably depends, in great measure, the anti-scorbutic quality of the vegetable. According to Baup, (a German chemist, 1836,) the potato yields enough citric acid to admit of its employment for making this acid for commercial purposes.

Potato starch is much used for dietetical purposes. Being void of nitrogen, it is inferior to flour or meal of the cereal grains in nutritive power; but being readily soluble in boiling water, it yields several agreeable articles of food. It is sold in the shops as *potato flour*, *potato arrow-root*, *Bright's farina*, &c. &c. *Indian corn starch* is the potato starch colored blue, very slightly.

POULTICES.—Nobody inquires the derivation of this word, because everybody knows what we mean by it. If poultices were in fashion in Noah's ark, or shortly after the expulsion from the garden of Eden, the end in view was probably the same as at present. Nature points to a soft, pleasant application to soothe pain, allay irritation, and to restore injured tissues to their original soundness. A poultice does not deserve the name if it be uneven, heterogeneous, lumpy, because such properties unfit it for use. Suppose the tender breast of a delicate female to require such an appliance, common sense would teach that the softer, the more emollient and yielding the mass, the better. Hence it is important to make a poultice in the best manner possible.

My custom has been, when I needed a *bread and milk poultice*, to boil fresh milk in a clean vessel, and while in the act of ebullition to throw in gradually finely-grated or powdered stale wheat bread, stirring all the while, until enough was added to made the whole of a proper consistence. A tablespoonful of fresh lard, or as much sweet oil, will be a good addition to a poultice large enough for the female breast, and the softness and emollient quality will be thus augmented.

A poultice prepared in this way will be void of lumps, and when spread on a cloth it will present an appearance of uniformity. It is the basis of compound poultices, and hence the need of making it as it should be. Bark, charcoal, yeast, and other articles added to such a poultice will sometimes greatly increase its value.

It is desirable to change poultices twice a day, at least; in hot weather a renewal should be made at noon, as well as in the morning and at night.

PRESCRIPTIONS.—Any instruction given by a physician to a patient, directly or indirectly, may be called a prescription. This may relate to the mind or body, to clothing, traveling, food, or physic. But we mean something a little different when we talk of prescriptions in the technical sense of the term. Thus regarded, a prescription is a special direction for a form of medicine, simple or compound. Under some circumstances these directions are verbal, and frequently the physician prepares the medicine with his own hands. In large, or even small cities, it is often the business of a physician to write his prescription and to direct it to be sent to a particular apothecary to be duly compounded. Hence the necessity of a proper amount of knowledge in order to discharge this duty in the best manner.

The young physician may say that he is not likely to be ever placed in a position where it would be necessary to write a prescription, since he designs to locate in a country neighborhood. But no man can foresee where his lot may be cast five years hence; and, therefore, as a city destiny is quite possible when least expected, every physician should be ready to write correct prescriptions at a moment's warning. And in order to acquire the needed facility, it is proper to practice a good deal in private, so that, by a sort of instinct or intuition, it may be perfectly easy to proportion half a dozen articles with great accuracy, and without delay or apparent embarrassment.

To do all this, a man must know and bear in mind for what he is to prescribe, and this idea being all the while before him, he should reduce the form to paper distinctly, accurately, and intelligibly to others as well as to himself. To illustrate, it may not be amiss to cite a fact. A very fashionable doctor in a Western city, known as a perpetual-motion talker, exquisitely polite, and fond of the nice things of the table, was requested to see a child in a family whose physician he had been for several years. On repairing to the house he met the good lady, and felt the child's pulse, and made the other customary examinations. The lady happened to speak in praise of a dish of which she had eaten but recently, and expressed a desire to have the receipt for making it. The doctor knew all about it, and, in place of writing a prescription for the child, deliberately penned nearly half a sheet of directions for the *pudding*. "There, madam," said he, as he finished, "there it is. You will please to give one of the powders every two hours, until it sickens and purges smartly;" and then the gentleman made his best bow and retired. At the same instant the father entered and inquired what the doctor had ordered

for the child. "There is his prescription, my dear," said the wife, "and he has told me how to give the powders." The husband took the paper for the purpose of sending to his apothecary, when to his great surprise he found that a pudding and not physic had been the theme of the doctor's cogitations. Vexed at this strange infatuation, a messenger was sent across the street for the late Professor Eberle, who from that day was the physician of the family, and from whom I received substantially the detail here given.

The prescriber should write in a plain style, so that a mistake could not be made at all without actual criminality. For want of care in this respect aqua fontis has been read aqua *fortis*, and with fatal result. The old-fashioned names known to everybody are always to be preferred when the articles are very energetic; as, for instance, *calomel* and *corrosive sublimate*, rather than the modern technicalities.

The physician who writes a prescription should never send it out so that an apothecary may take the liberty of guessing what the writer meant. For instance, I have seen a prescription for a drachm of blue mass to be made into pills, thus:—

℞.—Blue mass, ʒi.
To be made into pills.

Here it is obvious that the apothecary was to decide the number of pills to be made, and, of course, their weight. And if this may be done in respect of blue mass, why not in regard to corrosive sublimate or strychnia?

We are told by an English surgeon, Mr. Henle, in the *London Lancet* for June, 1846, that a practitioner of some note actually wrote a prescription and sent it to an apothecary to be com pounded, ending with—

Liquor potassæ arsenitis, quantum sufficit!

Could a man be sane who would allow his apothecary such a latitude with such an agent? Degraded as the profession is said to be in America, I have never seen anything equal to this.

It is not possible to be too careful in this part of professional duty; and it is a good rule not to let a prescription pass from the hand until read over a second time. Many facts could be narrated having an important bearing here, but it would seem to be unnecessary to go into detail.

As a general rule, a prescription should not contain more than four or five articles, and never should it exceed six. The late Dr. Chovet, an Italian, who was well known in this city sixty years ago, was in the habit of putting twenty and sometimes twenty-five ingredients into one prescription. He believed that

the practice of medicine was often a random business, and a good deal like shooting at a great flock of reed birds with a double load of fine shot. Although aimed at no single object, it was probable some of the three or four hundred shot would hit. He judged of his compound physic in the same way, and cared not which of the twenty articles hit the disease, provided the patient was the better for the dose.

The prescriptions given in this work are purposely written in the usual abbreviated Latin and full English styles; and I care not which is adopted, though inclined to believe that the welfare of the community would be most happily consulted by using plain English. Enough are presented to enable the young practitioner to become familiar with the writing or directing of prescriptions for any ordinary purpose. When there is no valid plea for the concealment or disguise of the remedial agents, there can be no sufficient reason assigned for a preference of the Latin language in our instruction to the apothecary. There is one method of writing prescriptions which should be discountenanced everywhere. I allude to the use of hieroglyphics not known to any of the books, and understood only by the prescribing physician and *his* apothecary. I say *his* apothecary, for no other in the place could decipher one of the prescriptions from such a source. The secret contrivance is adopted by the parties for their mutual profit; and when the physician has a large practice and understands how to multiply prescriptions, the clear gain is by no means inconsiderable. But such tricks are plainly disgraceful to an honorable and liberal profession, although not in conflict with any existing civil statute.

PREVENTIVE TREATMENT.—This is quite too much overlooked by the profession. In fact, it is not always in our power to meet cases of diseases in time to apply preventive means. The late Professor Rush was very emphatic in his teachings on this point, and hence the interest with which he dwelt on the *forming state of fevers*, the *premonitory signs* of disease, and the great advantage of meeting cases just at these epochs in their history. An emetic, or a cathartic, or a small bleeding, or abstinence, or quietude, may arrest a disease in its formative state, and completely break it up. Who has not learned that the surest way to meet *Asiatic cholera* is by absolute rest and a very little medicine when the first manifestations of looseness appear? And who does not know that a full seizure of *sthenic apoplexy* may be prevented by bleeding, purging, abstinence, cold to the head, &c.? In females with great liability to abort, we see daily the great advantage of absolute rest, a cooling diet and regimen, begun and carried out as soon as possible after conception, and even when no sign of abortion is perceptible.

PROTEINE.—This is from the Greek, and means *to hold the first place.*—It is the basis of albumen, fibrin, casein, and other important and nutritious azotized principles. It is introduced here because a writer has suggested the importance of its administration to debilitated subjects as a direct *means of nutrition.* Whether the plan will ever be regarded as an important matter, time must determine. The article is now prepared and kept on sale, and it may be well to give it a trial occasionally. It is obtained by dissolving the substances above named in potash, by a gentle heat, so as entirely to separate their sulphur; after which acetic acid is added, in order to throw down the proteine. When perfectly dried, this product looks somewhat like transparent horn, though far more brittle, and hence reducible to powder. Previous to the act of drying, it is a grayish-looking, gelatinous mass.

The discoverer (Mülder) gives its composition as made up of carbon, 40; hydrogen, 31; nitrogen, 5; and oxygen, 12. To this the suggestions of Liebig pretty closely conform; his variations being merely a matter of expediency for theoretical purposes.

As proteine is clearly the foundation of all the nitrogenized animal tissues, it is plain that its use as an article of diet has a philosophical basis. Its composition, moreover, aids us in determining the actual *alimentary* qualities of various articles of food. Its very ready solubility in acids found in the animal economy, as the acetic and phosphoric, prove its adaptedness as a means of nutrition.

Proteine has been introduced to our notice as an article of Materia Medica, and promises to be very useful. E. W. Tusson, surgeon to Middlesex Hospital, has succeeded with it in *caries* and *ulcers*, in ten-grain doses, given twice a day for two months. The healing process was rapid and perfect, though previously the cases were exceedingly obstinate.—*Braithwaite*, part xvii. We suggest the importance of trying it fairly.

Not a few interesting cases of *scrofula* appear to have been entirely cured by the use of proteine. Of these we may cite some furnished by J. Taylor, Esq., in the *Lancet* for Sept. 24, 1853. The patients were from two to five years old, and the disease was hereditary. Three grains were given in sugar and water three times a day, and increased to five-grain doses in the course of a month. The ulcers were dressed with zinc ointment and an occasional poultice of flaxseed. Some of the cases improved very obviously in a few weeks.—*Braithwaite*, part xxvii. p. 38.

PRUNUS VIRGINIANA. *Wild Cherry.* The *bark* and *berries.*—This tree is universally known in the United States, and therefore we are not about to describe it. The cherries or berries are

deemed more valuable as a medicine than the bark, by some individuals. Both contain, beyond doubt, a small portion of hydrocyanic acid, and the modified state of the acid is the secret of any good effects that may result from their use. The cherries are generally made into a sort of tincture or cordial by the addition of brandy. The inner bark, in form of infusion, presents a safer expedient, and is equally valuable. An ounce of this bark to a quart of cold water, allowed to stand undisturbed all night, will present a very good form for exhibiting the wild cherry. A little orange or lemon-peel may be added, if desirable. The infusion may be taken *ad libitum*, and is gently *tonic* and *expectorant*. A strong decoction is sometimes applied to indolent ulcers and herpetic eruptions, and is also the basis of an excellent expectorant syrup. (See the article *Syrups*.)

PULSATILLA.—This is one of the items on which part of the mysticism of the *infinitesimal* practice depends. An effort has been repeatedly made to induce the belief among the non-professional that all the medicines employed by this dreamy philosophy are different, as to source, nature, and everything else, from those exhibited by the regular practitioners. And yet it is really true that the latter employed every article known to the former for centuries before Hahnemann was born. Pulsatilla is a species of *anemony*. *Pulsatilla nigricans* is the *anemone pratensis* of the old books, and was a favorite with Baron Stoerck in *chronic diseases of the eyes*, *secondary syphilis*, and *cutaneous affections*. He regarded it as possessed of extraordinary virtues; but his cotemporaries valued it so lightly that it fell into disuse. It has acrid properties, and when chewed inflames the mouth and tongue, inducing an increase of the salivary discharge, on which account it has been employed for the relief of *toothache*.

We give these brief notices merely to put our junior readers on their guard when accosted, as they will be occasionally, touching the wonderful discoveries of the Hahnemann school.

PULVERES. *Powders*.—This is, beyond doubt, a most excellent mode for the exhibition of many medicines. We prefer it when the powders are not large, and the patient can take them without difficulty. The following formulæ will be useful to the practitioner:—

Compound Powder of Belladonna.

℞.—Pulv. fol. belladon. grs. ij;
" moschi,
" camphoræ, āā grs. v;
" sacch. alb. ʒss.

Rub well together, and divide into eight powders. (Used in pertussis, asthma, &c.)

Aperient Powder.

℞.—Pulv. jalap. ʒiij;
Cal. ppt. ʒi;
Pulv. zingib. ℈ij.

Mix. Dose, from eight to twenty-five grains, in syrup of lemon or ginger.

Tonic Powders.

1. ℞.—Pulv. rad. calumb.
" rad. zingib.
" carb. ferri, āā ʒi.

Rub together, and make twelve powders. Dose, one three times a day.

2. ℞.—Sulph. quin. ʒi;
Pulv. gentian, ʒiij;
Ferri. sulph. ʒi;
Ferri carb. ʒiss.

Mix. To make sixty powders. Take one three times a day.

Camphor Powder.

℞.—Camphoræ, ʒss;
Alcohol, q. s. to reduce to powder.
Sacch. alb. ʒi;
Pulv. gum Arab. ʒiss.

Mix, and divide into ten parts.

Carminative Powders.

1. ℞.—Magnes. calc. grs. x;
Sem. anis. contus.
Sem. fœnic. contus.
Sem. cardam. contus. āā grs. iij;
Sacch. alb. grs. x.

Rub to fine powder. Divide into two doses, to be given half an hour apart. (For children.)

2. ℞.—Pulv. cort. aurant.
" rad. zingib. āā ʒvi;
" nuc. moschat. ʒij;
" cret. prep. ℥i;
Magnes. calc. ℥ss;
Sacch. alb. ℥i.

Mix intimately. Dose, a teaspoonful or two, three times a day. (For adults.)

Chalk Powder.

℞.—Cret. prepar.
Pulv. gum Arab. āā ℥ij;
Sacch. alb. ℥iss.

Mix. Dose for an adult, a teaspoonful.

Compound Powder of Rhubarb.

℞.—Pulv. rhei, ʒi;
Hydrarg. cum cret. ℈i;
Sacch. alb. ʒij;
Ol. fœnic. dulc. ♏v;
Cret. prep. ℥ss.

Rub well together. Dose, from five to thirty grains, in syrup, two or three times a day. (For infantile diarrhœa.)

Compound Jalap Powders.

1. ℞.—Pulv. rad. jalap. ℥i;
Potass. bitart. ℥ij;
Pulv. capsici an. grs. x.

Rub intimately. Dose, thirty to sixty grains, in the morning, in syrup.

2. ℞.—Pulv. R. jalap. grs. xv;
Cal. ppt. grs. v;
Sacch. alb. ʒss.

Rub these intimately, and add
Ol. carui, ♏ij;
Pulv. gum. Arab. ℈i.

Mix. Take at one dose, in syrup.

Stimulant Powder. (Hartman's.)

℞.—Sodæ bibor. ℈i;
Pulv. sabinæ, grs. vi;
" castor.
" zingib. āā grs. x.

Mix, and take it for a dose, twice a day, in honey or syrup.

Purging Powders.

1. ℞.—Cal. ppt.
Pulv. cambog.
" zingib. āā ʒss;
Sacch. alb. ℈i;
Ol. fœnic. d. ♏xx.

Rub well together. Dose, ten to thirty grains.

2. ℞.—Pulv. rhei, ʒiiiss;
Hydrarg. cum cret. ʒi;
Potass. carb. ʒiss;
Pulv. cinnam. ʒss.

Mix well. Dose, from five to twenty grains two or three times a day.

3. ℞.—Pulv. rhei, ʒss;
Magnes. carb. grs. xx;
Sacch. alb. grs. x;
Ol. cinnam. ♏ij.

Mix, to make one powder.

4. ℞.—Pulv. scammon. ʒij;
Cal. ppt.
Sacch. alb. āā ʒi.

Mix well. Dose, ten to twenty grains, in the morning.

5. ℞.—Pulv. scammon. grs. xij;
" jalap. grs. xiij;
Pot. bitart. grs. xxv.

Rub these well together, and add
Pulv. zingib. grs. viij.

Mix, and divide into three parts. Take one every third hour, in syrup.

Compound Zinc Powders.

1. ℞.—Pulv. valerian, ʒij;
Zinc. oxyd. ℈i;
Moschi,
Sacch. alb. āā grs. x;
Ol. cajeput. ♏x.

Rub well together, and make six doses, one to be taken three times a day.

2. ℞.—Zinc. oxyd. grs. xij;
Magnes. calc. ʒss;
Pulv. calumb. ʒi.

Mix well, and make twelve powders. One to be taken three or four times a day.

3. ℞.—Zinc. sulph. grs. vi;
Gum myrrh. ʒi;
Pulv. ipecac. grs. vi;
" glycirrh.
Sacch. alb. āā ʒiss.

Rub intimately. Divide into nine parts. Take one three or four times a day.

Compound Saline Powder.

℞.—Potass. chlorat. grs. x;
Sodæ chlorid. liq. grs. v;
" bi-carb. grs. xij;
Ol. cajeput. ♏iij.

Mix. To be taken in barley-water.

Compound Powder of Saltpetre.

℞.—Nit. potass. grs. x;
Pulv. cinnam. grs. v;
" ipecac. gr. i;
Ol. piment. ♏i.

Mix for a dose. Take it three or four times a day. (Diarrhœa, dysentery.)

Compound Valerian Powder.

℞.—Pulv. valerian, ℈i;
Magnes. calc.
Ammon. hydroch. āā grs. v;
Ol. cajeput. ♏ij.

Mix, and divide into two parts.

Pumpkin Seed.—These are so common that every one knows what is meant quite as well, and better than if we had written *semines peponis*. The late Prof. Patterson, of the Pennsylvania Med. College, reported a case of *tænia* permanently cured by the use of an emulsion of the seeds of the pumpkin, after turpentine and kousso had signally failed. The seeds yield a fixed oil, which may be given in half-ounce doses twice a day, followed with an ounce of castor oil. The first case was reported in 1852, and we call the attention of physicians specially to the facts.

Punicæ Granati Tunica. *Rind of the Pomegranate. Rind of the fruit.*—The flowers have also been employed medicinally, both internally and externally. Celsus, who wrote in the fourteenth century, speaks in praise of a decoction of the small tendrils of the pomegranate as a remedy for *tapeworm*, the precise disease for which it has ever since been prescribed in various countries. The rind is slightly astringent, and this feature explains the reason of its use in certain forms of disease for which more decided astringents are prescribed.

The powder and decoction have both been employed in view of its *anthelmintic* operation. The dose of the powder is a scruple every hour until five or six doses have been taken. The decoction is prepared by boiling two ounces of the fresh rind in a quart of water until reduced to a pint. A wineglassful should be given every half-hour until five portions have been swallowed; and this quantity is affirmed to suffice for the expulsion of the whole or part of the tapeworm. It is a very safe remedy for

persons of all ages. A child only fourteen months old took it with benefit. Six ounces of the decoction, prepared as above, were mixed with two ounces of water, and a tablespoonful given every half-hour until vomiting ensued. Quite a large tapeworm was expelled.

The pomegranate is an ancient remedy for *chronic diarrhœa* and the last stage of *dysentery*. It has been frequently exhibited as an injection in *leucorrhœa*, and very often employed as a *gargle* to remove unpleasant relaxation and debility of the uvula and fauces. In all these cases it is supposed to act in virtue of its astringency.

The best bark or rind is entirely free of worm-holes; and the sounder it is the better.

PURE CHEMICALS.—It affords us much pleasure to learn that our own manufacturing chemists are paying special attention to the formation of elegant chemicals, and are furnishing proximate principles and rare articles of Materia Medica in a pure state. Thus codeia, morphia, quinodine, cinchonine, &c. are manufactured by Messrs. Powers and Weightman. An elegant article of piperine, valerianate, and nitrate of morphia, nitrate and acetate of strychnia, with many others, are prepared in elegant style by Messrs. Rosengarten and Sons. Amylene, valerianic acid, valerianate of ammonia, iodoform, and ethyl are furnished by Hennel, Stevens & Co.; while pyro-gallic acid, bromide and iodide of cadmium, bromide and iodide of ammonium, and nitrate of magnesia come from the laboratory of Garrigues, Magee and Meyer; the house of Bullock and Crenshaw producing the bi-sulphuret of tin, oxides of nickel, sulphate and carbonate of nickel, molybdate of ammonia, &c. &c. We trust that all our manufacturers of fine articles of Materia Medica will be abundantly rewarded for their industry and enterprise, and that the imaginary necessity of going abroad for such items may soon be annihilated. American ingenuity can do anything that falls within the province of man to achieve.

PYRI CYDONIS SEMINA. *Quince Seeds.*—These contain a large quantity of mucilage. To detach it, add one part of the seeds to three of cold water, which readily detaches the mucilage; this is nearly as viscid as mucilage of gum Arabic. It is a very soothing application to the eye, when inflamed, especially after free depletion has reduced the inflammation to the subacute state. It makes a good drink for persons laboring under irritability of the bowels, the bladder, &c. One or two tablespoonfuls should be added to a pint of pure water for this purpose.

PYROLA UMBELLATA. *Pipsissewa. Winter Green.*—This is a very common plant in the United States, and looks a good deal like uva ursi, and the leaves are somewhat like those of the

garden box-plant. A good infusion is made of an ounce of the leaves and a pint of boiling water. A wineglassful may be taken frequently through the day, and will be found to act as a *diuretic*. On account of its bitterness it is sometimes called a *tonic* diuretic. It rarely offends the stomach, and often improves its tone and increases the digestive powers. The diuretic effect is promoted by dissolving a drachm of nitrate of potash in a pint of the infusion. Formerly this plant was held to be a kind of specific or panacea in dropsy, rheumatism, and cutaneous diseases. Its powers have been overrated, and the most that can be justly said is, that it is a good *diuretic*. The bruised leaves, in form of poultice, have been usefully applied to hard and painful tumors.

QUASSIA. *Quassia Excelsa.*—This wood is obtained from the West Indies, sometimes rasped, chipped, or ground, but generally in billets. It is properly regarded as the purest bitter we possess, and hence its popularity. The bitterness is very intense, and easily imparted to water, cold or hot. If two drachms or half an ounce be added to a pint of boiling water, macerated and strained, we have a good infusion. If we need the infusion for very delicate stomachs, it is best made of cold water. Half an ounce of the rasped or ground quassia in a pint of cold water, after twelve hours maceration, will give a more suitable article, because the cold water does not dissolve the extractive matter. A wineglass half full may be taken three times a day, or oftener, alone or with a little ginger tea. For feeble, emaciated persons with impaired digestive organs, this will be found a good article.

Quassia was first introduced into use as a medicinal agent by a sort of casualty. A negro named *Quassi* labored under fever, probably an intermittent, and was greatly relieved by drinking of water made bitter by the leaves which fell from the quassia-tree. And although we do not now concede any peculiar anti-periodic power to it, all regard it as an excellent tonic. It does not accelerate the pulse, nor increase animal heat, nor disturb the bowels. Its alleged *vermifuge* power depends chiefly on its tonic action. A strong infusion has been employed as an injection for the expulsion of ascarides. (See *Ranking*, vol. ii. No. 2.)

In South America, bowls have been made of the wood suitable for holding water, to be drank after standing some hours in the vessel, as a remedy for *dyspepsia*. And if such patients could be persuaded to drink nothing else, the prescription would be more frequently salutary. The drink may be regarded as a cold infusion of quassia.

A very convenient vessel has been made in this city by turning a piece of quassia wood into a kind of goblet. It is known as the

quassia cup. If it is filled with cold water the contents will be found bitter enough in less than an hour. Many persons prefer this to all other modes of using the quassia. It is a very simple, convenient, and efficient mode of using a pure bitter.

This infusion has an advantage over other bitter infusions in respect of its compatibility with salts of iron. Ten or twenty grains of the green sulphate of iron added to a pint of quassia infusion will not change the color, while the tonic power is augmented.

The *extract of quassia* is an excellent article, both as a tonic and also because it helps to make good pills of articles that are not well managed without such aid; as, for example, the sulphate of iron. The tonic power of the medicine is in a condensed form, and free from liquid addition that is offensive to many persons. It is made by boiling one or two pounds of the rasped quassia in a gallon of water until four pints remain. Strain while hot, and evaporate to the consistency of extract. Three pills, containing one grain each, may be taken three or four times daily.

A proximate principle called *quassine* has been named, but it is really of no value.

Quassia simarouba and *quassia amara* are spoken of in the books; but the *excelsa* meets all the wants of practical medicine.

We may as well notice an additional use of quassia infusion, spoken of by Mr. Brande, the author of a good book on Chemistry. He states that the infusion, made pretty sweet with brown sugar, is an effectual *poison* for *flies*, and far preferable to the poisonous articles employed for the same end. Those who are troubled much with these little pests would do well to try the bane.

QUERCUS. *Oak.*—If the oak was less common and abundant, if in place of scores of varieties we had but one, every portion of the tree would be prized by many who seldom trouble themselves about it. The noted astringency of the oaks, the large quantity of tannin they contain, entitle them to consideration for their medicinal virtues; and hence they were formerly resorted to as substitutes for Peruvian bark. The late Professor Rush treated many cases of intermittents successfully with ground oak bark alone; and doubtless the same thing could be accomplished now. Some have combined dogwood bark with oak bark and snakeroot, very advantageously, in the form of infusion. It is well for medical men who rely on the sulphate of quinine because easily obtained, to bear in mind all the substitutes for it, since the time may come when neither Peruvian bark nor its alkaloids can be procured. It is true that we must give more oak

than Peruvian bark to cure an ague and fever, but its cheapness will allow it to be given without stint.

Infusion of oak bark administered internally, and a daily immersion of the body in a very strong bath of the bark, have frequently arrested *cholera infantum*. This disease sometimes depends on pure debility, and such cases are happily met by these expedients. An English surgeon tells rather an amusing yet instructive story in the *London Lancet* for April, 1850, respecting the efficiency of oak bark in restraining intestinal discharges. The patient had been delivered about a fortnight before, and suffered from very frequent discharges per anum, and considerable bearing down efforts. The surgeon gave a prescription for a chalk julep containing laudanum to be taken by the mouth; and an injection of oak bark and alum to be thrown into the vagina. Three days after this, he was greatly surprised at her improvement, and learned that the julep had been thrown into the vagina, while the oak bark decoction of twenty-four ounces had been swallowed in the course of the day. An ounce and a half of the bark and five grains of alum were thus taken every four hours. The *diarrhœa* promptly ceased. A strong infusion or decoction will be found useful to *feeble ulcers* whose vessels tend to bleed from very slight causes. For the relief of *relaxation of the fauces*, we shall find the oak bark tea to be one of our best gargles. It should be employed repeatedly. I have been much pleased with the effect of the same article, applied for the relief of *prolapsus ani* and hemorrhoidal tumors. Injections of the infusion have been frequently employed in *leucorrhœa* and *uterine hemorrhage*, with great relaxation of the parts, and very successfully. It will sometimes be found that *tinea capitis* is protracted because of debility in the vessels of the scalp, which may be subdued by daily lotions of strong oak bark decoction.

QUINODINE. This alkaloid is obtained from what is called "a new Bogota bark," named by some writers, "*China Bogotensis*." The new alkaloid is reported to differ from quinine chiefly in being less efficient as an antiperiodic. Dr. Foote, of Texas, has reported a number of cases treated with this article. He says it does not affect the head as unpleasantly as the salts of quinine, although given in larger doses. He thinks its antiperiodic powers are very great, while it is less expensive than the more fashionable product of Peruvian bark. The sulphate of quinodine is the preparation most in use.—*Dublin Hospital Gazette*, Jan. 1856.

Agreeably to Liebig, (see *London Lancet*, May, 1846,) quinodine is merely quinine in the *amorphous* or uncrystallized form, and convertible into the salts of the latter.

Dr. Graham, of North Carolina, has reported favorably of the

use of this article, in the *North American Medico-Chirurgical Review* for May, 1857. He regards it as a good tonic, and, in connection with iodine and ipecacuanha, an excellent alterative. But he holds it to be specially valuable in malarious fevers, and thinks that few who try it would be willing to lay it aside for quinine. He gives it in two-grain doses in form of pill, and says that each patient will require from thirty to forty grains.

Ready Method.—We do not like this term, but as it finds a place in several papers furnished by Dr. Marshal Hall to the journals abroad, it is, perhaps, necessary to speak of it here. It is his expedient for restoring suspended respiration in cases of asphyxia in new-born infants and older persons. Protesting against all efforts while the body is in the *supine* posture, that is, on the back, because necessarily worse than useless, he insists on the *prone* posture, that is, the face down. The body is to be rotated, occasionally pressing the hands on the sides and back, and alternately sprinkling cold and warm water on the surface. This expedient must be persisted in a good while. The warm-bath practice is held to be fatal by this writer necessarily.

Resina Flava. *Yellow Resin.*—This article remains in the still after distilling oil of turpentine from common turpentine mixed with water, and is therefore a product of the *pinus sylvestris.*

The powder of the yellow resin, or rosin, is sometimes administered as a remedy for *chronic rheumatism*, in doses of from twenty to thirty grains in molasses, and taken several times a day. It has also been employed in *asthma* as an *expectorant.*

It enters into the composition of the *ceratum resinæ*, or the *basilicon ointment:*—

Take of yellow resin, ℥v;
Yellow wax, ℥ij;
Lard, ℥viij.

Melt these articles over a slow fire, and pour into a clean stone or earthen jar, furnished with a tight cover. The cerate or ointment is a popular dressing to blistered surfaces, and serves to increase the discharge. Rubbed on a tile with as much spirits of turpentine as can be blended with it by means of a spatula, it furnishes the celebrated *Kentish salve*, or ointment for *burns and scalds.* In the use of this ointment, care should be taken to cover only the surface that has been burned. It is soothing to the burnt part, but exceedingly irritant to the sound skin. The patient will sometimes fall asleep in a few minutes after the application has been made.

Rhatany. *The root. Krameriæ Triandriæ Radix. Rhatanhia.*—The various spelling of this word is not of very great moment if its medicinal value be duly appreciated. The word

rhatanhia, or *ratanhia*, means *spreading*, and is employed to denote the fact that the root spreads out very much and traverses a good deal of soil. The plant is a native of Peru, and grows in arid, sandy places. The root is of variable thickness, having a dark-red color, a short, abrupt fracture, and revealing, when broken, a woody centre with a fibrous bark, which is readily separated, and is found to contain the active properties of the root. The woody portion is wholly inert.

The small roots are generally held to be the best, because their relative portion of bark is greater than in the large roots. The bark is bitter, *astringent*, a little nauseating, with somewhat of a sweetish taste. The odor is earthy, and the decoction has the peculiar smell of raw potatoes. The bruised root yields to boiling water a reddish-brown infusion, which is darkened by the addition of an alkali. The astringency of rhatany depends chiefly on tannin, and on many accounts it is probably one of our best astringents. Alcohol takes up the coloring matter, and part of the tannin, and also some resin. The Portuguese avail themselves of the coloring and astringency of this article for the purpose of improving their red wines; and it is probably a less hurtful addition than some articles that are frequently employed by the manufacturers of wine. The saturated tincture of the root is known among them by the name of *wine-coloring*.

If the root be digested in sulphuric acid, a brown extract is obtained that is quite soluble in distilled water, and when applied to the tongue gives a sensation of high astringency. This product has been used medicinally for the objects that are met by astringents generally; but I am not aware that it has any peculiar merits. The *St. Louis Medical and Surgical Journal* contains some facts in this relation.

The rhatany root has been employed in Peru as a *tonic* merely, as well as an *astringent*, and it is affirmed that it may always be given when tonics are proper.

One of the most common uses of this medicine has been in *dysentery* and *diarrhœa*. It was employed in the former disease in Peru, after inflammation had been wholly subdued, and when, probably, a state of relaxation remained. I have never tried it under such circumstances, but I esteem it a most valuable article in the treatment of *chronic diarrhœa*. The prescription which I have employed is as follows:—

℞.—Ext. rhatan. ʒi;
Acid nitric, ♏xxiv;
Sacch. alb. ʒi;
Tinct. opii, ʒss;
Aq. camphorat. ℥iv.
Mix.

The dose for an adult is a tablespoon half full three times a day, or oftener if occasion seem to require. I have found this mixture of special value in that sort of looseness brought on by a change of water and general living, so often met with in Lexington, Ky., and elsewhere, among medical students who have traveled several hundred miles, and with very changeful diet on the route. The good effect of the medicine is noticed after three or four doses have been taken.

The extract named is kept in all well-ordered drug stores, and is a very convenient and useful preparation. It is made from a very strong decoction of the root, as other vegetable extracts are formed. It will keep in any climate.

Thompson prefers the *infusion* and *decoction* of the root. The former is made by digesting an ounce of the bruised root in a pint of hot water, and the dose is two ounces three or four times a day. The decoction is made by boiling two ounces of the bruised root in a pint of water. A *tincture* has also been made, but it is unnecessary, and rarely exhibited. It can be formed by digesting for two weeks an ounce of the root in a pint of brandy. A tablespoonful of this makes an adult dose.

All the above preparations have been employed in *hemorrhages*, especially of the passive kind, and those of the mucous membranes in particular. They have been administered successfully in *uterine hemorrhage* in feeble constitutions. Sir Henry Halford speaks highly of rhatany in this relation, and he sometimes gave the powder of the root as well as the infusion, the dose varying from ten to thirty grains thrice a day.

M. Chauffard, physician to a French hospital, gave rhatany with marked success in a case of threatened abortion. The lady had miscarried twice, though bled and kept in a horizontal posture. She took, in less than sixty hours, one hundred and thirty-two grains of rhatany root, with twelve grains of alum. The hemorrhage was arrested, the patient passed safely through the period of utero-gestation, and had a healthy child.

The infusion has been employed as a gargle for *relaxation of the fauces*, and as a collyrium for *chronic ophthalmia*, and as an injection in *gonorrhœa* and *leucorrhœa*. *Fissure of the anus* in infants has been cured by injections of rhatany and by frequent washings with it; and the same treatment has been successful in *fissure of the rectum* in adults. (See *Bell's Bulletin of Medical Sciences*, 1846, and *American Journal of Medical Sciences*, 1841.)

Rhatany and chloride of lime have been combined in the treatment of *ozena*, with very foul discharge from the nose. This disease is sometimes very obstinate, and baffles medical skill. If there be a scrofulous taint in the system, it cannot be cured

without superadding some iodine preparation. In uncomplicated cases, the following will frequently succeed:—

℞.—Chloride of lime, ʒij;
Decoction of rhatany, ℥xij.

Rub these well together in a mortar, so as to make a homogeneous mixture. Bottle it, and keep it well stoppered. Let a tablespoonful be injected into the nasal passages three or four times a day. A long-pointed syringe answers best for this operation. (See *Amer. Med. Journal*, 1842.)

The physician who administers any preparation of rhatany internally should apprise his patients that the fæces will be tinged of a deep red, having some resemblance to admixture with blood; and that even after the medicine has been laid aside the same appearance may be visible a few days. The urine is not affected at all, but the long-continued use of the article may induce flying pains of the limbs, costiveness, abdominal disquiet, and even some spitting of blood. When any of these occur, the medicine should be discontinued at least for a few days.

Rhei Radix. *Root of Rheum Palmatum.*—Though rhubarb is a native of China and Tartary, it may be cultivated almost anywhere in a mild climate. The *rhaponticum* is the variety usually cultivated for the stalks, which are an excellent substitute for acid fruits, as currants, gooseberries, &c., that are not yet ripe nor fit for use. Dr. Prout speaks of well-marked cases of nephritic attacks in persons who had the oxalate of lime diathesis, brought on by the free use of rhubarb tarts; and he adds that this result is the more likely if hard water be the usual drink of the patient. This is owing to the presence of a good deal of oxalic acid in the rhubarb plant. To such an extent does this obtain in some localities, that symptoms of acrid poisoning have been induced by the tarts when eaten largely. The species whence medicinal rhubarb is obtained is perhaps a matter of uncertainty, and is of very little importance. All the varieties of rhubarb are affirmed to come from a common source; and even that point is not determined. The Russia and Turkey rhubarb are held to be the finest and best sorts, while the East India article is said to be of inferior quality. The sounder and freer of worm-holes the better is the rhubarb, no matter whence it comes.

The best rhubarb, when fractured, has a mottled texture, with streaks of red and gray. The odor of rhubarb is not very strong, yet peculiar; its taste bitter and slightly astringent. The color of good rhubarb is of a reddish-yellow, and its texture is compact. The powder of pure, unmixed rhubarb is of a bright yellow, inclining to buff. A vast deal of the powder of rhubarb sold in

our large cities is a compound of all kinds of defective, unsound, and spoiled rhubarb. I knew a man, many years ago, who bought all the worm-eaten, decayed rhubard he could find, and had the whole ground up with a small portion of good root. He was able to vend this manufactured rhubarb powder at a comparatively small price; and thus a most inferior article was widely circulated that had little or no medicinal power.

This home fraud practiced in the large cities is bad enough; and yet a foreign cheat is carried on that greatly magnifies the evil. No less than fifteen thousand pounds of spurious rhubarb were condemned in the port of New York in the space of six months by the government medical inspector, which had been imported from Canton, London, and Marseilles.*

Rhubarb is soluble in water as well as in alcohol. Water dissolves fifty per cent., and the solution has a yellowish-brown color. It contains mucilaginous, extractive, and astringent matter. The alcoholic solution or tincture is of a deep yellow color, and has a penetrating nauseous taste. The astringency of rhubarb depends on the presence of tannin and gallic acid. Its proximate principle, called *rhubarbine*, is of no practical value.

Rhubarb has been successfully resorted to as a substitute for tobacco, and to cure a bad habit. It is decidedly preferable to the nasty weed in every aspect, and not at all likely to establish a habit half so injurious as that which it is employed to remedy. Some persons carry the root in their pockets to chew occasionally, for the purpose of getting rid of habitual costiveness. While it purges gently, it leaves the bowels in a better condition than is induced by neutral salts. Its astringency is the quality that compensates for the debility of the bowels consequent on the cathartic action. The tannin makes it really a *tonic cathartic*. From fifteen to thirty grains of good powder of rhubarb will purge, without griping or loss of tone of any part of the alimentary canal. A drop or two of oil of cinnamon, or a few grains of cloves or cinnamon powder, will cover the nauseous flavor of rhubarb so that it can scarcely be perceived. The same end can be

* The most common *adulterations* of rhubarb are the substitution of inferior sorts for finer kinds, especially when the drug is sold in powder. Then it is very difficult to detect the fraud, as the bright yellow characteristic of the best kinds may be imitated by mixture with some coloring matters. In respect of the solid root, those pieces should be preferred which are moderately heavy and compact, have a bright color, a fresh appearance when broken, with reddish, yellowish, and whitish veins intermixed, an aromatic odor, an astringent not mucilaginous taste, coloring the saliva yellow when chewed, and sometimes giving it a reddish-yellow. The fraud of filling worm-holes with a paste of rhubarb and mucilage and then rolling the pieces in fine rhubarb powder should be borne in mind, for it is very often practiced. Every lump of rhubarb should be broken and inspected if there is reason for suspicion at all.—*Adulteration of Medicines*, page 191.

reached by the addition of calcined magnesia, though not so perfectly.

A very frequent addition to powdered rhubarb is calomel, and the combination is a very efficient and not disagreeable cathartic. It is also combined with the sulphate of magnesia, and occasionally with jalap and a very small portion of ipecacuanha.

Rhubarb may be so administered as to prove a tonic chiefly, while it may gently act on the bowels. From three to five grains, taken daily or every other day, have produced these results.

The *dinner pill* for dyspeptics contains rhubarb and carbonate of soda, and is usually taken an hour before dinner. The *peristaltic persuaders* of former times were composed largely of rhubarb. The peculiar name grew out of the tendency of the pills to promote peristaltic action and subdue constipation. They were made as follows:—

℞.—Pulv. rhei, ʒi;
Pulv. ipecac. grs. x;
Ol. carui, ♏x;
Pulv. gum Arab. q. s. to make twenty pills.

The dose, two or three pills taken at bedtime, operates on the bowels gently yet efficiently.

The *stomachic pills* were prepared as follows:—

℞.—Pulv. rhei. ʒss;
Pulv. ipecac.
Sap. Castil. āā ʒi;
Muc. gum Arab. q. s. to make sixty pills.

The dose of the pills was three or four twice a day. They give tone to the stomach and bowels, and operate gently. Hence they are useful to persons laboring under indigestion and costiveness.

The combination of calcined magnesia and rhubarb, hinted at above, is very useful in *infantile diseases*. The magnesia lessens the tendency of the rhubarb to gripe. It neutralizes the acid in the stomach and bowels, and so promotes the action of the rhubarb. Adults troubled with flatulence and indigestion, and inclined to be costive, are relieved by taking occasionally ten grains of rhubarb in powder, a teaspoonful of calcined magnesia, and five grains of powdered cinnamon or ginger, mixed with syrup of ginger. For persons laboring under piles, and who require a mild cathartic, rhubarb with magnesia will be found much better than more active cathartics.

The article called *rhubarb tea* is often a very useful medicine. It is made by adding one or two drachms of the root to a pint of boiling water, and gently simmering for a few minutes. A teaspoonful of carb. soda is to be added to a wineglassful of the tea, for a dose. It acts gently on the bowels, and is a very plea-

sant medicine. Rhubarb taken in this way speedily passes by the kidneys, and may be detected in the urine in ten minutes after the dose has been swallowed. This may be regarded as a quick passage; and it is so, for it demands a longer time to make this manifestation when the powder is administered. If we apply a poultice of rhubarb to the abdomen of a young child, it will purge, but cannot be detected in the urine. If the powder be applied to an ulcerated surface, it can be found in the urine without difficulty. The inference has been made, and we think justly, that in the case of infantile purging as just named, the action is through the nerves, while in the last case it is evidently by absorption.

The *infusion*, *tincture*, *compound tincture*, *spiced rhubarb*, and *syrup of rhubarb* are employed in the practice of medicine, and are variously estimated by practitioners. To make a good infusion we give the following formula:—

℞.—Rad. rhei contus. ʒi;
Rad. gentian contus. ʒss;
Pulv. caryoph, ℈i;
Aq. bullient. Oi.

Mix, and macerate for the space of two hours in a covered vessel, and strain. The dose is a wineglassful every hour until it purges. Some omit the gentian, or add only a scruple, and this is a matter of little moment. The tincture and compound tincture are alcoholic preparations, and are not necessary. The first may be made by digesting two ounces of the root in a pint of brandy, adding two drachms of fennel-seed. The other, which is pretty much the same, is made with the addition of nutmeg, cloves, mace, or cinnamon, to render the dose pleasant. The *spiced rhubarb* is made thus:—

℞.—Rad. rhei contus.
Myrist. moschat.
Muc. moschat. āā ʒij;
Aquæ, lbij.

Mix, and simmer over a gentle fire for about an hour, and when cold, strain for use. Some add to this, which is a sort of infusion, a portion of brandy, in order to prevent it from spoiling. This is not necessary, as the aromatics will accomplish that end sufficiently well. The dose for a child two or three years old is a teaspoonful, repeated every hour or two until the alvine discharges regain their wonted color.

The *syrup* is preferred by many because more readily taken by children. It is made thus:—

Take of bruised rhubarb root, ʒi;
Caraway seeds, ʒij;
Cardamom seeds, ʒi;
Raisins, stoned, ʒij;
Boiling water, Oi.

Macerate for the space of two hours, and then strain. Some boil the whole a few minutes before straining, though that is not necessary. To the clear liquor add two pounds of refined sugar and simmer over a slow fire until the syrup is formed. The dose is the same as for the spiced rhubarb, and is very useful in the summer *bowel complaints* of young subjects. It is generally best to give a few grains of calomel three or four hours prior to the use of the syrup, especially in cases of *infantile diarrhœa*. I know, from much experience, that the practice is safe and successful.

Some practitioners make a *decoction* of rhubarb for bowel affections. They add magnesia and cinnamon with other aromatics, and form the fluid into a syrup when desirable. I am not aware that it possesses any superior advantages.

The only preparation of rhubarb that remains to be noticed is one introduced by Mr. Hoblyn, of *Middlesex Hospital*. He directs good rhubarb root to be calcined in a covered crucible until it is quite black. It loses two-thirds of its weight by calcination, and is nearly tasteless. It is given in milk or water, in five or ten-grain doses. Mr. H. has given it for twenty years, in the *diarrhœa* attending pulmonary consumption.

Rhus Toxicodendron. *Rhus Radicans. Poison oak*, or *Sumach*.—This vegetable is known all over our country as a poisonous weed. Some persons of peculiar susceptibility are readily injured by the mere exhalations from it, while others can handle it with impunity. I attended a young lady once whose features were almost obliterated by the swelling occasioned by this agency. She was cured by the use of a weak solution of corrosive sublimate, and free purgation.

The internal use of the leaves has been highly praised as a remedy for *palsies* of the lower limbs, for *herpetic affections*, &c. Sometimes the powdered leaf, in the dose of half a grain three times a day, has been employed. Dr. Alderson thus exhibited the rhus, and also in shape of infusion, made by digesting six grains in eight ounces of boiling water. The dose was a tablespoonful three times a day, and the effect was to induce convulsive twitches of the palsied parts. Dr. Fresnoi made use of a strong infusion, drank freely for six weeks, which acted as a diuretic and diaphoretic. He tells us that he cured very obstinate herpetic disease in this way. (See *Medical Commentaries*.)

Ricini Oleum. *Castor oil. Palma Christi*.—The plant yielding the seeds or beans that furnish this valuable oil is a native of the West Indies, South America, Africa, and Asia. It flourishes in North America, and is very extensively cultivated in the States of Illinois, Ohio, Indiana, &c., and thousands of barrels of the oil are manufactured there. When the plant finds

a place in the garden, it is not easy to expel it. The seeds blown about by the winds are sufficiently deposited in the soil to insure a crop of plants, however undesirable they may be. The tree, for such it often is, has quite an ornamental appearance, and a few shoots are allowed to remain in a garden as a pretty variety of vegetation. The ripe seeds or beans plucked by children and eaten, have done a good deal of mischief by the severity of their action on the stomach and bowels. A lady, the wife of a most respectable physician, was nearly destroyed by the imprudent eating of less than a dozen of the seeds as she passed through a garden where the plant attracted her notice. There would seem to be a peculiar acrid property in the seeds when thus taken; they not only vomit and purge, but leave the system in a very prostrated condition. This acrid quality doubtless resides in the hull or cortical part of the seeds, and was formerly combined with all the castor oil in use. The process of making the oil was by the ebullition of the whole seed, and hence the peculiar drastic quality of the West India oil employed in this country forty years ago. Hence the dark-brown color of that oil, and its frequent rancid quality, which made it so objectionable.

The cold-drawn or expressed oil is a very different article. The hulls being seperated entirely by a proper process, the kernel, which consists almost entirely of condensed oil, is submitted to pressure, and the operation is effected without heat. Hence the propriety of the terms *expressed* and *cold-drawn* oil. As the entire product is oleaginous, without any of the coloring matter of the brown hull of the seed, the oil is fitly styled *pale*, and hence we see it sometimes nearly colorless. It has no taste save that of the pure oil, when prepared with a due amount of care.

Castor oil is a viscid, fixed oil; and in cold weather the viscidity seems to be an objection to its medicinal use internally. The difficulty is speedily removed by heating gently for a few minutes before its exhibition. It thus assumes the fluidity of the most temperate season.

Various expedients are in use to facilitate the taking of this medicine; and yet I prefer its exhibition alone, if there be no real objection. Dr. Wansborough, of Chelsea, suggests the following:—Wet the inside of a wineglass, and particularly the edge. To a teaspoonful or two of brandy add five or six drops of lemon-juice and half an ounce of cold water. On this, and in the centre, pour the requisite quantity of castor oil; direct the patient to open the mouth wide, and throw the dose promptly down the throat. The flavor of the spirit and acid remain on the tongue, while the oil is not tasted. (See *Braithwaite*, part xiii.)

In the same number of the journal just referred to is a suggestion of M. Righini, copied from the *Journal de Chimie Médi-*

cale. He directs the oil to be mixed with about as much mucilage of gum Arabic, to which he adds the juice of a sweet orange, free of the seeds. The whole, well mixed, should be swallowed promptly.

Some persons prefer to take the oil with strong coffee, or wine, or brandy, or essence of mint, or molasses, and not a few prefer what is commonly called the castor oil mixture, made thus:—

℞.—Ol. ricini, ℥ij;
P. g. Arab.
Sacch. alb. āā ℥ij;
Aquæ cinnam. ℥iv.
Mix.

When desirable, we may add a half-drachm of calomel to the above, and then it is important to direct that the bottle be well shaken prior to the administration of the dose, because the calomel falls to the bottom speedily. The adult dose of the mixture is a tablespoonful every hour until purgation is effected.

M. Parola has suggested some novel preparations of castor oil that may be worthy of notice, as they appear to be the result of a good deal of experimental research. He affirms that the purgative action of the *ethereal* and *alcoholic tinctures* of the *seeds* or beans is more powerful than that of the expressed oil, while those tinctures are not more irritant than the oil; that they retain their properties unaltered for a very long time in any climate or season. These tinctures do not prove emetic, and very seldom even sicken the stomach.

Castor oil alone will not always operate as speedily as when ten drops of laudanum are added. This may sound like a contradiction or paradox, yet it is not so. There is often an unfavorable state of spasm in the bowels, which would be augmented by the oil, simple and mild as it is. A few drops of laudanum will correct that state of the canal, and prepare it for the right action of the oil in due season. We have made too many trials of this combination to have a doubt on the subject.

It is proper to say that by some unappreciated process in the bowels castor oil is changed into fatty masses, not unlike those formed by the action of nitric acid upon it out of the body. These round, fatty masses often pass away in the fecal discharges, though they have been found in quantities after death.

The *external* uses of castor oil are sometimes important. In India it has been for a long while employed as a dressing for *ringworm* and various cutaneous affections; and, in fact, its use was almost wholly for external purposes. We use it in this country for the same ends, and especially for the cure of *itch.* It is supposed to operate like all oily matters in the case of itch, by pre-

venting the insect which induces that disease from performing the functions of life; in other words, the insect is destroyed. The oil has also been applied to *burns* and *scalds*, and to parts laboring under *erysipelatous inflammation*. A thick coating repeated twice a day is supposed to act by excluding the irritant qualities of the external air.

But the oil is most extensively employed as a *cathartic*. This property resides in every part of the plant, and in Hindostan the bruised bark made into balls with tobacco leaves is given to horses for the cure of *gripes*.

The almost universal testimony of the profession is in favor of the mild quality of the oil as a cathartic, and hence its supposed adaptation to females immediately after delivery. The *British Flora Medica*, in its notice of the mild action of castor oil, speaks of its peculiar fitness for young infants, in whom it also operates as an *anodyne*. The latter result, however, may be a sequel merely of the previous evacuation of the bowels and the removal of offending matters.

The *Montreal Medical Journal* for November, 1846, speaks in high praise of castor oil as a remedy for disease of the mucous membranes, and especially for *infantile diarrhœa*. For a child of from two to six months old, it directs as follows:—From a drachm to a drachm and a half of the oil, the yolk of an egg, and an ounce of fennel-seed water are to be made into an emulsion by due admixture. Give a teaspoonful three times a day. The color of the discharges is soon changed for the better, and all the symptoms mitigated.

Colica pictonum has sometimes been subdued by the persevering use of the oil, associated with frequent injections and the warm bath. It is sometimes improved for this end by the addition of a drachm of spirits of turpentine to each dose of the oil.

Habitual costiveness may generally be removed by the following plan: A tablespoonful, or two if necessary, should be taken so as to empty the bowels. On the next day half a teaspoonful less, and on each subsequent day a like reduction, until the dose is less than a teaspoonful, which will act sufficiently. Thus the difficulty has been obviated in many instances. The principle is a very obvious one, and needs no comment.

In the treatment of *dysentery*, some practitioners rely on the use of castor oil more than on any other medicine. After bleeding and a dose or two of calomel and ipecacuanha, castor oil will frequently complete the cure. The *tormina* of dysentery may sometimes be speedily allayed by an injection of an ounce of castor oil, two ounces of warm water, and thirty drops of laudanum, and this may be repeated two or three times in twenty-four hours.

An individual who has made a fortune by quack pills affirms that his famous cathartic pill contains *ricinine*, which, he says, is the active part of castor oil in a very concentrated form.

Rose-Water.—A pleasant, fragrant article, obtained by distillation of rose leaves. It forms a good vehicle for the exhibition of various medicines, and is preferable to water in preparing eye-washes, after depletion has reduced the inflammation to the subacute form. The *compound infusion of roses* is made thus: Take of red-rose leaves, half an ounce; boiling water, two pints and a half; dilute sulphuric acid, three drachms; sugar, an ounce and a half. Pour the water on the leaves in a glass vessel, add the acid, and macerate for six hours. Strain, and add the sugar.

Rosmarinus Officinalis. *Rosemary. The leaves.*—It is not our intention to consume much time with this article. We do not regard it precisely as some do, who appropriate a large space for its consideration. That it has something like *emmenagogue* qualities seems to be pretty generally conceded. Our chief design, however, is to apprise those of the profession who are not aware of the fact, that the oil of rosemary and a strong tea of the leaves are among the numerous devices in all large cities for *inducing abortion*. Whether the action is primarily or secondarily on the uterine organs, we do not propose to inquire. It is quite certain that profuse flooding and abortion have resulted from the exhibition of the preparations named. (See *London Lancet*, February, 1843.)

Routinism.—We mean by this term to convey the idea of a kind of habit in medical men that leads to the use of the same medicine for all purposes. There are physicians who carry with them their boxes of pills to the number of three or four, and these are invariably administered, no matter what the disease may be. The pills may be well compounded of articles in due proportion, and may be well adapted to certain ends. But habit is almost invincible, and because the pills are really good the doctor feels at liberty to dispense them on all occasions. The practice is radically and entirely wrong; not a whit more philosophical than that of the Dutch root-quack, who filled his patients' vials out of a common huge jug. It is no valid argument in favor of either that many of the sick get well, because we are well assured that nature comes happily to the rescue, and that the patient recovers in spite of the folly of the physician.

The true practice of physic is based on a right adaptation of curative means to each case, just as though it were the only one to be treated. No two patients present the same precise features in all respects, and hence the need of discrimination in the first place, and of corresponding prescription afterward. It cannot

harm the doctor nor his patients to have his quiver full of arrows at all times, to be ready for any emergency that may occur. But it must operate most ruinously on the human constitution, when, to cure its ills, the bow is drawn at a venture, aimed nowhere and directed by no sort of principle.

Rubia Tinctorum. The root of dyers' *madder*.—The root is grown largely in France and Holland, and is of a reddish hue externally, of the thickness of a quill, and having numerous branches. It has little smell, and a slightly-astringent taste. Formerly it was regarded as tonic, astringent, and emmenagogue. The use of it for a short time colors the bones. The dose is from half a drachm to two drachms every three or four hours.

Rubus Trivialis. *Dewberry*.

Rubus Villosus. *Blackberry*.—As these fruits are confessedly very much alike, our remarks will apply alike to both. The estimate of these articles is very various; and yet there are practitioners who would regard a book like the present as quite defective if it failed to give them a passing notice. It is well known to all persons that no ripe fruits are eaten with more general impunity; in fact, their salutary quality is proverbial everywhere.

A *decoction* of the roots, and various *syrups* and *jams* and *cordials*, are manufactured by families all over the country, and great reliance is placed on them for the treatment of various bowel affections. We feel so strongly tempted to narrate an anecdote here that we must be gratified. In a medical school (which shall be nameless, albeit it has a very potent cognomen) of this country, two professors happened to hit on the same day for the notice of the dewberry and blackberry roots. Their lectures were only an hour or two apart, and of course the impression was the more striking. Said one, "I have the authority of Dr. —— (a very distinguished teacher and physician) for saying to you, gentlemen, that no reliance can be placed on the decoction of these roots in the management of disorders of the bowels. It is utterly worthless." The other professor, who was teaching Materia Medica, averred, on the authority of the same distinguished gentleman, who happened to be a near relative, "That the decoction of the roots and the syrup of the fruits were most excellent medicines, and had saved the lives of many children who were suffering from the prevalent bowel disease of hot weather." The story is a fair illustration of an old adage.

I like the preparations named because they are more accessible than foreign articles, and answer in many cases quite as well as more expensive prescriptions. The *decoction* or *tea* is prepared without any specific rule. Boiling water soon extracts all the astringency, and a hot infusion will accomplish the same end.

The dose is not limited; as much and as frequently as it can be taken without annoying the stomach, is a good rule.

The syrup and cordial are so well known to all families that we do not feel disposed to enter into details.

Rumex. The *Dock.*—Our country furnishes dock roots in considerable variety, and they are held in high estimation by the common people. The *acetosa* variety is our common sorrel, sometimes called sour dock. The *acutus* is the sharp-pointed wild dock; the decoction of the root has been useful in leprous and impetiginous affections. The *alpicus* or monk's rhubarb is laxative. The *aquaticus brittanicus* is the yellow-rooted dock, called also yellow dock root. Its leaves have a good deal of acidity, and are laxative. The root is quite astringent, and has been much employed, externally and internally, for the cure of some cutaneous diseases, as lepra, lichen, scurvy, &c. The powdered root is also used as a dentifrice. The dose of the dried root, made into a decoction, is about one drachm. Two ounces of the root in a pint of boiling water, digested for two or three hours, will make the decoction of about the proper strength.

The *sanguinea* variety gives what is called bloody dock, which, on account of its astringency, has been used in diarrhœa. There are other varieties of rumex, but it is not necessary to cite them.

Ruspini's Styptic.—It is by no means certain that we know the precise composition of this article. It is pretty generally agreed, however, that it consists of a strong solution of tannic acid in alcohol, modified by the addition of rose-water.

Ruta Graveolens. *Garden Rue.*—This is a bitter vegetable, found in nearly all our gardens, and employed in the form of *tea*, or decoction or infusion, as a means of relieving the pain attending the catamenial flow. It is held to be an *emmenagogue.* The juice of the fresh leaf in large quantities is a *narcotico-acrid poison*, and capable of producing *abortion.* "A girl in the fourth month of pregnancy," says Dr. Helie, in the *Annales d'Hygiène*, "took for several days a strong dose of the fresh juice expressed from the leaves. Vomiting, severe colic, great prostration, tendency to syncope, somnolency, delirium, and coldness of surface came on. There was also an inflammatory swelling of the tongue, attended with profuse salivation. The expulsion of the fœtus did not happen until the sixth day after swallowing the poison."

Several other cases are given, very much of the same nature, proving conclusively the deleterious influence of rue. Dr. H—— says that its action in lessening the force and frequency of the heart's movements is as evident as that of digitalis. He has known the pulse to sink, in a short time, to thirty in a minute.

In one case of attempt to induce abortion, and which succeeded, Dr. H—— arrested the vomiting by withdrawing the drink the female was using, not then knowing that it was a decoction of rue, and confining her to barley-water. This would seem to indicate that the poisonous influence is arrested without serious difficulty.

Although the use of rue, as here stated, has been very common in France, it is not unfrequently made subservient to the same end in this country.

Sabinæ Folia. *Juniperus Sabina. Savine. The leaves.*—This is an evergreen, and grows in various parts of the United States. It is cultivated as an ornamental shrub, rather for its perpetual verdure and fragrance than for a truly valuable quality not medicinal. It has a very strong, peculiar smell, a bitter, acrid, pungent, heating taste. The active properties reside in an essential oil obtained by distillation. This, as well as the hot infusion of the leaves, is regarded a very efficient *uterine stimulant*, resembling in its operation the Spanish fly. When incautiously employed, or given largely by design, it acts with great violence and destroys life. Such are its ultimate consequences when administered to effect abortion, an end for which it is too frequently employed. As these cases have become matters of notoriety, it is well to remember that on opening a body after death from this agent, the peculiar savine smell is very obvious, and sometimes the green tinge of the decoction is visible in the intestines and stomach.

The *London Medical Gazette*, 1845, has the case of a pregnant woman, near full term, who was poisoned by savine. The mother and fœtus were both destroyed.

Savine is one of the articles usually called *emmenagogue*, and it does appear to exert a decided agency on the uterine organs. Its activity and energy require that it be administered by judicious men, and not by every ignoramus who may choose to prescribe it. In *amenorrhœa*, with a very languid circulation and no fever, it is frequently an efficacious medicine.

A writer in the *Revue Médicale* recommends savine very highly in what he calls *passive uterine hemorrhage* of long standing, where the blood has lost its red color, the serosity being in excess and a kind of anæmic habit established. The formula advised is thus:—

℞.—Pulv. sabinæ, ʒiij;
Extract sabinæ, ʒij:
Ol. sabinæ, ℈i.

Mix, and divide into pills weighing three grains each, and give two for a dose three times a day.

Savine has also been successfully administered in *menorrhagia*

of the atonic form. Several cases are cited in which doses of fifteen or twenty grains, thrice a day, have been efficacious. (See *American Journal of Medical Sciences*, October, 1844.) We should have remarked before, that the emmenagogue property of savine was considered as well established several centuries ago, and great reliance was then placed on its powers, duly regulated. (See *Medico-Chirurgical Review*, 1844.)

But savine has also been resorted to as an *anthelmintic*. The dose of the fine powder for children varied from five to ten grains, given in syrup, three times a day; or from two to five drops of the oil on sugar. It is probable that the successful action of turpentine as a vermifuge, led to a similar employment of the savine. I have never tried it for this purpose.

The expressed juice of the mature green leaf, a little diluted, has been prized as an application to the scalp for the cure of *tinea capitis*, and also for the relief of *scabies*. It is probable the effect is due to *counter-irritation*.

The *ointment* or *cerate* of savine is a good article to maintain and augment the discharge from raw or blistered surfaces. The powder of the leaf is also applied to unhealthy ulcers, to induce a more vigorous action. To prepare this cerate a pound of the bruised leaves and half a pound of yellow wax are mixed with two pounds of lard. The mixture should be simmered over red-hot coals and then strained through a linen cloth. It has a yellowish-green color, and a strong smell of the plant.

The extract named can be prepared as other extracts are, by making a very strong decoction of the plant and evaporating the clear liquor to a proper consistence.

SACHETS, or *little bags*, long ago recommended by Leuret, and quite too much neglected at the present time. They may be made of linen or other suitable material, and should be so large as, when filled and well moistened, to impact the vagina. The contents may consist of fine powder of best galls, alum, sulphate of quinine, rhatany, kino, &c. &c. Each sachet should have a tape well secured to it so as to allow of easy removal. After being filled with some or all of the above articles, dip it in port wine or claret, and, after soaking, squeeze gently, and before passing it into the vagina coat the surface with sweet oil.

These little contrivances give tone to the vagina walls and help to keep the womb in its proper position. They should be changed every five or six hours, and may be worn for weeks, being decidedly better than any of the solid pessaries in use.

SAGO.—The pith of the *cycas circinalis* yields this well-known article of diet. It is a starchy farina, and the word is sometimes written *sagu*. As we generally purchase it in the shops it contains more or less dirt, which should be separated by washing

with clean cold water. A tablespoonful or two of good sago boiled in a pint of water will make a sort of jelly which can be rendered very palatable by the addition of sugar. Some prefer a little lemon-juice or syrup of ginger. It is an emollient, soothing, and sufficiently nutritive diet for convalescents.

SAINT JOHN LONG'S CELEBRATED OINTMENT.—Take the yolk of an egg; oil of turpentine, ʒiss; strong acetic acid, ʒi; pure water, ʒiij. Rub the yolk, water, and acid well together, and then add the turpentine, shaking frequently. The *counter-irritant* action of this ointment is obtained by using a sponge to coat the parts. The effects vary with the force of the friction and the length of time the application is continued.

SALEP. *Salep Root.*—A farinaceous substance extracted from the *orchis morio*, and imported from Turkey. It is employed as an article of diet, and can be prepared in the manner pointed out for sago.

SALIX. *The Willow.*—The aborigines of our country have been familiar with the medicinal properties of the various kinds of willow, as well as with the uses of the branches for purposes of domestic economy, from the earliest periods of their history. Subject as they were to *ague and fever*, they were obliged to resort to the best means in their possession; and hence the willow was employed in the form of strong decoction. Although inferior to Peruvian bark, it is possessed of astringent and tonic qualities that render it a comparatively valuable article.

The infusion, decoction, and tincture have been employed. The first are made as strong as possible, and are really saturated solutions. Two or three ounces should be boiled in a quart of water for half an hour and strained. Take of the strained liquor, six ounces; bruised orange peel, two drachms; compound infusion of roses, three drachms. Mix, and take it in four portions in the course of the day. The dose of the powdered bark of the willow varies from thirty to ninety grains.

The variety of willow called *salix capræa* is the one from which the vegetable alkaloid *salicine* is obtained. It is a very neat and useful preparation, and much employed as a substitute for sulphate of quinine, though decidedly inferior to it. The dose is from five to twenty grains. To determine whether salicine is present in a sample of willow bark, a drachm is boiled in four ounces of pure water. A drachm of litharge is added to the infusion so made, and the filtered liquor is acted on by sulphureted hydrogen gas to precipitate the lead. The liquid is then evaporated to one ounce. If the addition of sulphuric acid gives a bright purple-red, salicine is there in sufficient quantity to justify the requisite labor to procure it. The process just named, prior to adding the sulphureted hydrogen gas and sulphuric acid, is

the one employed to get the salicine. The litharge is added to the decoction to detach the acid matter from the salicine, which latter falls as a precipitate. The mixture, after digestion for twenty hours in a sand-bath, is filtered, and the clear liquor evaporated to the consistence of syrup. As it cools crystals of salicine appear, which must be redissolved in pure water and evaporated as before.

It is proper to say, that the surgeons of the United States army were instructed by the surgeon-general to test the anti-periodic powers of salicine on a broad scale, to see what proportion it bore to the sulphate of quinine; and the result was by no means favorable. Still, there are practitioners who esteem salicine very highly. It may be combined with sulphate of quinine and piperine advantageously in cases that do not yield very promptly to the salt of quinine alone.

Sambucus Nigra. *Black Elder.*—We do not name this article because of any very great importance attached to it by the profession generally. The plant is common in every region almost, where it is recognized by the blossoms, and subsequently by the large quantities of the berries, which are gathered by children for the purpose of eating. An *infusion* or tea of the blossoms has long been in use for various purposes, as well as an *ointment* of the leaves and blossoms. The late Stephen Girard was so very partial to the elder ointment that he made it with his own hands, and kept it in his house for distribution among his friends who happened to be *burnt* or *scalded.* It is a very pleasant application, and should be renewed twice a day. Some persons think it a valuable application to allay the itching and heat of *erysipelas.*

We are led to notice the elder-plant a little more particularly because of recent encomiums passed on the juice of the fresh root as a remedy for *dropsy.* Some of the old writers speak highly of the diuretic qualities of the juice of the inner bark, while very few hints can be found in any of our books respecting the medicinal properties of the root. Pereira speaks well of the hydragogue action of a decoction of the inner bark as well suited to dropsy, and directs it to be made by boiling an ounce of the bark in a quart of water down to a pint, which is to be exhibited in doses of four ounces. Simon, in the *Annal. der Pharm.*, vol. xxxi. p. 362, says:—"The active principle of the inner bark of the root is a soft resin, which may be obtained by exhausting the powdered bark with alcohol, filtering and evaporating to the consistence of syrup, then adding ether to dissolve the active matter, which is to be evaporated to the consistence of an extract. Of this, twenty grains induce vomiting and purging."

The editors of the *United States Dispensatory* tell us that

"the juice of the root has been employed as a diuretic in dropsy."

In the *Repertoire de Pharmacie* of 1849, edited by Bouchardat, we find the following statements as the result of investigations made by M. Rene Vanoye :—The fresh juice of elder-root may be administered in all serous accumulations and infiltrations requiring the use of drastics. It generally acts with greater energy and rapidity than the most active purgatives. There is no advantage in combining it with drastics or diuretics, its action never being more decided than when given alone. If it induce vomiting, it should be suspended for a few days, but not on this account abandoned. From four to six ounces, given in teaspoon doses, will generally be found sufficient. It often cures dropsies which have refused to yield to other means, and is not a dangerous medicine.

The second bark of the black elder has long been known as possessing emeto-cathartic and hydragogue qualities, and hence suited to dropsical affections; but M. Bogetti has employed it successfully in five cases of *epilepsy*. His directions are these :—Take branches of the elder one or two years old, removing the gray or outer coat, and scraping off the second bark; on this latter, to the amount of two ounces pour five ounces of hot or cold water, and set aside for forty-eight hours; then strain or filter, and take a mouthful of it every quarter of an hour when the fit is anticipated. The patient should abstain from food at the time. Let this treatment be resumed every six or eight days. We would have been better pleased if the ages of the patients had been given.—*Braithwaite*, part xxx. p. 38.

SANGUINARIA CANADENSIS. *Puccoon. Blood-root.*—This is a very abundant plant in various portions of the United States. It is one of the earliest spring plants in the West, and is seen on a southern hillside very soon after the frost quits the ground. The root, taken recently from the ground, is seldom as large as the thumb, and frequently less than the little finger. If broken, as it may easily be, it exhibits a blood-red fracture, and hence one of its names. This marked color very early led to the belief that it must be a capital remedy for discharges of blood of every grade. The taste is decidedly acrid, and after chewing it but a moment, the sense of acrimony remains a good while.

Sanguinaria is held to be *tonic*, *stimulant*, *emetic*, *expectorant*, *narcotic*, and feebly *astringent*. The late Professor Barton valued it chiefly as an emetic, and therefore believed it to be suited to various forms of *sore throats*, as *cynanche trachealis*, *cynanche maligna*, &c. From fifteen to thirty grains of the powdered root act as an emetic, and a smaller dose nauseates. It may be taken in sweetened water or syrup. In *dyspnœa* that

will not admit of bleeding, from thirty to sixty drops of the tincture, or a teaspoonful of the infusion, given every hour, affords sensible relief. The design of the medicine is to nauseate or vomit; and unless the dose named induce one of these effects, it must be enlarged. The same doses, carried to the nauseant or vomiting point, have been equally beneficial in *asthma* and *severe colds*. The late Professor Eberle was very partial to the tincture for the relief of cough attending pulmonary consumption. The dose was a teaspoonful given every two or three hours until it sickened the stomach. I have derived obvious benefit from a mixture of this tincture, and the tincture of lobelia, a half-teaspoon of each several times a day, and increasing the proportions if necessary.

Dr. Horace Green, of New York, has published some high encomiums on the good qualities of the blood-root, of which he prefers a saturated tincture. In torpor of the bowels, dependent on hepatic derangement, the following has been quite efficient:—

℞.—Tinct. sang. Canad. sat.
Tinct. aloes. comp. āā ℥i.

Mix. Give thirty to sixty drops twice or thrice daily. It improves the digestive organs and accelerates peristaltic action.

The favorite mixture for bronchial or pulmonary irritation and severe cough is as follows:—

℞.—Tinct. sang. Can. sat. ℥i;
Opii, ʒij;
Vin. ipecac. ʒvi;
Syr. tolu. ℥ij;
Mix. Dose, thirty to sixty drops four to six times a day.

The following laxative pill is also highly commended:—

℞.—Pulv. sang. Canad.
Rhei. opt. āā ʒi;
Sapon. ℈ij;
Aquæ, q. s.

To make pill mass for thirty-two pills, of which take one night and morning. —*Amer. Drugg. Gaz.*, 1857.

Some of the western practitioners employ a syrup made of the strong infusion as a remedy for *cholera infantum;* and although I have never employed it, I am disposed to regard it with favor. It has also been tried in the management of intermittents, in consequence of its emetic and subsequent diaphoretic action. The *tonic* power is said to be developed by the use of three-grain doses daily; but I have no satisfactory evidence in this relation.

The late Professor Nathan Smith had long been in the habit of administering blood-root, and was very partial to it. He preferred the simple infusion to any other preparation of the plant.

The powder was regarded by him as too harsh, and the tincture less efficient than the infusion. His opinion was probably correct.

The *infusion* is readily made by digesting an ounce of the bruised root in a pint of boiling water. A teaspoonful is a suitable dose, and should be repeated every two or three hours to induce nausea. Two ounces of the root and a pint of brandy form a *tincture* the dose of which is from thirty to sixty drops.

In addition to the infusion just named, there is another formed by saturating strong vinegar with the root. This has been applied to common *tetter* and *ringworm*, and also for the cure of *scald head*. A very pretty *cerate* is formed of the fine powder of the root well rubbed with fresh lard or simple cerate, in the proportion of a drachm to an ounce. This is regarded in some localities as a very superior *healing cerate*, and is so employed.

We have to add, in conclusion, the proof of poisonous quality as furnished in the *New York Journal of Commerce*, in 1841. Four persons, engaged to clean and whitewash the apothecary shop of Bellevue Hospital, found a demijohn which they supposed contained brandy or spirit of some sort, of which they drank very freely. They were seized with severe racking and burning pains of the stomach and bowels, intense thirst, &c., and all died. They feared to apprise the physician of the house until it was too late.

Some have conjectured that the brandy killed the men; but it is probable they were not novices in the use of that article, and therefore not likely to be seriously injured by it. As it was a strong tincture of blood-root, the result must be referred to the poisonous agency of the root in a very enlarged dose.

SAPO. *Soap.*—Hard soap is made with olive oil and soda. *Castile soap*, one of the varieties of hard soap, is employed to wash diseased parts, and so to fit them for the application of lotions, liniments, cerates, and absorbent powders.

Soft soap, made in this country by boiling any sort of grease or fat with the strong ley of wood-ashes, is usually of the consistence of honey, but often is more solid.

Any form of soap serves an important purpose by neutralizing acids in the stomach when likely to exert a *poisonous* influence. The potash in the soap is the antidote that meets the case. The soap should be so diluted that it may be swallowed with ease, and also thrown up the rectum.

Habitual costiveness is more certainly subdued by rhubarb, aloes, or colocynth, if well incorporated with soap, which serves to make a better pill mass at the same time. The oily matter of the soap, it is believed, tends to bring this desirable result.

Under the article *potash*, we alluded to the use of soap in the treatment of *burns* and *scalds*, and need not repeat.

Soap liniment is often a very good application to bruised and painful parts. It is made by dissolving an ounce of camphor in sixteen ounces of spirit of rosemary, adding three ounces of soap, and macerating with a gentle heat until the whole is dissolved.

Steer's opodeldoc is a little different from the soap liniment. It is made thus:—

R —Sapon. alb. ℥xiv;
Alcohol, ℔v;
Aquæ, ℔ss;
Ol. lavend.
" rorismar. āā ʒiij;
" origan. ʒij;
Gum camphor, ℥iv.

Mix, and digest for the space of ten days. The whole mass becomes like a jelly, but is readily liquefied even in the palm of the hand. It is an excellent external application to parts bruised or very painful.

Soap is one of our best articles for making *suppositories*. It should be of the consistence of the brown soap usually employed in washing clothes, and is then easily moulded into a proper shape. A piece about two or three inches long, and from half an inch to an inch in diameter, made entirely circular, will serve the purpose. An advantage of soap is the readiness with which we can blend opium or cathartic medicine with it.

SARSAPARILLA SMILAX.—We have large quantities of sarsaparilla in this country, and much larger quantities are imported; and the article is variously estimated by regular practitioners as well as by regular quacks. It is employed in decoction, syrup, compound syrup, extract, &c., and is recommended in all our newspapers as a panacea. If the millionth part of what is said about its efficacy were true, it would seem that men and women should no longer die, or, at all events, cease to suffer. I have surveyed this subject with a good deal of care, from the days of Swaim's glory with professorial endorsements down to the penny newspaper puffs of old Jacob Townsend's syrup, and the conclusion of the whole matter is, that sarsaparilla is a most worthless article, regarded *per se*. It may do very well for the vehicle of other substances, and may, therefore, innocently enough help to make up a *diet drink;* but that is quite as far as I can venture in its commendation. For me to say another word in praise of it would be a breach of truth.

SCABIOUS. *Erigeron Philadelphicum. Philadelphia Fleabane.*—The plant commonly called *fleabane* and *scabious* grows plentifully in the vicinity of Philadelphia, and is so well known

as not to need a description. The whole herb is used, and should be collected while the plants are in flower. The odor of the plant is aromatic, its taste bitter, and all its properties are readily imparted to boiling water. My chief reason for introducing it here, is that it was a favorite with the late Professor Wistar and Dr. Joseph Parrish, who esteemed it as a good diuretic, and superior to some others, because inoffensive to the stomach. The gentlemen named, and others under their influence, employed the plant in *gravel* and other *diseases of the kidneys*, and in various dropsies in gouty persons.

The infusion or decoction, made by adding an ounce of the plant to a pint of boiling water, was the favorite mode of administration, and this quantity was consumed in twenty-four hours.

From all that I could learn respecting this article as exhibited by the distinguished physicians named, it served chiefly as a substitute for other diuretics, and was therefore alternated with them. Now and then a dropsical patient appeared to be cured by the persistent use of the scabious.

Scammony. *Convolvulus Scammonia. Gum Resin.*—Smyrna, Aleppo, Montpelier, and other places furnish large quantities of scammony. The root of the plant, when cut, yields a milky juice, which concretes, changes color, and assumes the form of commercial scammony. That which comes from Aleppo is generally regarded the best, very probably because it is the most costly. The external aspect is of a dark gray color, and even darker, so as to be nearly black. Within, it is of a gray, or greenish-brown, and of a softer texture than the outer portion exhibits. The fine powder of the best scammony is of a light green, or a grayish-green color. The odor of the gum resin is not unlike that of some kinds of cheese. Trituration of scammony with water makes a milky-looking mixture.

Scammony is called a drastic cathartic, and, if given alone, is very apt to gripe. A few grains of an aromatic added to the usual dose of scammony lessen the griping tendency, and often prevent it entirely. The combination with calomel and jalap has a similar effect. The ancient *pulvis basilicus*, called also the *royal* or *noble powder*, was a compound of equal parts of scammony, calomel, and jalap, and operated not unpleasantly.

The dose of scammony is from five to fifteen grains, and of this it is said the resin is the only medicinal part. Proof spirit readily dissolves scammony, but the solution is of no value, excepting as a lotion to cutaneous affections of the herpetic kind.

Scammony may be given in pill, in powder with syrup, or in the form of emulsion.

In the times of Dr. Friend, fifteen grains of calomel, ten of

jalap, and five of scammony were given in one dose to young females of fifteen, as a means of forcing the catamenial discharge. (See *Friend's Emmenalogia.*)

Scilla Maritima. *Sea Onion. Squill-root.*—This is a bulbous root, very much like the common onion. It is brought from the Levant, packed in wet sand in order to be kept in a fresh and sound state. The taste is nauseously bitter, and the flavor is very acrid. For pharmaceutical purposes, the coats of the sea onion are detached and cut into narrow slices, and dried slowly at a temperature not exceeding 200° Fahrenheit. Many years ago, Vogel noticed a peculiar principle in squill called *scillitin*, but it is unimportant.

Squill is *emetic*, *expectorant*, *diuretic*, and in large doses *cathartic*. It is given in combination with gum ammoniac, gum fetid, tartar emetic, calomel, digitalis, &c., all of which seem to modify its action.

Very large quantities of squill sometimes fail to vomit in *croup*, owing to great vascular fullness in the parts specially affected. A few ounces of blood previously drawn from the arm, or from the throat by leeches, will obviate the difficulty.

A very good expectorant pill, well suited to painful coughs, may be made as follows:—

℞.—Pulv. scill. ℈i;
Pulv. gum ammon. ℈ij;
Ant. tart. grs. ij;
Muc. g. Arab. q. s. to make twenty pills.

One of these given every four hours will make expectoration quite free and easy. They may be used advantageously also in the *asthma* of old persons.

I have treated *hydrothorax* successfully with pills made of a grain of calomel and three grains of squill, and given three times a day.

It has been objected to the frequent use of squills as an emetic, that the tone of the stomach is impaired thereby; but I have never had occasion to notice the circumstance, although very much in the practice of employing the medicine in that way. Very large doses have greatly irritated the bowels, inducing spasms and bloody stools.

The more common preparations of squill are the vinegar, syrup, and oxymel. The first, viz., the acetum scillæ, or vinegar of squill, is made as follows:—

Take a pound of dried squill; acetic acid or strong vinegar, six pints. Macerate with a gentle heat for twenty-four hours in a covered vessel, then squeeze through a linen cloth, and when cold bottle the liquor.

I have not followed this rule when I wanted the article for

my own use, but prefer to make it thus:—Fill a quart bottle nearly full of the squill, and then pour in as much acetic acid or strong vinegar as the bottle will hold, and allow the bottle, well stoppered, to remain undisturbed for a week or ten days, or even two weeks. Pour all the liquid on a filter, and place the clear liquor in another bottle for use. Then fill the bottle with acetic acid as before, and in two weeks the acid will be sufficiently impregnated with the squill. I have thus acted on the same mass of squill four times, and the product was efficient.

The vinegar of squill is sometimes combined with saltpetre in order to augment the diuretic power. From thirty to sixty grains may be added to a pint for this object. *Obstructions of the bronchial tubes*, dependent on thickening of the mucous coat and mucous accumulation, may often be relieved by an emetic composed of half an ounce of vinegar of squill, ten grains of ipecacuanha, and an ounce of mint-water. It acts promptly, but not severely.

Syrup of squill may be made by boiling three pounds of sugar in a quart of vinegar of squill. A gentle simmering on hot coals will answer better than active ebullition. The *oxymel* is made in the same manner, substituting honey for the sugar. Both medicines are good *expectorants* in the dose of from a drachm to two drachms, or half an ounce. Larger doses act as an *emetic*.

An excellent use of the syrup or oxymel is in combination with the tincture or milk of assafœtida, for the cure of *spasmodic* or non-membranous *croup*. I have given it times almost without number, and have never been disappointed. To a child three or four years old, a teaspoonful of each may be given at once, and this will frequently calm the irritation. If necessary, the dose may be repeated in a half hour.

Scutellaria Laterifolia. *Scullcap.*—This plant was exceedingly popular many years ago as a remedy for hydrophobia, and also as a prophylactic. Dr. Spalding, of New York, published several essays on the excellent qualities of the medicine. He gave it in strong infusion and decoction, *ad libitum;* and in many cases it seemed to answer the end. The plant is very common in various places in this country, and is a perfectly safe agent.

Secale Cornutum. *Ergot of Rye.*—A parasitic plant of the order *fungi* is supposed to give rise to this article. It grows on the ear of rye, barley, and wheat. From its peculiar shape it has been called *spurred*, because of its resemblance to a spur. And since it is most abundant in rye, it is called *secale* cornutum, horned or spurred rye. It is much more abundant in some seasons than in others, varying with the predominance of

drought or wet. Some persons do not regard it as a fungus, but as a disease of the grain caused by the puncture of an insect. The grain so diseased retains some of its usual characteristics, but is for the most part an evident transformation. All the ergot I have seen is nearly cylindrical, curved, and striated, being of a deep violet color on the outside, and of a lighter color within; having a peculiar smell, when dissolved in hot water, that cannot easily be mistaken. The fullest account of its natural history may be seen in the Journal of Prof. Silliman, vol. ii., at page 48, to which we refer the reader.

Ergot was in use out of the profession more than a century ago, when it was known as a promoter of parturition. We are indebted to the late Dr. Stearns, of Albany, for its general introduction to the regular obstetrical practice of this country. As a *partus accelerator* it stands alone in Materia Medica, and is capable of inducing most felicitous results in the hands of judicious men, and alike competent to the development of sad results when ignorantly or recklessly employed. Ramsbotham, one of the ablest obstetricians in the world, was among its most powerful advocates, and the most distinguished men abroad and at home have followed his example. And yet I have known a professor of obstetrics who denounced it as positively worthless, affirming that the hot water in which the ergot was administered was the efficient agent. It is well to say, however, that this person acknowledged that he had never employed the article but once. For any man to talk of the *inertia* of ergot is like making a labored argument to prove that gunpowder is not explosive. The grand objection to ergot is its frightful energy when injudiciously administered; and if there be a single valid reason why it should be discarded, it is its vast potency.

But it is due to truth to affirm that while ergot is very powerful, it may be so employed as to be safe. Of what good medicine can we say more? I have never witnessed bad results from its administration; but when it is known that some country practitioners carry it in their pockets constantly, and give it to save time, right or wrong, we are prepared to hear of disastrous consequences. It would be wonderful if they did not occur frequently.

The circumstances justifying and forbidding the use of ergot are so well defined that no man need to err in its administration. I speak of it now as a *parturient* medicine, and say that if the os uteri be dilated some, and the parts be evidently in a dilatable state, wanting only the proper uterine contractions, the ergot may be safely exhibited, and its effects will be salutary. But, if uterine contractions be pretty strong and regular, the os uteri unyielding, and every feature of the case indicating

the need of the lancet, ergot must do mischief. Under such circumstances, rupture of the uterus will be apt to ensue. Take the following illustrations:—

A French journal reports the particulars of two cases of labor in which ergot was employed simply to save time, the labor going on in the most natural manner. A drachm was given to the women in the course of five minutes. Severe vomitings and excessive anxiety came on, and the patients died, one in sixteen hours, the other in three days after in consequence of *rupture of the uterus.*

One of the latest writers on *parturition* (W. Tyler Smith, M.D.) says, "Ergot is a medicine of direct, and not of spinal reflex action. It is of extreme value in cases in which, from the state of the passages, there is no danger of laceration or rupture. Its action on the uterus through the spinal centre is as special as the influence of tartar emetic on the respiratory muscles."

But while it is of vast importance to see that the os uteri and the uterine contractions are in such a state as to justify the use of ergot, some attention must be paid to the fœtus also. Hence the truth of the following remark, made by the author just named:—"As the ergot of rye affects the life of the child, either as a direct poison or by interfering with the materno-fœtal circulation, it should not be given, if possible, too long before the time of birth. The effect of ergot on the uterus is peculiar; it not only produces the intermittent pains of labor, but it constricts the uterus during the intervals between the active pains. On account of the influence of ergot on the child, it should not be used until the usual reflex modes of exciting the uterus had been tried in vain."

It has been conjectured that the variable quality of different collections of ergot has occasioned the professional discrepancy touching its power, so far as that exists. This may be, and hence the need of attending a little to that point. M. Boettcher, of Menderlutz, made a good many experiments for the purpose of ascertaining the truth in this regard, and he reached the following conclusions, viz., that the action of ergot gathered before harvest is *very potent*, while that collected when harvest was over was *powerless.*

There is another consideration worthy of notice. If ergot be kept in a powdered state, it is in the condition most likely to deprive it of oily matter, in which its power resides. Hence the necessity of keeping it whole, and bruising it as it may be wanted. It is a mistaken notion that good ergot, well preserved, must lose its power in a few months, and that hence it requires to be obtained every year. I kept a parcel seven years, without any

special care, and it was as efficient as when first placed in the bottle; the only precaution was to keep a tight cork in the bottle, and that tied down by means of bladder and sheepskin. It is stated that the addition of a few grains of camphor will exert a preservative influence, but I have not tried it.*

The action of ergot on a system in full health, and not pregnant, is injurious if it be taken in considerable quantity. Severe contractions of the muscles, amounting to slight opisthotonos, pains in the head, delirium and vertigo, have been induced. These are not the ordinary effects of an inert medicine.

The constant use of bread into which ergot enters is decidedly deleterious, and has proved to be so on a very broad scale. The grain has been promiscuously gathered, ergot and sound ears, the whole being ground into flour. In Silesia, a *dry gangrene* became epidemic from this cause, and raged in the years 1096 and 1588, being occasionally seen during the intervening years. Whitlaw, the author of a queer book on some new discoveries, says he detected ergot as the cause of a similar disease in this country, and especially in the State of New York, many years ago. And although some writers have boldly ridiculed the statements, they are neither, for that reason, unphilosophical nor false.

The *Gazette Médicale*, 1844, has the case of a child, ten years old, in whom the ergot induced gangrene of the legs, demanding amputation. In a child twenty-eight months old, spontaneous amputation of the right leg ensued, and the child got well. The ergot was probably taken in food, but it is not so stated.

Various results have followed the examinations of ergot with a view to determine its ingredients. It is agreed that it is specifically lighter than water, and that it contains neither starch, gum, sugar, nor gluten, as rye does; that it is resolved into two coloring principles, the one a fawn, and the other a violet-colored matter; also a sweetish oleaginous substance, a free acid, ammonia, and a vegeto-animal substance, tending rapidly to putrescence. Other and later experiments assure us that it contains a highly poisonous and a medicinal ingredient, which may be entirely separated, thus securing all the valuable properties of the ergot unmixed. One of these is a reddish-brown extract, very soluble in hot water, possessing in the highest degree the

* Some specimens of ergot, procured for analysis by a celebrated chemist, were found to be only plaster of Paris casts, colored in imitation of ergot. The active principle is said by some to reside in the outer covering, which is liable to be washed away by a heavy rain, and that fine dry weather is essential to make good ergot. A peculiar worm also may impair the article, by consuming the active portion. It is certainly more apt to spoil in powder than if entire.

The above may account, in part, for the diversity of results obtained from ergot by different physicians at different times.—*Adulteration of Medicines*, p. 87.

valuable obstetrical and hæmostatic properties so long ago conceded to the spurred rye. The other is a fixed, colorless oil, and decidedly poisonous.

Ammoniacal and *ethereal solutions* have been proposed, to facilitate the administration and operation of the medicine. Of these the latter is to be preferred; and it can be made by acting on any quantity of bruised ergot by sulphuric ether, for ten days or two weeks, in a tight vessel. Thirty drops of this ethereal oil or tincture are equal to a drachm of the solid ergot. A *wine of ergot* has also been proposed, but it is not needful. I regard the infusion, made by pouring hot water on the bruised article, as the best plan for its administration, from fifteen to thirty grains being a dose. If the parts be in a proper state, as before mentioned, such a dose, in two or three ounces of warm water, will soon induce active contractions of the uterus, and the dose may be repeated in twenty minutes if needful.

An instructive case is reported in one of the journals, in which thirty-grain doses, frequently repeated in the early stage of pregnancy, in order to arrest hemorrhage, brought on delirium, coma, vertigo, sloughing of the parts, and ultimately death.

Dr. Patterson, in the *Dublin Journal of Medical Science*, May, 1844, gives the following case:—Two drachms of ergot were given in a single dose, in a case of accidental hemorrhage, in which the membranes were ruptured. All the usual means failed to induce the desired contractions. The dose was repeated in an hour, and then the pains came on with decided efficiency, resulting in delivery.

In this brief history, we learn that very large doses, under peculiar circumstances, may do no harm, but result in real advantage to the patient. Such facts are to be met with in other journals.

The *excito-uterine* action of ergot is further displayed by the following case, reported in the *Phila. Bulletin of Med. Sciences*, 1843:—A female, as a consequence of the absence of the menstrual discharge, (probably *suppression*,) was seized with violent hysterical symptoms. It was determined, after trial of other means, to use the ergot. A scruple, mixed with sugar, was given, in divided doses, in the course of a day, and the practice continued for three days, intermitted on the fourth, and then repeated. The catamenial flow appeared, and the hysteria vanished.—Dr. Nardo.

The above, and kindred facts, have led to a general belief in the *emmenagogue* powers of ergot. The *Medico-Chirurg. Rev.* for 1835 contains several interesting cases, showing the happy effects of the medicine in this relation. The mode of administration was as follows:—Two drachms were infused in a quart of

boiling water, in a covered vessel, for one hour, and a small teacupful given every half hour. From one to two days' use of the medicine sufficed.

Dr. Hoffman, of Berlin, recommends the ergot in high terms for the relief of after-pains. He gives five-grain doses every two hours, with a little powdered cinnamon merely to aromatize. The pains and hemorrhage seem to be augmented at first, but they speedily diminish, and disappear entirely. The action would appear to be at first stimulant, and then sedative.

The effect of ergot in the expulsion of *uterine polypi* is also worthy of notice. We cannot fail to detect here the high utero-excitant power of the medicine. The polypi are really foreign bodies, which nature, unaided, cannot get rid of. The ergot induces such positive contractions as to break off the morbid connection and expel the mass.

Mr. Harris and others have substituted *uva ursi* for *ergot* in obstetric practice, and regard it as being preferable in many cases. The uva ursi does not induce such violent contractions as the ergot, and therefore is safer for mother and child. From a scruple to a drachm is the dose. The ergot of *wheat* has also been employed as a substitute.

Dr. Negri has shown conclusively the *hæmostatic* powers of ergot. Hence the successful treatment of *epistaxis*, *hæmoptysis*, *hæmatemesis*, &c., with five-grain doses, given every fifteen or twenty minutes, or even once in an hour. Alarming hemorrhage from the gums, resulting from the extraction of a tooth, has promptly yielded to this treatment. The remedy is supposed to act, in all such cases, in virtue of its nauseant quality, which accelerates the closure of the bleeding vessels.—*Edinb. Med. and Surg. Journ.*, 1834.

It must be conceded (as Dr. Smith has said, in his late work *On Parturition*) that the opposite action of ergot in *arresting* hemorrhage and *bringing on* a sanguineous flow, seems to involve the notion at least of a paradox. But we think the solution applied in the case of opium is fitting here, viz., that the variable and perhaps unascertained state of parts under a morbid influence will so modify the operation of the same remedy as to make it a *stimulant* or *sedative*. We believe this to be the actual and only relief to the difficulty.

The *diuretic* property of ergot has been very much praised by Dr. Theriano, an Italian physician, whose paper may be found in the *Journal de Chimie Médicale* for 1839. The following case seems to be satisfactory:—An aged man had been compelled to use the catheter very frequently in order to relieve his distended bladder, but was finally relieved of this difficulty by the use of ergot. Two scruples, mixed with as much green tea, were

infused in a pint of boiling water; when cool, he took three large tablespoonfuls every fourth hour, and by the persistent employment of the medicine for several days, not exceeding a week, he was cured. A similar case is furnished in another periodical, in which the prescription was to divide twenty grains into six powders, to be taken in the course of a day. The dose was increased to ten grains, and with the most palpable diuretic power. The man was cured.

M. Payen has given his testimony in the *Edinb. Med. and Surg. Journ.* for Oct. 1842, to the salutary operation of ergot in *paraplegia*. After the persistent trial of ordinary means, the patient was put on the use of fifteen grains of ergot daily, the dose being augmented gradually to thirty grains. Irritant liniments were kept to the spine during the treatment, and no doubt exerted a good influence. It is affirmed that no unpleasant circumstances marked the use of the doses named, and that recovery began to be obvious in from fifteen to thirty days.

We cannot but think that the paraplegia must have depended on some comparatively trivial cause; and we presume that difficulty in urination led to the trial of the ergot.

The last fact we name, touching the therapeutic application of ergot, is more novel and singular than the one just adverted to. We find it in the *Medical Examiner* for Nov. 1848. *Excessive dilatation of the pupils, from the action of belladonna*, is reported as very promptly yielding to the fine powder of ergot, taken as common snuff. The dilatation disappeared in a few seconds, but soon returned. The remedy was repeated, and the pupil completely restored to its natural state.

SEDATIVES, from *sedo*, to *ease* or *assuage*.—These have been divided into *direct* and *indirect* sedatives. The first, or direct sedatives, are any agents that depress the vital energies without the intervention of any previous excitement by the same source. Such is blood-letting, as when enough of the vital fluid is detracted at a single operation to induce complete syncope. Long-continued cold will exert a positive prostrating influence, from which the system cannot rally.

An indirect sedative is any agent whose obvious primary action is to elevate the system above the par of healthy excitement, from which it sinks to a point below the natural standard when that agent is withdrawn or is not repeated. It is in this manner that a full dose of opium proves an indirect sedative.

SEMOLA.—This is a new article of diet, said to contain nearly sixty per cent. of wheat gluten, with pure wheat starch so combined as to be exceedingly nutritive, and therefore well suited to cases of debility. (See *London Lancet*, April, 1850.) I am not

aware of its introduction as yet into this country, and hence can say nothing from personal experience.

SENNÆ FOLIA. *The leaves of Senna. Cassia Senna.*—This plant grows abundantly in Upper Egypt, and the leaves are imported in great quantities into Europe and this country from Alexandria, and hence the name *Alexandria Senna.* Adulterations are constantly practiced by mixing the leaves of other plants with the leaves of senna, and it is not easy to guard against the fraud. Besides the senna just named, the *Tripolitan* and *East India* varieties are spoken of; and it is said that each of these is adulterated.

The marks of a good senna are a bright, fresh, yellowish-green color, with a peculiar and not disagreeable odor, somewhat like that of green tea. The fewer stalks and seed-pods and broken leaves and dirt, the better is the article, for all these increase the weight and lessen the medicinal power. When senna is chewed for a few minutes, we are conscious of a nauseous flavor that is quite peculiar. Boiling water develops sufficient coloring matter to give a brown appearance to the infusion, which has the nauseous taste and smell in a concentrated state. As this infusion is apt to spoil in hot weather, it should be made in small quantities, as occasion may require. Alcohol takes up the active powers of the plant efficiently, and a brown tincture is formed.

A peculiar proximate principle, called *cathartine*, has been separated from senna by the French chemists; but the process is too tedious for detail here, and the product is unimportant.

Few persons can take senna alone without experiencing more or less of griping pains, and hence the term *drastic* has been applied to it. This effect is readily prevented by adding to a teacup of the decoction or infusion a teaspoonful of cremor tartar. Strange as it may seem to those who have not tried the mixture, it is a fact that the union of these articles (which separately employed will often gripe) presents a mild and pleasant cathartic, that is admirably suited to females who require an aperient soon after delivery. On the same principle, too, the addition of a little Epsom salt, Rochelle salt, phosphate of soda, manna, and aromatic seeds, after the manner of the French, divests senna of all unpleasant tendencies, so that the complex mixture referred to is very highly prized.

I have long been satisfied that mistake has prevailed in regard to *senna infusion.* My plan is to prepare it as strong as it can be made, and instead of two drachms in a pint of boiling water, I prefer to add an ounce, or a half-ounce at least. Cover the vessel tight, and let it stand undisturbed until it becomes sufficiently cool for use. Then pour the contents on a fine gauze, and

bottle the liquor for subsequent administration. If an ounce of senna entered the infusion the product will be so concentrated that a smaller quantity than usual will answer for a cathartic; and that is a point of some importance in respect of young children.

I have heard objections raised to *decoctions* of senna, but experience has dissipated them all. With a perfectly clean earthenware vessel, furnished with a close lid, I can prepare a decoction of senna that will purge promptly and mildly, if cremor tartar be added in the way named above. The boiling need not last over ten minutes, and the product will have much more cathartic power than any mere infusion. The experiment has been too often made to admit of anything like reasonable doubt.

What is called the *compound infusion of senna* is prepared with an ounce and a half or two ounces of senna leaves, a drachm of bruised ginger-root, and a pint of boiling water. Macerate during an hour, and strain. A few cloves may be added in place of the ginger, if agreeable, or any other spice may be substituted. This infusion should be prepared only as it is needed, because by long keeping it deposits a yellowish precipitate that gripes and nauseates. The addition of Epsom salt or cremor tartar improves the properties of the infusion very materially.

We may modify this compound infusion variously, to suit different tastes and preferences. Thus:—

Take of the compound infusion, ℥iv;
Epsom salt,
Syr. ginger, āā ℥ss;
Mint-water, ℥ij.

Mix, and give to an adult a wineglassful every hour until it acts freely.

A compound syrup of senna is kept in the drug stores, and is a convenient article. It is not difficult to prepare a syrup from the compound infusion above named. The addition of sufficient sugar and suitable cooking over hot coals will give the result.

Senna may be managed so as to be nearly void of its peculiar taste and other unpleasant quality. Take two, three, or four drachms, and infuse in eight ounces of boiling water for the space of ten or twelve hours, in a covered vessel. Strain through a fine gauze, and fill a teacup two-thirds full, adding new milk to fill the vessel. The mixture looks not unlike a cup of coffee, and has very little taste. The celebrated Baudelocque employed this preparation at the *Children's Hospital* in Paris, and found it to

operate smartly without griping, sick stomach, or any other unpleasant result.*

Children take senna very readily when intimately rubbed with perfectly ripe figs. An ounce of the leaves made as fine as possible, and half a pound of the softest, ripest figs, well incorporated, furnish a mixture of which a piece as large as a walnut will purge. Not only do children relish this *figgy senna*, but I have known adults who were exceedingly partial to it.

Senna and soft prunes can be managed in the same way. Take half an ounce of senna, half a drachm of cremor tartar, and half a pint of water; boil on a slow fire for about ten minutes, and strain. To the clear liquor add half an ounce of sugar and half a pound of prunes, and simmer on hot coals till the liquor is nearly all absorbed by the prunes or evaporated. A soft extract is thus procured which will act on the bowels gently. For a child four years old a piece as large as a medium nutmeg will be a dose.

Or to a pint of strong senna infusion add half a pound of soft prunes and three ounces of sugar; simmer slowly until the mixture is complete and homogeneous. A tablespoonful taken every hour will soon purge. The infusion or decoction of senna may also be employed, in the way of injection, alone or with the addition of Glauber's or Epsom salt.

The *American senna* is a less efficient article than those of which we have been speaking.

Serpentariæ Radix. *Aristolochia Serpentaria. Virginia Snakeroot.*—This is indigenous to the United States, and is known to the country people in almost every section. Many farmers gather it in great quantities at their leisure, and vend it to city or village druggists. The root abounds with innumerable fibrillæ, exceedingly thin, having a light-brownish aspect, a somewhat pungent, bitter taste, and a pleasant aroma. It is held to be *stimulant*, *diaphoretic*, and *tonic*.

As this and the senega polygala are both familiarly termed *snakeroot*, it is well to remember the points of distinction. The branching out from a small knob into very minute fibrous radicles, not thicker than stout thread or small twine, is so peculiar to the *Virginia* variety that it ought never to be mistaken for the root of the thickness of a little finger and with no fibrillæ, that marks the *senega* or *seneka*. The brown color of the former, and the grayish appearance of the latter, are also safe guides,

* Dr. Linthner advises to administer senna as follows:—Infuse one, two, or three drachms in one or two teacups of cold water, all night. Use the strained infusion to make coffee for the next morning, just as if it were only water. The product will be an aperient void of the senna taste, and which does not gripe. —*Medical Times and Gazette*, Dec. 1856.

especially when associated with the greater pungency of the latter and the more pleasant odor of the former.

Virginia snakeroot is rarely administered in any other forms than *infusion* or *decoction*. An ounce to a pint of boiling water, macerated for the space of four hours and strained, will give a good infusion, the dose of which is a wineglassful every three or four hours. The force and pleasantness of the infusion is sometimes augmented, thus:—

℞.—Infus. serpentar. ℥iss;
Pulv. serpentar. grs. x;
Syr. zingib. ℥ij.
Mix, and repeat three or four times a day.

The warm infusion acts chiefly as a diaphoretic. If taken cold it proves gently tonic, and this property is augmented by the addition of Peruvian bark.

Some thirty-five or forty years ago it was the almost universal practice to treat autumnal fevers with decoctions of Peruvian bark and Virginia snakeroot. These were so exceedingly feeble, when contrasted with the modern sulphate of quinine practice, that we are disposed to wonder how any one recovered under the old and obsolete system. The contrast will compare pretty well with the ancient mode of stage travel and the present flight by railroads.

As a tonic merely, in the period of convalescence from an attack of fever, an infusion made of an ounce of Peruvian bark, as much snakeroot, and a pint of boiling water, will often be useful. The infusion should stand for several hours and then be strained. A wineglassful may be taken every three or four hours.

Chronic rheumatism is sometimes relieved by draughts of hot infusion of serpentaria. It stimulates gently, and induces perspiration.

Sinapis Semina. *Mustard-seed, black and white.*—The activity and acrimony of the seeds reside in a volatile oil, which is separated by distillation. They yield a fixed oil also, by pressure, and abound in mucilage, starch, and something like gluten.

White mustard-seed has long been a favorite medicine in the treatment of *rheumatism*, *indigestion*, &c. The dose is a teaspoonful three times a day. It may be given in molasses, or syrup of any kind. It is too stimulant to be proper when febrile symptoms are present. The black mustard is employed by very many in country locations for the same purposes as the white; and I never detected any real difference in their operation or effects.

The ground mustard has been very much employed as an

emetic in the early treatment of *Asiatic cholera* in this country. Two drachms of the flour, or the same quantity of fresh-ground seeds, in a half-pint of hot water, will act as an emetic, with the advantage of leaving the stomach and system in a less depressed condition than it is after the use of other emetics. I have no doubt that the mixed stimulant and emetic operation exerts a favorable influence on the stomach in reference to the subsequent use of opium, or opium and calomel combined.

The effect of a weak solution of this article, as above, contrasts forcibly with the daily table use of a concentrated aqueous or acetous mixture, such as we employ at our dinners, especially when we partake of fatty meats. Here the design is to prevent sickness of stomach and to invigorate it for the right disposal of gross food.

The term *sinapism*, so familiar to the profession, is derived from the word *sinapis*, and it imports a plaster, cataplasm, poultice, or other application, prepared from ground mustard, or the flour, as it is often called. As a large portion of the mustard sold in the stores is an adulterated article, it is preferable to grind mustard-seed for the occasion when a sinapism is needed. Then we can have no doubt as to the purity of the article.

To prepare the sinapism some persons add water, others vinegar, and occasionally spirits of turpentine and cayenne pepper, in order to increase the cutaneous effect. The mustard is seldom mixed alone, an equal quantity of wheat or rye flour being combined with it, and the whole made into a paste so as to allow of being spread out on a cloth. The action of sinapisms is in the nature of counter-irritation or revulsion, and we place them in the list of *rubefacients*.

The promptitude or tardiness with which a sinapism acts depends very much on the actual condition of the system at the time. I have known an intolerable burning to be induced before the plaster could be properly secured in its place, and its instantaneous removal was necessary. More frequently I have been greatly disappointed, either by the delay of action or the feebleness of it when it did occur. In one instance, no action could be induced at the time, and in a week or ten days after, high irritation, burning, and the like, were manifest in the places where the sinapisms had been applied.

It is important to give specific directions in respect of the removal of sinapisms. Neglect of this has induced deep and painful ulcerations that might have been avoided by timely care. It is proper to direct the removal at the end of half an hour, and to have the sinapism shifted to another spot, if the first trial failed.

The *London Lancet* for June, 1850, contains a brief history of

a fatal case in a girl six years old, ascribed to the mistaken use of sinapisms. She labored under an eruptive fever, with the glands of the neck very much swollen. A linseed poultice was ordered for the neck, but a mustard plaster was substituted. This was not the grand mistake, after all. The plaster was kept on three hours, and two others were applied soon after. Frightful gangrenous inflammation ensued, which proved fatal.

We have in this item the true ground of fault-finding with blisters and sinapisms. In the first place the swollen glands did not call for a sinapism at all. Flannels wrung out of warm water would have been far preferable. But in this case the length of time the plaster was allowed to remain fearfully aggravated the mischief.

The oil of mustard is sometimes employed as an external application, but the ground seed is preferable.

SODA. *Oxide of Sodium*, formerly called *mineral alkali*, *natron*, *kelp*, *barilla*.—Barilla, kelp, and natron are impure varieties of soda. It has been called *mineral* because found in seams and crusts with mineral bodies. The ashes of a marine plant, the *salsola soda*, furnish impure soda by lixiviation, as in preparing potash. The plant is cultivated largely on the Mediterranean coast of Spain, where the soda is prepared for commercial purposes. If the same plant be taken to an interior location, fifty miles from the sea, it will not yield soda. The inference is properly made, therefore, that on the sea-coast the plant washed by the sea is capable of decomposing the muriate of soda in sea-water and appropriating the soda to itself.

Pure soda is exceedingly caustic, and hence the term *caustic soda*. It is obtained in the same manner as indicated for the manufacture of pure or caustic potash. The caustic soda is not employed in practice.

Carbonate of soda is obtained in a pure form from the articles above-named, by lixiviation and crystallization. It dissolves in twice its weight of boiling water. The crystals are efflorescent, fuse at 50° Fahr., and lose their water of crystallization, changing into a white and friable mass. The article called *sal soda*, so much employed in the process of washing clothes, is an impure carbonate. The term subcarbonate has been applied under the impression that the acid is deficient and the alkali in excess. In the exactly neutral salt the alkaline taste predominates, and the solution changes vegetable blues to green. Four hundred and sixty grains of diluted sulphuric acid neutralize one hundred grains of dry carbonate of soda, and thus we judge of the alkaline strength of the salt.

The *incompatibles* are the same as those of carbonate of potash.

Fourcroy contended for the medicinal use of the soda carbonate, in preference to that of potash, because soda is found in the animal economy always, while potash is seldom present. In the neutral state, and in the form to be noticed presently, it is very largely employed as an *antacid*, the effect depending on a direct chemical action. As an *antilithic* it is more frequently resorted to than potash, because its long continuance as a remedy is better sustained by the stomach. Twenty grains per day, in mucilage of gum Arabic, or in a glass of Seltzer water, will correct acidity and lessen the tendency to deposits of red sand in the urine; and this dose may be repeated daily for two or three weeks, when it should be substituted by lime-water or magnesia.

When there is obvious deficiency of tone in the alimentary canal, we may advantageously combine the carbonate with some of the bitters, as the compound infusion of gentian; half an ounce of the infusion, a scruple of the carbonate, and a table-spoonful of cinnamon-water, mixed, may be taken two or three times a day.

When carbonate of soda is employed for a long time in considerable quantity to cure the uric acid diathesis, it may so neutralize the acid as to put the earthy matters in excess and give a white deposit to the urine. Hence the necessity for care in the administration. As a proof of the speedy action of carbonate of soda on the urinary organs, it is said that two drachms taken in the morning on an empty stomach, in a cup of tea, have induced sensible changes in the urine in ten minutes, and that in three hours the urine was decidedly alkaline, though not so before.

In respect to the habitual use of any variety of carbonate of soda, it is well to remember that it may exert a pernicious influence, softening and even eroding gradually the coats of the stomach, and more frequently inducing incurable indigestion. The proper advice is to change the antacid every two or three weeks, and so to get all the benefit of the antacid medicine without incurring the risk of the continued use of any one article.

Dr. Maxwell, surgeon of the United States Army in China, thinks he has made a *discovery* in respect of the power of the carbonate of soda as an antidote for *Asiatic cholera*, and he has made a communication to the Secretary of State, at Washington, on this subject. He says that the instant a case of cholera is presented he gives the carbonate in teaspoonful doses dissolved in gruel or water, and drank as hot as the patient can bear. This allays the pain and burning of stomach, produces sleep, and restores the heat of skin and pulse in a very short time. If the dose was thrown up, it was repeated with a few drops of

laudanum and a full dose of oil, so as to cause the antidote to pass down as speedily as possible to the poison in the small intestines. When any portion of the oil and antidote passed in the evacuations, convalescence was found to have already commenced, the patient soon passed urine, and was then out of danger. The antidote should be continued morning and evening, if necessary, only reducing the dose.—*Philadelphia Medical Examiner*, November, 1849.

Such of our readers as are familiar with the practice of Dr. Stevens, so much talked of in 1832, will not fail to perceive that the discovery of Dr. Maxwell does not differ essentially from the saline treatment of Stevens. This was very abundantly tested in this country at that time, and although sometimes successful, it was often unavailing.

Carbonate of soda has been highly spoken of by Hufeland as a remedy for *goitre*. He prefers it to iodine, because it is less apt to derange the digestive organs. Two drachms of the salt are dissolved in six ounces of balm tea, with the addition of half an ounce of syrup of cinnamon or ginger, and a tablespoonful is given four times a day.

The carbonate is not often administered in the form of pill, because not easily prepared, unless the water of crystallization is expelled, or soap added to make a suitable pill mass.

The celebrated Alibert treated *scald head* with signal success with carbonate of soda. The same practice was adopted in several medical institutions of Paris, where more than fifty thousand persons have been cured. The hair was directed to be shaved off and the scalp washed daily with a solution of carbonate of soda and an infusion of walnut leaves alternately. An ointment, consisting of a drachm of the carbonate and an ounce of lard well mixed, was rubbed into the scalp, which was then covered with a piece of blotting paper. A mild bitter infusion was given at the same time, and some mercurial if a syphilitic taint could be detected.

Soda poultices were formerly much in use as local appliances for the relief of pain in *chronic gout* and *rheumatism*, but they have gone into disuse, and should be revived. Dr. Bennet has derived great benefit from them lately in the wards of St. Thomas's Hospital, and it is known that the late Dr. Pereira was partial to the practice. To prepare them, add one drachm of soda to a common bread and milk poultice, and apply it every night as hot as it can be borne. A little more soda would do no harm.—*Braithwaite*, part xxix. p. 46.

Warm baths of water charged with carbonate of soda have been very useful in relieving the severe pains of gout and rheumatism in the feet and ankles.

Bi-carbonate of soda differs from the carbonate in the fact of containing an additional equivalent of carbonic acid. It is made by passing carbonic acid gas freely into an aqueous solution of the carbonate. The bi-carbonate, although containing two equivalents of acid, is alkaline to the taste, and makes vegetable blues green. It is more pleasant as a medicine than the carbonate.

The genuine soda-water is an aqueous solution of carbonate of soda, with excess of carbonic acid. What is generally sold for soda-water has no soda in it, and is only water highly charged with carbonic acid gas.

It is well for physicians to be aware of the fact that *gastric pain*, and even something very like *lead colic*, has been induced by freely drinking soda-water at the fountains kept in drug stores. These fountains are sometimes furnished with leaden tubes and have a copper lining. From both these circumstances the water may acquire a deleterious quality.

A fraudulent imitation of soda-water has been effected by adding a few drops of sulphuric acid to a solution of carbonate of soda and instantly corking the bottle. This fraud can be detected very easily by adding a drop or two of solution of chloride of barium (mur. barytes) to the suspected water until precipitation ceases. On treating this precipitate with diluted nitric acid, if any portion remains undissolved it proves the presence of sulphuric acid in the solution.

The bi-salt is frequently called *supercarbonate*, and is a good *antacid* and *antilithic*, in twenty or thirty-grain doses, taken in a tablespoonful of water three times a day. Great quantities of it are appropriated to the manufacture of *soda powders*, which are put up in boxes in white and blue papers, one containing thirty grains of bi-carbonate of soda, the other thirty grains of tartaric acid. The contents of each paper are dissolved in two tumblers one-third full of water, and when the powders are dissolved the contents of the tumblers are mixed and drank in the act of effervescence. The bi-carbonate is instantly decomposed by the tartaric acid, and its carbonic acid is evolved, tartrate of soda remaining in solution. The powders, frequently taken, prove at length mildly aperient.

Bi-carbonate of soda and tartaric acid may be kept in a state of intimate mixture, and employed as an effervescing draught may be needed. It should be packed in a glass bottle, and well stoppered, so as to exclude moisture. A teaspoonful of the mixture dissolved quickly in a half-pint tumbler of cold water makes a very pleasant draught.

The bi-carbonate is sometimes made into lozenges by admixture with white sugar, mucilage of gum Arabic, and oil of pep-

permint. The mixture is properly divided into convenient-sized masses, which are resorted to for the relief of indigestion.

Muriate of Soda. Chloride of sodium. Common salt. Sea salt. Fish salt. Bay salt. Rock salt.—These terms indicate one and the same thing. Sea-water, salt springs, salt licks, salt wells, furnish the basis whence, by evaporation, we get the common salt so well known and estimated.

The benefit of sea-water as an external remedy depends chiefly on the salts it contains, including the muriate of soda, hydriodate and hydrobromate of potash, &c. And the efficacy of bathing with salt water for the relief of indolent tumors depends on the same combination.

An aqueous solution of common salt was highly recommended by Dr. Rush as an *anthelmintic*, a copious draught being taken night and morning. It is stated, in the *Transactions of the College of Physicians of London*, that two pounds dissolved in two quarts of water were taken at a single dose, for the cure of *worms*. The same salt was frequently given in powder by Dr. Rush, disguised by trituration with a few grains of cochineal, in order to conceal it from the ignorant. This device is entirely justifiable, as there are many persons who could not be induced to take the salt if they knew it was prescribed, however much it might benefit them. I presume that the use of common salt as a vermifuge was based on the sad consequences resulting to criminals who were deprived of salt, as was the custom in Holland; the intestinal canal being impacted with worms as the necessary result of the deprivation.

Injections of common sea-water have been successfully employed in the treatment of *gleets*. Patients who had been affected for more than two years were completely cured in ten days.—*Edinburgh Medical and Surgical Journal.* I see no reason why a weak solution of common salt would not answer quite as well.

Burns and *scalds* have been successfully treated by Lisfranc with the common salt, and the remedy was very probably in use long before he was born. It is a very old practice in some parts of Great Britain to cover a burnt or scalded surface instantly with common house salt, fresh from the barrel, and undissolved. I have known a case in which a very crude application of the remedy gave instant relief and prevented vesication.

A watery solution of the salt is also an old remedy for ophthalmia, and has been revived by a writer in the *Edinburgh Medical and Surgical Journal* for 1844.

Bi-borate of soda. Borate of soda. Borax.—Although this salt has two equivalents of acid to one of base, it has an alkaline reaction. All the mineral acids, potash, the sulphates and muriates of the earths, are incompatible.

Borax has long been employed to cure sore mouths, and it was therefore called *detergent*. It is thus used in the cases of children now, and sometimes for adults. *Mel boracis*, or *honey of borax*, is one of the forms resorted to for this end. To make it, mix a drachm of the fine powder of borax with an ounce of good honey, so as to incorporate them as perfectly as possible. The addition of borax to balm tea is very commonly made when a pleasant gargle is needed. The fine powder of borax and white sugar, equal parts well mixed, and applied to small ulcers of the mouth in adults as well as children, will often exert a healing influence. The best mode of application is on the end of a finger, gently moistened, and laid directly on the sore spot.

The peculiar irritation of the throat, mouth, and gums, occasioned by mercurials, is often allayed by the following mixture, to be used as a wash to the parts several times a day:—

℞.—Pulv, sod. bi-bor. ʒij;
Infus. ros. comp. ʒviij;
Mel. pur. ʒss.
Mix.

Dr. Rhinehart, of Prussia, employed a strong solution of borax in *scaly tetter of the hand*, with great success. The solution consisted of half a drachm of the borax to an ounce of water, and was employed twice a day.

Efflorescence of the face, so very annoying to young persons, females especially, has been treated with a solution of borax with happy results. The prescription is borax, two parts; orange flower and rose-water, each fifteen parts. With this mixture the face should be washed five or six times a day.—*Bulletin de Thérap.*, August, 1851.

Dr. Effenberger stated to the Vienna Medical Society, in 1850, that he had been successful in cases of *gangrenous bubo* by applying a solution of borax, made by adding one or two drachms to a pint of water. The solution was applied by means of soft lint, which should be changed at least three times a day. Fifty cases were so treated in one year.

A writer in the *Western Lancet* has strongly urged the use of borax in *dysmenorrhœa*. "In plethoric habits," says the author, "I take from four to six ounces of blood from the veins of one of the lower extremities, and repeat the venesection, if necessary, and keep the bowels open by Epsom salts. For two days previous to the appearance of the menses I order a warm foot-bath every evening and morning, and give borax in the following formula:—

℞.—Bi-bor. sod. ʒij;
Infus. sem. lini, ʒvij.
Mix, and give a tablespoonful every two hours.

The pain was relieved by a grain of the extract of henbane, given every half hour."

Prof. Meigs regards the following prescription as admirably suited to relieve *pruritus vulvæ* of pregnant women:—

℞.—Sodæ bi-bor. ℥ss;
Morph. sulph. grs. vi;
Aq. rosar. ℥viij.
Mix, ut fiat lot.

This should be applied three times a day with soft sponge or linen, first washing well with tepid soapsuds.

The same mixture will answer well for itching of the scrotum in males.

Borax is a novel article to be given as an injection in the treatment of *diarrhœa*. It is in the idiopathic form of the disease in children, when it is catarrhal in its nature and hard to manage, that borax often does service. It acts on the mucous membrane of the bowels as it does on the mucous membrane of the mouth in aphthous affections. Borax has the advantage over other articles that it is not irritating, and is alkaline. The following is the formula of M. Bouchut. He calls it the *alkaline lavement*.

Borax, ℥iv to ℥vi;
Sugared water, ℥iv.

If more borax be used, there must be more water, in order to hold it in solution.—*Dublin Medical Gazette*, February, 1855.

Sulphate of Soda. Glauber's salt. Sal mirabile, or the *wonderful salt*.—The latter name was applied in the early history of the article, when no other saline cathartic was known. The salt has a peculiar saline, bitterish, yet cooling taste. It dissolves in three parts of cold and in one of boiling water. The crystallized salt contains more than a third of its weight of water of crystallization, which is lost by exposure to the air, the salt falling into a fine white powder. This has been thought by some to be of no value, when in fact the medicinal power is more than equal to the same weight of the crystals.

The unpleasant taste of this salt is readily removed by a little lemon-juice, or cremor tartar, or vinegar; but it is seldom employed now because of the extensive use of Epsom salt. From half an ounce to an ounce will purge.

M. Puchelt, a German physician, affirms that two scruples of the sulphate of soda will correct or prevent the unpleasant effects that sometimes attend the use of a grain of opium; and to make the result certain, it should be repeated two or three times a day.*

* Schultz found, in a man who took an ounce of sulphate of soda each day for two days in succession, that the amount of fibrine in the blood was lowered from

Phosphate of soda is sometimes used as a cathartic in this country. It is soluble in four parts of cold and in two of boiling water. It has a saline taste, without the unpleasant bitterness of Epsom or Glauber's salt. It is the *sal perlatum* of the old books, and was first introduced to notice by Dr. Pearson. Because of its almost total insipidity it has been also named the *tasteless* purging salt. It is a very pleasant medicine, and very popular in France. Two ounces make an adult dose; and it may be taken in gruel or broth, imparting no more taste than ordinary table salt.

Tartrate of potash and soda. Soda tartarisata. Sal Seignette. Rochelle salt. Sal de doubus, &c. &c.—It is a salt of two bases and one acid, is slightly efflorescent, and readily soluble in water. It can be made by adding bi-tartrate of potash to a solution of carbonate of soda at a boiling heat, so as to neutralize the excess of tartaric acid. The proportions are three hundred grains of the carbonate and four hundred grains of cremor tartar dissolved in water, and boiled until action ceases. The result on due evaporation is the compound salt of tartrate of potash and soda.

This salt presents a very pleasant, gentle variety of cathartic medicine, and is agreeable to all who employ it. It enters the composition of the effervescent aperient known as *Seidlitz powders*. These consist of two different powders, whose solution in separate vessels, and subsequent commixture in one, furnish a very grateful carbonated drink. One of the powders contains one hundred and twenty grains of tartrate of potash and soda mixed with forty grains of bi-carbonate of soda; the other contains thirty-six grains of tartaric acid. Carbonic acid is evolved from the decomposed bi-carbonate, and the fluid taken into the stomach holds tartrate of potash and soda in solution. Two or three of these powders drank in the course of an hour will usually act gently on the bowels. From half an ounce to an ounce of the tartrate of potash and soda will suffice for a moderate cathartic, the action of which is facilitated by the use of warm gruel.

Chloride of soda is important because of its *chlorine* qualities, and it has acquired considerable celebrity as a *disinfectant*. It differs from chloride of sodium (which is only muriate of soda dried by a strong heat) in being a compound of soda and chlorine, or an oxide of sodium somehow united to chlorine gas. The precise nature of the union has occasioned much discussion, and is not, perhaps, well understood. Some have supposed that the

5 to 1.9 in 1000 parts. This must be explained by supposing that the antiplastic saline, by its entry into and presence in the blood, had hindered the formation of this fibrine. Hence the utility of sulph. soda as an anti-inflammatory medicine.

oxide of sodium or soda absorbed the chlorine somewhat as charcoal absorbs various gases. This seems to have been the opinion of Dr. Ure. A chloride of an oxide appeared to many a contradiction in chemical terms not easily reconciled.

Pure chloride of soda is prepared by passing a current of chlorine gas into a cold and diluted solution of caustic soda until no more can be taken up; or, in other words, until the soda is saturated with the gas. It is said that common carbonate of soda will answer as well as the caustic soda, but that more chlorine is requisite in order to displace all the carbonic acid gas. The celebrated disinfecting liquid of Labarraque, or liquid chloride of soda, is soda fully charged with chlorine gas, and is regarded by many as the strongest preparation of the kind manufactured anywhere. I have never met with anything superior to it as a disinfectant.

The liquid chloride of soda is well suited to remove all offensive odors, as of sewers, privies, dissecting rooms, foul ulcers, hospitals, &c., and has been successfully employed in all these relations. For the same reason it has been tried as a counteragent of pestilential fevers, as a decomposer of morbid effluvia; and, as some say, with success. It is certain that very foul apartments are often speedily purified by sprinkling chloride of soda over the floor, and by placing it in saucers in chambers. The extrication of the chlorine is so gradual as not to injure the respiratory organs in the smallest degree, and when extricated it combines chemically with the hydrogen of the offensive gas or vapor, and both are neutralized so as to be imperceptible.

The bottles of chloride of soda should always be kept perfectly tight, so as to prevent the escape of any of the chlorine; and this should be particularly attended to whenever a portion is poured out for use. With due care a bottle may be preserved in good condition for a great length of time.

The liquid chloride is extensively employed in medical practice, especially for its *disinfectant* and *stimulant* qualities. I know of nothing better to relieve the mouth made sore by *salivation*. One or two drachms should be added to two or three ounces of water, and the mixture employed as a wash frequently. Healing is promoted, and the offensive condition of the breath is neutralized. The ulcerated throat in *scarlatina maligna* is happily treated by the same wash or gargle, making it somewhat stronger of the chloride. In *gangrenous sore mouth*, Dr. Bonneau, of Guersent, employed the following mixture with success:—

℞.—Decoct. hordei, ℥iij;
Chlorid. sod. liq. ℥i;
Cons. ros. ℥i.
Mix.

℞.—Decoct. cinchon. ℥iij;
Syr. aurant. ℥i;
Liq. chlor. sod. ℥i;
Mix.

These were used very frequently as lotions, and also as gargles, alternately.

Dr. Chopin speaks very favorably of the application of the liquid chloride to *excoriated nipples*, where I suppose it acts partly by its cleansing agency. It should be applied several times a day, with a hair pencil.

In addition to the large number of remedies for *burns* and *scalds*, the chloride of soda has been named as well entitled to consideration. I have never had an opportunity of testing its value in that respect, but can speak very decidedly of its efficacy in the treatment of *tinea capitis*. A case presented in the West that had been at least six months under treatment. I attended to the digestive organs of the child, and corrected their aberrations; and then, having had the scalp softened and cleansed with poultices, it was washed three times a day with two drachms of the chloride combined with an ounce of water. In less than a week a manifest improvement gave assurance of complete success, which was fully realized in the course of two or three weeks.

The liquid chloride has also been given internally in *malignant scarlet fever*, and in *low fevers* of a typhoid character, with a view to neutralize what has been called the typhoid or adynamic element that seems to give fatality to those diseases. A mixture of two drachms in three ounces of water, administered frequently in teaspoonful doses, has seemed to meet the case. In low fevers, with looseness of the bowels and very fetid discharges, it has been employed also by injection. The half of such a mixture as that just named may be thrown up at once, and repeated in two hours. The effects are a happy stimulation and correction of the offensive odor, both of which are important considerations. The editor of the *Cyclopedia of Practical Medicine* has the following judicious remarks, confirmatory of the foregoing statement:—

"The *chloride of soda* is a valuable medicine in all the typhoid forms of fever, when judiciously prescribed. It may be given early in the putro-adynamic variety, when excitement is imperfect or low and the skin discolored, or petechiæ are appearing, and continued throughout the disease. But when vascular reaction is considerable, or local determination prominent, particularly in the nervous and exanthematic varieties, this substance should be withheld until these states are subdued or about to lapse into the nervous stage. At first it ought to be prescribed in small doses, so as not to offend the stomach, in from ten to fifteen

drops of the solution as prepared by Labarraque, every three or four hours, in camphor julep or in an aromatic water. As the disease passes into a state of exhaustion or of manifest putro-adynamia, or when there is a lurid skin, low muttering delirium, stupor, meteorismus, black sordes on the tongue, teeth, &c., the supine posture, unconscious offensive evacuations, petechiæ, blotches, a disposition to gangrene in parts pressed upon, coma, &c., it should be given in larger doses or more frequently, and in tonic infusions or decoctions, or with camphor, serpentaria, or other stimulants and tonics. I have seen it productive of great benefit in such cases; but it should be commenced before these symptoms appear, and be persisted in, as its good effects are seldom manifest in less than three or four days, or more; and it should not supplant the use of wine, opium, suitable nourishment, and other means which the stage of the disease and peculiarities of the case may suggest. It should also be frequently administered in enemata; and the surface of the body ought to be often sponged with a stronger solution of it in warm water, with the addition of camphor. M. Chomel has lately given the chloride of soda an extensive trial; and he states that it has proved more successful in low fevers than any other means, when perseveringly employed. Dr. Graves has also recently employed it, and has found it extremely serviceable. It acts first on the tissues, with which it is brought in contact, as a gentle stimulant and antiseptic; and is most probably partially decomposed in the digestive organs and reduced to the state of common salt. In this state it is carried into the circulation, where it supplies the waste of this substance that has taken place in the early stage of the disease."

In harmony with the above is the testimony of a writer in the *Edinb. Med. and Surg. Journ.* for 1842, who strongly recommends the internal use of the liquid chloride in *diarrhœa* induced by, or connected with, ulceration of the intestinal glands.

The silicate, and the benzoate of soda have been employed, recently, in the treatment of *gout* and *rheumatism*, by two physicians, who furnished a paper, with the results, to the *Academie Imperial de Paris*. They say that the silicate facilitates the elimination of uric acid, and that its influence may be extended so far as to render the urine alkaline. It is also said to act as a tonic to the digestive organs. The benzoate transforms the uric into hippuric acid, the combinations of which are very soluble, while those of uric acid are hardly soluble at all. At the same time colchicum was given, to carry out of the system the remains of uric acid thus changed, and aconite was applied to the parts where the severest pain was located.—*Brit. and For. Med.-Chirurg Rev.*, Jan. 1857.

Solanum Dulcamara. *Woody Nightshade. Bitter Sweet.*—This plant was once highly valued, and some physicians appear to regard it favorably at this day. But it seems to me that it has no just claims to our notice, and should be discarded.

Solutions.—This term has been given to a variety of medicinal compounds, and will probably continue to be employed, although, perhaps, not really necessary. We retain it in accordance with custom, and present a few samples of this variety of mixture.

Iodine Solutions.

1. ℞.—Iodine, ℈ss;
Iodid. potass, or Hydr. pot. } ʒss;
Aquæ, ℥vi.

Dissolve the hydriodate in the water, and then add the iodine. We thus make Lugol's solution. The strength can be regulated as desired. Dose, teaspoonful for an adult.

2. ℞.—Iodine, ℈i;
Hyd. pot. ʒi;
Aquæ, ℥vi.

Mix as above. For external use to scrofulous eruptions.

Caustic Iodine Solution.

℞.—Iodine, ℥ss;
Hyd. pot. ℥i;
Aquæ, ʒij.

Mix. To be used externally.

Rubefacient Iodide Solution.

℞.—Iodine, ʒiv;
Hydr. pot. ℥i;
Aquæ, ℥vi.

Mix.

Refrigerant Solution.

℞.—Nit. potass. ℥ss;
Hydrochlor. ammon. ʒiij;
Aquæ, ℥viij.

Dissolve, and add
Pulv. camphoræ, ʒiss;
Alcohol, ℈i.

Mix. Dose, a tablespoonful in barley-water.

Solution of Acetate of Morphia.

℞.—Morph. acet. grs. xx;
Aquæ, ℥i;
Acid. acet. ♏x;
Alcohol, ℈i.

Mix. Dose, five to twenty drops.

Prussic Acid Solution.

℞.—Acid. hydrocyan. ℥ss;
Alcohol, ℥i;
Aquæ, ℥xii;
Plumb. acet. ℈i.

Mix. For external use, to allay itching.

Soot.—Wherever wood is burned as an article of fuel, this agent can be obtained at little cost, save the value of the time needed for its collection. Being a domestic remedy, it has some claims to our regard, and is too much neglected. It is decidedly *antiseptic*, and may be considered a feeble modification of creosote or pyroligneous acid. Lotions of soot have long been employed by the French physicians in the treatment of *ulcers*, *cutaneous affections*, &c. The common direction for preparing the lotion is to boil two handfuls of soot in a quart of water for the space of half an hour, and to apply the strained liquor to the parts at least four times a day. A similar, but weaker, decoction has been recommended as an application to burnt and scalded surfaces. A handful of soot in eight pounds of water, boiled down to three pounds, is the preparation spoken of in the *American Journal of Medical Sciences* for Jan. 1842. Pledgets of lint

are directed to be thoroughly soaked in the decoction, and applied two or three times a day. By reference to the article *Creosote*, it will be seen that a very weak solution of that article has been successfully applied, under like circumstances.

An ointment of soot, made of half an ounce of soot and two ounces of fresh lard, has been frequently resorted to for the healing of *indolent ulcers*.

There is scarcely an old lady in the country who has not heard of *soot tea* as a remedy for *infantile colic*. It is one of those traditionary relics that has passed from generation to generation, and continues to be approved in the nursery. It is mildly *antacid* and *carminative*. A teaspoonful of soot will make an ordinary teacupful of boiling water sufficiently strong. A few teaspoon doses will suffice.

A tincture of soot (*tinctura fuliginis*) has been employed for *flatulent colic*, with frequent success. A tablespoonful of the subjoined mixture is a dose for an adult :—

Take of wood-soot, ℥ij ;
Assafœtida, ℥ss ;
Proof spirit, lbij.
Digest for the space of ten days, and filter.

Spigelia Marylandica. *Maryland, Indian, Carolina Pink Root. Perennial Worm Grass.*—This is a very common and well-known plant in the United States. The whole plant is possessed of medicinal properties, but many persons employ the root only. It was known at a very early period as an *anthelmintic*, and employed in that relation by the aborigines of this country. The apothecaries have been in the habit of keeping two kinds for sale ; one made of all parts of the plant intermixed, the other consisting wholly of the roots. Every physician should purchase the latter, even at treble the price of the former, because of its superior value. I speak thus from personal acquaintance with the article.

Two modes of exhibiting this article as a vermifuge are in use. The first is to give a decoction or infusion *per se*, for several days, and then to exhibit a carthartic so as to operate smartly on the bowels. The design is to destroy the worms by the spigelia, and to carry them out of the body by purgation. Others prefer to make a compound infusion or decoction of pink root and senna, and so to secure at once the compound anthelmintic and cathartic property. The latter is the plan which I have been in the habit of recommending, and for the following reason : The exhibition of the pink-root tea is sometimes attended by unpleasant cerebral development, which is occasionally alarming. There is now and then some vertigo, and frequently a good deal

of dilatation of the pupil. These are avoided by the use of the compound infusion.

An ounce of the root infused for a few hours in a pint of boiling water, then gently simmered over hot coals and strained, is the customary mode for preparing the tea, as it is called. The whole of this is to be given to a child twelve years old in the course of ten hours, and followed on the next day with infusion of senna and Epsom salts. The only difference as respects the *compound tea* consists in the addition of an equal quantity of senna.

Sometimes the powder of the root is administered to small children in doses of ten to twenty grains, mixed with syrup, which may be repeated two or three times a day.

Dr. Jas. Clark, in 1796, published some facts in relation to the vermifuge powers of the spigelia, and named the following as an excellent mode for exhibiting it. A strong infusion is made of the entire plant in boiling water, and to this a quantity of the rind of sour oranges or lemons is added, and also some of the juice. The mixture is strained, and boiled to a syrup with Muscovado sugar. A tablespoonful or two of this syrup given to a child from two to six years old, thrice a day, for two days, and followed by a dose of castor oil on the next day, rarely fails to expel a great many round worms. Dr. C. remarks that the medicine was seldom given to children under two years, and that it was deemed necessary to confine them to a dark room, as the light made them giddy, caused dilatation of the pupils and pain in the eyeballs. If too large doses be taken, they induce cerebral derangement, which is easily removed by a spoonful or two of lime-juice and water, and by washing the face with cold water. "Employed in proper doses," says Dr. C., "I never knew it to do any serious harm."

Not a few of the patent worm medicines sold in all parts of the country consist chiefly of the spigelia.

Spongia Officinalis.—The Mediterranean and Red Seas, as also the West Indies, furnish varieties of sponge. The composition of sponge, free of corals, shells, sand, &c., is gelatine and coagulated albumen. When it is burnt, the ashes are found to contain silex, carbonate and phosphate of lime, carbonate of soda, chloride and iodide of sodium, bromide of magnesia, and some oxide of iron.

Sponge Tents are employed in surgical practice. They are strips of sponge saturated with melted wax, so that when in contact with the animal fibre the heat of the parts gently melts the wax; moisture is absorbed by the sponge and it swells considerably. Hence the dilating power of sponge tent.

Sponge Pessaries.—The whole class of solid pessaries should

be blotted from existence as a positive nuisance. The little *sachets* of Leuret are a hundred-fold better, and the sponge pessary a thousand times more valuable. They should be made of well-cleaned soft sponge, of a size large enough to fill the vagina to slight distension, and should have a tape or string annexed. There should be a dozen on hand, and all made perfectly clean by immersion in the water of chloride of lime. They may be dipped in warm water before being passed up, or in sugar of lead water, or in port wine diluted, or in any of the astringents in solution. Their yielding nature secures their accommodation to the vagina more exactly and remedially than any pessary ever invented. Their medicinal quality restores lost tone, and helps greatly to keep the uterus in its right position. They should be changed twice a day.

Burnt sponge is an old remedy for goitre and scrofulous affections generally. On the continent, not a few physicians now prefer it to the preparations of iodine, to the presence of which the burnt sponge owes part of its efficacy. The adult dose of the powder of this article is a drachm, mixed with a little honey or molasses, and ginger or ginger syrup.

To prepare burnt sponge, the common article of commerce is cut into small pieces, then beaten, to free it of stony particles, after which it is heated in a covered iron vessel till it becomes quite black and friable. The mass is then to be pulverized.

Spoons for dispensing medicinal agents are of more importance than is generally imagined. They should be of pure silver, in order to guard against accidents such as that referred to below.

Dr. C. Woodward, of Cincinnati, relates in the *Western Lancet* a case of destructive inflammation of the eye, which he is led to believe was caused by chemical reaction taking place between a solution of nitrate of silver and a *German silver* spoon, into which it was poured previous to being applied to the eye. The patient was a child about two years old, of scrofulous diathesis. At the period of the first visit, the eyelids presented externally a red, tumid, and glazed appearance, and was in so irritable a condition that it was found impracticable to examine satisfactorily the internal condition of the organ. There were very considerable febrile excitement, with a slight eruption, somewhat resembling rubeola, over the face and neck, and superficial ulcerations studded the posterior fauces. After appropriate treatment the inflammation was sufficiently subdued to admit of an examination of the cornea and general conjunctiva. The conjunctiva of the lids was found to be red and thickened, and covered with coagulable lymph, but the cornea was transparent, perfectly free from ulcerative action, and apparently not the least endangered

by the neighboring inflammation. A solution of nitrate of silver, in the proportion of one grain to the ounce of distilled water, was ordered, which was dropped into the eye from a *German silver spoon*. In twenty-four hours from the first application, and after the solution had been introduced into the eye three or four times, the cornea was examined; but instead of the clear transparency of the preceding day, the entire anterior surface of the globe of the eye was found covered with a thick, albuminous opacity, completely obscuring the cornea, and looking as if an active caustic had been passed over it and had entirely disorganized the superficial tissues. This went on to ulceration, staphyloma, and, finally, the loss of the vitreous humors of the eye. We have said that the spoon used for dropping the solution into the eye was composed of *German silver*, which metal is composed as follows:—nickel, one pound; copper, three and a half pounds; zinc, one and a quarter pounds. At the request of Dr. Woodward, Dr. E. A. Hildreth, now of Wheeling, Va., made some experiments with a solution of nitrate of silver dropped from a German silver spoon on the eyes of cats and dogs. In the cat the experiment failed, the failure being attributed to the membrana nictitans preventing the solution from touching the surface of the eye. In the dog, however, the destruction of tissue and loss of sight were complete.

According to Dr. Hildreth, the following chemical changes occur when a solution of nitrate of silver is placed on German silver:—

The nitric acid unites with the copper, nickel, and zinc, forming nitrates of those metals, and the oxide of silver is precipitated. The nitrates are all soluble in water. Now copper has a much stronger affinity for the nitric acid than either of the other metals, and consequently ought to deprive the nickel and zinc of it. In the present case, it can only be explained by granting that the nitric acid is *in excess* for the copper, and, because they unite in definite proportions, there will be a part of the nitric acid free, which part unites with the nickel and zinc, forming nitrates, the affinity of these two metals for the acid being about equal.

STETHOSCOPE.—An instrument for exploring the chest, and designed to assist the ear in the investigation of diseases of the lungs and heart especially. (See *Auscultation*.)

STIMULANTS.—The Latin word whence this term is derived signifies a *sting* or *spur*. Hence we understand why it is affirmed that a stimulant applied to the skin induces a sense of heat, with pain, and makes the part red. Hence, too, the propriety of speaking of a feeling of warmth in the stomach when an internal stimulant is swallowed.

Under the action of pure stimulants, the nervous energy is roused, and the muscular contractility is more manifest. If the stimulant be repeated at proper intervals, the effects will continue.

Diffusible stimulants differ from others of a more permanent nature in their more evanescent action, which calls for frequent repetition of the dose. The ethers are plain instances of this class, while the stimulation of opium is decidedly more persistent. A full dose of sulphuric ether may accelerate the pulse as obviously as a full dose of opium; but the acceleration will endure much longer in the latter than in the former case.

Stimulants are useful and necessary for the relief of enfeebled vital energy when it is not attended by inflammation; no matter whether the debility flows from profuse hemorrhage or other profluvia, or from positive syncope. And yet the use of this class of remedies calls for great caution and good judgment.

True stimulants are only of use by counteracting that failure of the nervous force which hinders the manifestation of the vital strength, which is stored up somewhere in the system. For to exalt nervous force is not necessarily to exalt vital force, since anything which tends to destroy the former must at length repress and extinguish the latter. In such a case as syncope, or stoppage of the heart on account of a sudden nervous shock, stimulants are specially proper; also in the last stage of fevers, asthenic pneumonia, &c., where the existence of life is endangered by a great loss of nervous power.—*Headland's Action of Medicines*, p. 260.

STRYCHNIA. *Strychnine.* The alkaloid base of the *strychnos nux vomica.*—This powerful constituent of several species of vegetable matter was first separated by Pelletier and Caventou, in 1818. They obtained it from the *strychnos nux vomica*, a magnificent tree, a native of the islands of the Indian Archipelago. The seeds are flattened, depressed in the centre on one side, convex on the other, and covered on both sides with a velvet-like surface. From these seeds or beans the active principle is obtained in considerable quantity, and is known to exist in them in combination with igasuric acid. A pound of the seeds, well managed, yields thirty-four grains of pure strychnia. The same quantity of the bean of St. Ignatius yields one hundred and two grains. The purest kind of strychnia has been obtained from a species of *Upas.*

The *nux vomica* was early used as a medicine by the Hindoos, and its nature and properties understood by Oriental doctors long before it was known to foreign nations. "Dog-killer" and "fish-scale" are two of its Arabic names. It is stated that at present the natives of Hindostan often take it for many months

continuously, in much the same manner as opium eaters eat opium. They commence with taking the eighth of a nut a day, and gradually increase their allowance to an entire nut, which would be about twenty grains. If they eat directly before or after food, no unpleasant effects are produced; but if they neglect this precaution, spasms result.

To procure strychnia from the beans of the *strychnos nux vomica*, they are rasped as fine as possible, and macerated in successive portions of water. The liquor is then evaporated to the consistence of syrup, and the gum is thrown down by addition of alcohol, which forms a tincture, which is to be evaporated in close vessels by the heat of a warm bath. A yellowish-brown colored extract is left, which is redissolved in cold water to remove some fatty matters. The strychnia is then precipitated by lime-water from this solution. The igasurate of strychnia is thus decomposed, an igasurate of lime being precipitated, and the strychnia being taken up by the addition of alcohol. In this state some brucia is present, which is made evident by the action of nitric acid, which strikes a deep red with brucia, but not with strychnia.

The purest strychnia is in minute, elongated, prismatic crystals, though sometimes it is in a granular form. It is inodorous, and so intensely bitter that a single grain gives obvious bitterness to eighty pounds of water. Like the other vegetable alkaloids, strychnia is scarcely soluble in water, requiring more than six thousand parts for solution at 50° F., and twenty-five hundred parts of boiling water. It is not very soluble in sulphuric ether, nor in cold alcohol, but readily soluble in boiling alcohol. When quite pure it is white, unchanged by the air, but decomposed by a slow heat.

Besides combining with acids, strychnia unites with iodine, forming important compounds that are potent as therapeutical agents.

Igasurate of strychnia being the active principle of nux vomica, whatever may be said of strychnia as a remedy may be considered as applicable to the other substantially. In all forms, pure or combined, strychnia is a powerful stimulant, exhibiting its influence by increasing the energy of the whole system, and then acting on those tracts of the spinal marrow that give origin to the motor nerves. The nerves of sensation are also involved in this action, for, along with the muscular contractions and convulsions which supervene, the surface of the body is highly sensitive, and susceptible of the slightest impression. Even the motion of the air becomes a source of uneasiness, almost as great as that of water to a hydrophobic patient. Prior to the twitching or tetanic convulsions during the use of this

article, patients experience a sensation of heat, pricking, &c. These increase, subside, and return.

The first effect of strychnia on the digestive organs is increased energy of the digestive powers. The appetite is improved, the food better assimilated, and the patient looks better. The circulation is not perceptibly affected, and yet if the dose be too large, respiration is oppressed and a sense of suffocation occurs. The urinary organs are but little affected, but the cutaneous system feels the influence very powerfully; the capillaries are excited, and a copious sweat breaks out.

The effects of strychnia on inferior animals, birds, &c. are important, as serving to confirm its remedial powers. When dogs swallow twenty or thirty grains of powdered nux vomica, they soon become evidently tetanic, have distortion of the limbs, tremors, convulsive movements of the face and eyelids, immobility of the eyelids, and complete muscular rigidity, with involuntary flow of urine. Cats, rats, foxes, minks, crows, &c. are all powerfully affected by the article. Strychnia is now sold in large quantities for the purpose of killing crows and minks. Meat impregnated with the poison very promptly kills. Corn soaked in the alcoholic tincture is equally fatal, if the alcohol be pure and plenty of strychnia be added. When the alcohol is weak and but little of the alkaloid employed, the crows, although they swallow the corn greedily, are only made a little drunk, as was noticed by some farmers in Peoria, Illinois.

A solution of nux vomica injected into the pleura of a dog induced tetanus and death. Similar results followed its application to wounds, but it was inert when laid on the sound skin. The watery decoction injected into the jugular vein brought on tetanus very speedily, which terminated in death.

While the examination of the dead body detected no token of inflammation, the general contraction of the arterial system was too obvious to escape notice. It is not to be expected that any very palpable lesion could be seen after so speedy a death as follows a fully poisonous dose.

It was held by Magendie and others that strychnia does not act through the medium of the nerves, but is absorbed and carried by the blood to the spinal column, on the anterior nerves of which its immediate influence is exerted. But when it is remembered that tincture of iodine acts as an antidote to strychnia, by changing its nature in the stomach, and that the influence of the poison is promptly arrested if the stomach be emptied by a powerful emetic, there is reason to doubt the correctness of Magendie's view, and to believe that the operation is by the nerves. That strychnia, in very large doses, operates directly on the origin of the motor nerves, is obvious from the symptoms

that follow, viz., violent tetanic spasms, rigidity of the voluntary muscles as well as those of respiration, immobility of the chest, and hence defective decarbonization of the blood; add also from the evidence afforded by the experiments of Fodere, who found that on exposing the spinal marrow of an animal to which strychnia had been given, he could produce convulsions by pressure on the anterior segment of the cord. Experiments have also shown that strychnia produced no effect on the system when the spinal marrow had been destroyed.

It was long ago observed that paralysis might occur in the lower extremities, independently of any affection of the brain, and physicians were led to refer the disease to some morbid change or impression on the motor tract of the spinal cord. It may probably be induced by powerfully sedative impressions on the extremities of the nerves which supply the intestinal canal, as in painter's colic. As this palsy has been cured by strychnia, it gives additional proof that the alkaloid operates through the medium of the intestinal nerves. On the supposition that paraplegia depended on palsy of the anterior nerves of the spine, and aware of the influence of nux vomica on this set of nerves, Dr. Fauquier, of Paris, tried it as a remedial agent in this disease. He gave it in the form of powder and extract, with decided advantage. Fauquier observed that the paralytic parts appeared to be more sensible to the impression of nux vomica than the sound ones, and his success with the nux led him to try strychnia in like circumstances. The experience in the use of the latter is already extensive; and although sometimes injurious, is often a useful stimulant in palsy of the lower extremities. My own experience has not been very favorable to its administration, although I have not employed it very frequently.

As some persons may feel disposed to try the nux vomica in preference to strychnia, it is proper to say that in some respects their effects are different. The extract determines powerfully to the head, whereas strychnia and its salts evince scarcely anything of the kind. This is decidedly in favor of strychnia. It should not be forgotten, however, that in all palsies with great determination to the head, venesection should be premised before either nux vomica or strychnia is administered. There is a case reported, however, in which strychnia induced all the symptoms of intoxication, although it very rarely affects the head at all.

The alcoholic extract of nux vomica has been administered, in *sick headache* of an obstinate character, by Dr. McCaw, of Virginia. The dose is one-twelfth of a grain to begin with, and increased to a quarter-grain. The pills are to be taken for a

fortnight, and then suspended for as long a period.—*Virginia Medical Journal*, 1857.

Pure strychnia is very generally preferred to any form of nux vomica. It is more uniform than the extract, and hence is safer. It is necessary to be very careful in exhibiting strychnia. As an alkaloid, uncombined, it is comparatively insoluble; and its activity will depend on the greater or less acid state of the stomach. The more acid in the stomach the more active the strychnia, because the salt formed will be more soluble. Hence the danger of patients using strychnia and vegetable acids, as lemonade, vinegar, and the like, at the same time. These acids, joining the strychnia, form salts, which, by their great solubility, virtually double or treble the dose. It is much better to give the acetate or some other salt of strychnia at once. The acetate is readily made by adding a grain of the alkaloid to a drachm of distilled vinegar. Every six-drop dose of this solution contains a tenth of a grain of strychnia, and the administration can be regulated with great accuracy. I regard this as decidedly the best method for giving the alkaloid.

Magendie directs the combination of strychnia with conserve of roses. Two grains are to be intimately mixed with thirty of the conserve, and divided into twenty-four pills, each of which contains a twelfth of a grain. He orders a tincture, also, to be made of three grains to a drachm and a half of alcohol. Three drops, which make a dose, contain a tenth of a grain of strychnia.

The tincture is a much safer preparation than the pills, because it demands great care to insure an equable distribution of the active agent, so as to have just a twelfth of a grain in each pill. I prefer the acetic solution to either, and think all will be pleased with it who give it a fair trial.

In many cases of palsy obvious relief follows the use of strychnia in two or three weeks, while others resist it entirely, no matter how long its use is continued. The declaration has been made very positively that paralysis of sensation is not curable by strychnia, while that of motion is very generally. But the assertion has been too sweeping altogether. The *London Medical Gazette* for June, 1845, reports a case of palsy of *motion and sensation* in an arm and leg of a female, aged twenty-nine, who was cured by taking seventy grains of strychnia in two months, beginning with a sixteenth of a grain, and gradually increased, so that she took three-grain doses before a week expired. My son, Dr. B. Rush Mitchell, of the U. S. Navy, reported a case in the *Western Lancet*, in which palsy of sensation and motion was cured by the same medicine; and I have seen one case of a similar kind.

Strabismus, evidently paralytic, and of twelve years' standing,

was completely cured in seven days by the application of a solution of twelve grains of strychnia in two ounces of alcohol, to the eyebrows and temples, morning and evening. (See *Western Lancet*, Jan. 1847.)

Dr. Stevenson, of Calcutta, relates some cases of success in the use of strychnia to blistered surfaces to cure *amaurosis* of several years' standing. Half a grain was applied twice a day, on the temple, until tremors of the limbs were induced. He employed a like practice successfully in partial palsy of the limbs.—*N. American Medical and Surgical Journal*, vol. viii.

The local application of strychnia was also successful in the following case, copied into the *Western Lancet:*—

"A habitual drunkard, aged fifty-six, was admitted into the Glasgow Royal Infirmary, having suddenly lost the power of the left forearm and hand ten days previously. The sensation of the parts was perfect, but the power was much impaired; he had no headache; the bowels were costive after free purging; a blister was applied to the back of the forearm, and one-eighth of a grain of strychnia sprinkled over the vesicated surface. On each successive day the application was increased by adding the original quantity to that of the preceding day, till it amounted to one grain, after which one-fourth of a grain, instead of one-eighth, was to be added. From the second week the improvement was manifest; no obvious constitutional effect ensued, and the patient was dismissed cured at the end of five weeks from the commencement of the treatment. In another patient, affected with paralysis of the flexor muscles and diminished sensation of the right leg, a cure was effected in the course of six weeks."

Prolapsus ani, evidently paralytic in its nature, was soon cured by the following preparation of nux vomica:—Four scruples of salep were boiled for twenty minutes in three and a half ounces of water, and to the strained liquor three-fourths of a grain of the extract of the nux were added. A teaspoonful of the mixture was given so frequently as to consume the whole in twenty-four hours. This treatment was employed in young children.—*Edinb. Medical and Surgical Journal*, July, 1846.

Dr. Schwartz treated the same disease with the same medicine. He dissolved two grains of the extract in two drachms of pure water, and gave from six to ten drops every four hours. He affirms that the disease is generally cured in twenty-four hours, or greatly relieved. To children of eighteen months or two years old he gave fifteen-drop doses, and continued the medicine for about a week after the cure, in order to prevent a relapse. For children of six months old three-drop doses suffice.

I have treated *incontinence of urine* with strychnia with de-

cided success, and regard it as a capital remedy when the disease is clearly a paralytic derangement. Dr. Moudière has reported the happy effects of nux vomica in the same disease, in the *Archives Générales* for 1836. His formula is as follows:—

R.—Ext. nuc. vom. grs. viij;
Ferri oxyd. nig. ʒi.

Mix intimately, and divide into twenty-four pills, and give one three times a day. After twelve were taken by a patient the incontinence disappeared; but, to prevent a relapse, the pills were continued until twenty-four grains of the medicine were consumed. Dr. M. cured five persons with this prescription who had long been under other treatment. Strychnia, in appropriate doses, will answer quite as well.

The following case presents several points of interest, in which it is probable that paralysis was more extensively operative in the system than might be inferred by some who peruse the narrative:—A young man, aged twenty-one, after long-continued gastro-intestinal suffering, was seized with paralysis of the lower extremities, diarrhœa, profuse discharge of urine. The nitrate of strychnia was administered in doses of a tenth of a grain, and at the expiration of the fourth day of its employment there was some motion of the limbs perceptible, and by the time six grains were consumed, the *paralysis* and *diabetes* had wholly disappeared. (See *Gazette des Hôpitaux*, 1843.)

Chorea has been repeatedly cured by strychnia. Thirteen patients were treated by this medicine, of which number ten recovered. A grain was incorporated with three and a half ounces of syrup, and two and a half drachms of the mixture were given daily, in three doses, an increase of a drachm and a quarter being made every day, until itching of the scalp and some muscular stiffness were obvious. By persevering for a month in the treatment, the results were gained as above stated. (See *American Journal of Medical Sciences*, 1847.) The same journal for 1844 reports some cases successfully managed by the strychnia, given long enough to induce tetanic spasms; and in the number for April, 1846, a case of chorea is reported as having been cured by an overdose.

In the *London Lancet* for September, 1845, Dr. Ross reports decided success with strychnia in the treatment of *chorea*, as we learn by the following remarks:—

"The first occasion on which I made trial of the remedy in this disease was in the beginning of 1839, in the case of a delicate girl of twelve or thirteen years of age, who came under my care as an hospital patient, with many of the eccentric symptoms of this singular disease most distinctly marked. From having

been very expert with her needle, she was rendered incapable of using it, and her attempts to thread it were almost ludicrous. I prescribed for her the eighth or tenth of a grain of the alkaloid, to be taken twice a day. On the second or third day of the treatment, through a mistake of the nurse, she had an overdose of the medicine, which produced more violent effects than I intended, viz., convulsive twitches, which, however, quickly subsided on the medicine being intermitted, and with them all symptoms of the disease. In a day or two after this I saw her thread a fine needle with a hand perfectly steady, and she was dismissed cured at the end of a week. I saw her more than a year afterward; she was quite well, much improved in appearance, considerably grown, and had had no return of chorea. I ought to mention that she first came under my care after having been already some weeks in the hospital, under the care of my esteemed predecessor, Dr. Bayne, whose treatment of her was continued, without any improvement in her symptoms until she commenced the use of the strychnia.

"My next case was a girl of the same age and constitution, who came under my care as an hospital patient about the same period. In her case I adopted the same treatment. No violent effects were produced by the remedy, and after a few days' treatment the symptoms of chorea began gradually to disappear, and she was also dismissed cured at the end of a fortnight.

"I cannot speak so favorably of the effects of strychnia in some cases of paralysis in which I have considered myself warranted in trying its use, and in which class of diseases, under certain circumstances, its advantages have been favorably recognized by some authors; but in chorea, in the limited number of cases in which I have given it a trial, I have been much satisfied with the result."

M. Trousseau treated *chorea* by the use of the sulphate of strychnia made into a syrup. Four-fifths of a grain were incorporated with three ounces of simple syrup, and six teaspoonfuls given daily to children from six to twelve years old. The doses were increased or diminished according to the effects induced; among which were rigidity of the jaws, neck, and limbs. Three out of four children so treated were soon cured, and the fourth was recovering rapidly.

See *L'Union Médicale* for June, 1849, and *Ranking's Abstract*, No. x. p. 41.

A highly interesting case of the cure of *tic douloureux* by doses of strychnia, usually regarded as poisonous, is reported in *Braithwaite*, part xvii. page 289. The patient had been accustomed to large doses of muriate of morphia for the relief of his sufferings, and took, one day, three and a half grains of a pow-

der just purchased for the same end, and went out upon his ordinary business. In a very little while he felt a disagreeable numbness in his legs, increasing rapidly, so as almost to disable him. On reaching home he felt better and went to bed, about five hours after he took the medicine. Just as he was going to bed, in the hope of getting a good night's rest, he took a second dose of the same powder as that swallowed early in the day. In less than ten minutes violent tetanic spasms came on, affecting the legs and respiratory muscles almost to suffocation. The spasms followed in close succession and with increasing severity. The man continued perfectly conscious, although his senses seemed to be invested with unwonted sensibility.

After a while the paroxysms began to diminish in violence and number; and when it was imagined that the case was about to terminate, the symptoms were suddenly renewed with great violence. In a short time, however, the aspect changed for the better, and at the end of thirteen hours all the symptoms had disappeared. The most remarkable feature in the history is that the man never after this disaster had an attack of his *tic douloureux*. The medical treatment of the poisonous action of the strychnia is not stated, but it is added that a quantity of the medicine had been taken equal to about three ounces of nux vomica, one of the largest portions ever swallowed without a fatal issue.

The above detail is an apt illustration of the doctrine set forth in other parts of this work, called the *antagonism of poison and disease*. On no other principle can we account for the failure of so much strychnia to destroy life.

In *L' Union Médicale* for 1840, Dr. Homolle reports success in the reduction of *strangulated hernia* with exceedingly minute doses of strychnia. He supposes it to act as it does in constipation from paralysis, by augmenting the peristaltic action, or by correcting irregular action. Instead of the hundredth part of a grain, we should suppose a tenth of a grain might be safely given.

It is probable the known effect of strychnia in paralytic patients—viz., its induction of tetanic spasms—led to its employment in *tetanus*. Dr. Fell reports seven cases of traumatic tetanus cured by doses of a sixteenth and a quarter of a grain continued so as to induce decided twitching. (See *New York Journal of Medicine and Surgery* for Nov. 1846.) In the January number of the same work for 1847, an article may be found the design of which is to prove the efficacy of strychnia in *idiopathic tetanus*.

Dr. Brainard, of Chicago, Illinois, gave *strychnia* for the cure of obstinate intermittents, with considerable success, in doses of

an eighth of a grain three times a day, in form of pill. (See *Indiana Medical Journal* for July, 1847.)

A German physician, M. Frisch, found that cases of *ague and fever*, in robust persons, not cured by the sulphate of quinine alone, were curable by the addition of strychnia or nux vomica. He gave from six to ten grains of the nux, with two ounces of cinchona, or twelve grains of sulphate of quinine, in the intermission. The same physician declares that no medicine is so efficacious in that form of *chronic diarrhœa* kept up by subacute inflammation of the villous coat of the intestines, and marked by viscid mucus secretions and tenesmus, as the nux vomica. He combines it with small doses of ammonia and mucilaginous drinks. *Dysentery* often depends partly on a similar cause, and sometimes on lesion of the nervous filaments of the lining coat of the colon; in both cases strychnia has been useful in the advanced stage.

Excessive *gastric irritability* has been promptly relieved by minute doses of strychnia. The derangement may be so protracted as to induce deep innervation of the stomach, and then the remedy may be very appropriate. (See *Lon. Lancet*, Nov. 1846.)

Dr. F. E. Wilkinson, in the *Lancet* for Dec. 1853, speaks favorably of strychnia in *neuralgia*, *ague*, *dyspepsia*, *epilepsy*, &c. He employed the liquor of strychnia, made by adding two grains to an ounce of phosphoric acid, which is a prompt solvent. It adds, also, to the powers of strychnia over the brain and nervous system. It makes, in fact, a phosphate of strychnia. After attending duly to the secretions he gave five drops of the solution (as a general rule) three or four times a day.—*Braithwaite*, part xxix. p. 54.

The *poisonous* action of this article claims some particular notice. When a really poisonous dose has been swallowed, the fatal consequences seem to depend partly on exhaustion of the heart's irritability, and partly on asphyxia. If it actually poisons, the first effect is a tremor, followed by stupor and a sense of intoxication, after which there are symptoms of tetanus, rigidity of the muscles of the neck, even locked jaw, severe pain at the lower end of the sternum, violent spasmodic contractions of the intercostal and lumbar muscles, and those of the whole spine, inducing opisthotonos and laborious respiration, ending in complete asphyxia and death.

The first effort of the physician in such cases is to dislodge the offending cause, and the next is to destroy the virulence of the action already induced. The stomach-pump or a prompt emetic should be resorted to instantly; and, after these have accomplished the desired end, tincture of iodine should be given to

neutralize the poison. This antidote was first suggested by M. Donne, who found that ioduret of starch could be given, in doses of two and a half grains, to a dog with impunity, whereas half a grain of pure strychnia would kill the same dog. He therefore tried iodine as a counter-poison, and with success. He gave the tincture to dogs after a grain of strychnia had been swallowed. In seven cases only one resisted the antidote, and in that the antidote was not given until ten minutes after the poison had been taken.

Tannin is spoken of favorably as an antidote, in the *British and Foreign Medical Review*, 1842; it is stated that five ounces of decoction of galls precipitated the strychnia from two grains of the nitrate so as to render it inert. An insoluble tannate was formed.

The following case presents the largest quantity of strychnia on record from which recovery followed. A drunken fellow in a moment of high intoxication took a drachm dissolved in spirits. All the usual spasmodic effects were induced. The treatment is not stated, further than the giving of an emetic. There can be no doubt that the intoxication prevented the fatal operation of the poison.—*London Medical Gazette.*

A young man, aged seventeen, in a fit of low spirits, took two scruples, and was speedily seized with great anxiety and agitation, which are often the first products of its operation. He sent for medical aid, and in a quarter of an hour an emetic was administered, but with very trifling effect. The patient now lay stiff on his back, with his head bent backward, his lower extremities rigid, visage pale and haggard, pulse quick and contracted, and obvious signs of trismus. The latter increased rapidly, and the spasms extended to the muscles of the chest. Strong emetic doses gave rise to slight vomitive efforts; tincture of iodine and morphine were administered, but without benefit. The whole body was next seized with tetanic spasms, and suffocation was extreme. This state, with some variations, continued until death, which occurred an hour and a half after the poison was swallowed. The *post-mortem* examination was not at all satisfactory as to the *modus operandi* of the poison.

The *Edinburgh and London Surgical Journal* for December, 1845, furnishes the following interesting but fatal case of poisoning by *less* than *one* grain of strychnia:—

"Agnes French, aged thirteen, September 27, 1845, has been in this house since the 16th instant, for eczema capitis, which is now nearly well.

"About half past five, P.M., swallowed three strychnia pills, which belonged to a paralytic patient in the same ward. Each pill contained a quarter-grain of strychnia. She has been occa-

sionally in the habit of taking medicines belonging to other patients. Twenty minutes after taking the pills she said she felt a strange sensation in her head, and became almost immediately convulsed. The clerk was called, and visited her without loss of time. The following was her state:—The arms were found extended and rigid, as also were all the muscles of her body, which was bent backward at a considerable curve. Pupils were natural. Pulse was obscured from the rigidity of the muscles, but impulse of the heart was strong. Face was much flushed and lips livid. Breathing rapid and difficult, but larynx quite free; spasms of diaphragm very marked. Every few minutes she had a fit of general convulsions. The mind was quite entire, and great fear and anxiety for relief were expressed.

"The cause at first being unknown, six ounces of blood were abstracted from the temporal artery. Cold lotions were applied to the head, and sinapisms to the extremities. Ten minutes after the symptoms began the owner of the pills told the cause, when a scruple of zinc was immediately given, and large draughts of warm water, which were eagerly swallowed by the patient. No vomiting, however, was induced for about a quarter of an hour, although the fauces were tickled with a feather; and when the emetic operated it acted very sparingly. All this time the opisthotonos and universal muscular twitching had continued most violent; but now, during one of the ineffectual attempts to vomit, the rigidity of the muscles suddenly relaxed, and the spasmodic contractions ceased. The heart's impulse, previously strong, could not now be felt, and respiration was for the time extinct. Her face, which, from the commencement of the attack, had continued deeply flushed, became gradually pale, from above downward; her lips remaining livid. She was laid down, and seemed to recover slightly; her chest heaved slowly, and her heart beat feebly and at long intervals. The flush also somewhat returned to the face; but, with the exception of a few twitches, she had no recurrence of the spasms. The pupils were now dilated, the eyes fixed and turned upward. The stomach-pump was suggested and immediately applied, but without any good effect. In a short time the respiration again ceased, and the heart could no longer be felt. The flush, which had been but slight, again descended and disappeared on the neck. Artificial respiration and galvanism to the phrenic nerve were now tried in vain. The patient was dead. Death took place at three-quarters past six, P.M., little more than an hour after the poison had been swallowed, and in about three-quarters of an hour after it had produced its physiological effect.

"*Autopsy forty-four hours after death.* Face placid; abdomen tympanitic; much lividity of depending parts. Post-mortem

rigidity of body in general moderate, but fingers and thumbs very livid, half-flexed, firm, and somewhat elastic. Integuments of scalp bled freely on being cut. Brain and its membranes quite natural, excepting turgescence of velum interpositum and choroid plexus. Spinal cord healthy; its investing membranes rather vascular. Lungs much congested with venous blood. *Muscles of the heart quite stiff. The right ventricle was flattened into a sharp edge, and was quite empty. The left ventricle was also collapsed and empty. The auricles were in a similar condition.* The stomach contained a half-digested meal. Its mucous lining was pale and natural. Other viscera normal."

The probability that iodine was antidotal to strychnia was shown by the experiments of Dr. Buchanan with the ioduret of starch. By reference to the article *Iodine*, it will be seen that seventy-two grains were administered, without any sort of injury, at a single dose.

Dr. Pidduck gives a very interesting case to show that *camphor* is an effectual antidote for the poison of strychnia. An intemperate man, subject to rheumatic gout, took by mistake some strychnia powders, in preparing which the druggist erred by dividing into six in place of sixteen papers. Two doses induced all the worst symptoms of poisoning by strychnia, for the relief of which a camphor mixture was ordered, consisting of twenty grains in six ounces of almond emulsion, one-fourth to be taken every two hours. The first dose allayed the convulsions so effectually that there was no need of a repetition.—*Braithwaite*, part xxvii. page 326.

Another successful recovery is reported by Dr. Tewkesburry, of Portland, Maine, viz.:—A boy was seized with convulsions after eating a biscuit containing one grain and a half, for the purpose of killing rats. The spasms were so severe that immediate death seemed inevitable, though all the usual remedies were resorted to. Camphor could not be introduced into the stomach on account of the locked jaw. Strong injections, therefore, of camphor were used, and the body immersed in a camphor bath, and in a few hours the boy was comparatively well.

Dr. Shaw, of Texas, states that he has found sweet oil, drank freely, a successful antidote to strychnine in two cases,—the oil poured down without reference to vomiting or sickness.

Those persons who desire to study the most important features of alleged *strychnine-poisoning* should read with care the full account of the trial of Dr. Palmer, who was executed in London in 1855, for the murder of John Parsons Cook. The report is to be found in the *London Lancet* for July, 1856, and presents the fullest scientific testimony ever given on the subject of poisoning by strychnia. No student should neglect to study this report

patiently and thoroughly. Not a little of the testimony was outrageously contradictory, and it is abundantly plain that the culprit knew far more about strychnia than half the witnesses developed on the stand.

The largest quantity of strychnia ever swallowed without a fatal issue is one drachm and a half, or ninety grains. It was put into a half-pint of gin, the whole of which was drank without suspicion that strychnia was in it at all. The dose sat heavily on the man's stomach, made him faint, and finally obliged him to take an emetic, at the expiration of four hours and a half, to get relief. The person who played this game was tried for an attempt to poison, and was sentenced to seven years imprisonment. So says the *Vermont Caledonian*, in July, 1857. We suppose the stimulus of the gin defeated the poisonous intent, and the case was one of *compound poisoning*.

Marshall Hall says the treatment of strychnia poisoning, according to his philosophy, resolves itself into the following points:—1st. To get rid of the poison by evacuating the stomach. If emetics fail in this, then tickle the throat with a feather, the patient lying on his face. 2d. Tracheotomy. 3d. The *ready method*, by means of which respiration is reproduced by alternate pronation and rotation of the body.—*London Lancet*, February, 1857.

We close this article with an account of Marchand's test for strychnia, which is regarded as a very delicate one. It consists in pouring on the strychnia, or mixture containing it, a few drops of strong sulphuric acid mixed with one per cent. of nitric acid, and then adding a small quantity of peroxide of lead, when immediately a fine violet color is produced. The experiment succeeds best when the mixture is made in a watch-glass, care being taken that the quantity of peroxide be extremely small; and then, on mixing with a glass rod, the color makes its appearance in streaks.

SULPHUR.—This very simple and neglected article is very abundant in nature. The late Professor Physick used to say, "If sulphur were a dollar a pound, it would be a very popular medicine with the medical profession." Roll sulphur is obtained chiefly by roasting the sulphuret of copper. It is collected in chambers of brick work, through which the fumes of the heated ore are made to pass, and the condensed substance is purified afterward by fusion. It is cast into moulds, which give us the roll or stick sulphur.

The *sublimed sulphur*, or *flowers of sulphur*, are made by heating roll sulphur to 500° or 600°, when it rises rapidly into vapor and is condensed in proper receptacles. The collected mass should then be well washed several times with pure water, till the

fluid passes tasteless. In the process of sublimation some sulphurous acid is formed, which would induce griping pains if not completely washed out; and whenever the use of the flowers of sulphur occasion this accident in children, it may be inferred that the medicine has not been sufficiently washed.

The only medicinal use of the roll sulphur with which I am acquainted is in the form of *sulphur tea*, as it has been called by old *rheumatic* persons, who profess to have been cured or greatly relieved by it. They macerate a pound of the roll, broken into small pieces, in a gallon of boiling water, and drink the fluid while hot, in wineglass doses, five or six times a day. In winter the vessel containing this tea is allowed to remain on the stove, and it is frequently shaken. No one can fail to perceive that the *diaphoretic* action set up depends in part on the augmented temperature of the dose. I knew an old gentleman of wealth and respectability, who assured me that he was cured by this simple medicine. Another declared his decided conviction that the mere act of carrying roll sulphur in his pocket constantly warded off rheumatic seizures. He supposed there was some sort of electrical agency developed in his case.

The flowers of sulphur have also been employed in *rheumatism*. A teaspoonful in a small cup of milk, taken at bedtime for a week, is affirmed to be one of the best remedies that can be employed for old and obstinate rheumatic pains, cramps of the legs, &c. The quack medicine called the *Chelsea pensioner*, so famous as a rheumatic medicine, was composed largely of the flowers of sulphur. (See *Medico-Chirurgical Review*, 1844.)

Mixed with equal parts of cremor tartar, the flowers of sulphur make a gentle aperient, and children take it readily. The dose is from half a drachm to two drachms, given in molasses, and repeated, if need be, twice a day. Professor Physick advised this medicine for patients laboring under *piles*, as best suited to that condition, acting, as it does, very gently and yet efficiently. If repeated several times, its odor is very perceptible on the person, and silver coins in the pocket are discolored. These effects are the more obvious when there is considerable action on the skin at the same time.

While *Asiatic cholera* was prevailing, in the summer of 1849, a Dr. Bird, residing in the State of Illinois, excited a good deal of discussion by reason of his *sulphur pills*, put forth as a remedy for that disease. He connected this medicine with the notion that *ozone* was a chief cause of the epidemic. The affair proved to be a sort of nine days wonder, and was soon forgotten.

We learn from the *London Lancet* of February, 1850, that sulphur was held to be an important remedy for cholera long before Dr. Bird's announcement was evolved. The editors make

a brief notice of a pamphlet of forty-seven pages, issued in 1848, with the title of *Sulphur as a Remedy for Epidemic Cholera.* They apprise us that this pamphlet is not the first publication of the kind, and name another, by Mr. Blacklock, of the *Madras Medical Establishment*, as having been reviewed in a former number of the *Lancet.* Mr. Grove, the author of the pamphlet first named, speaks of one hundred and one cases treated by the sulphur practice, all having recovered excepting three. His usual prescription was thus:—

℞.—Sulph. precip. pur.
Sodæ carbon. āā ℈i;
Lavend. spt. comp. ʒij;
Aquæ, ℥vss.
Mix, and give one-fourth for a dose.

The first dose, it is said, almost always relieved the patient, and the medicine was repeated every fifteen minutes. It induced a rapid determination to the surface, a genial warmth and moisture following, the odor of the sulphur being strongly exhaled. In some cases this medicine was preceded by a drachm of sulphuric ether and half a drachm of laudanum for a dose, to be repeated in a few minutes if ejected by vomiting.

At the time when Dr. Bird's *ozonoid* sulphur pills were the lion of the day, a *distinguished infinitesimal* of this city is reported to have announced the discovery that a *pinch* of sulphur dropped into the boot or shoe would infallibly prevent an attack of cholera. How big a pinch, we are not informed; but, to be in keeping with the farce of the diminutive system, it should be a sort of infinitesimal pinch, we presume. The preventive as well as the curative indication bore on its frontlet infallible tokens of incompetency. The prescription taken from the *London Lancet* has the semblance, at least, of common sense in its favor.

Dr. Fuller, of St. George's Hospital, London, has resorted to a novel use of sulphur in the treatment of rheumatism, and especially of sciatica. The entire surface is covered with precipitated sulphur, and then covered with a flannel bandage. Over this is put oiled silk or gutta percha, which not only increases the warmth and confines the vapor of the sulphur, but obviates the unpleasant odor of the remedy. The dressings are to be kept on night and day. The sulphur is freely absorbed, as the breath, urine, the discharges from the bowels and the skin, fully prove.

Dr. O'Conner, of the Royal Free Hospital, gives his testimony in favor of the same practice, and cites cases in proof. (See *Medical Times and Gazette*, January, 1857; also *London Lancet*, February 21, 1857.)

Sulphur has for a long time been a popular medicine in the treatment of *itch.* It is given internally to keep the bowels

loose and at the same time to affect the skin favorably, while the ointment of sulphur is applied to the surface. Three ounces of the flowers are well rubbed with half a pound of fresh lard, or melted with it, so as to get a well-formed cerate or ointment, which should be rubbed into the skin at bedtime. It is proper to say that the failures of this treatment are often owing to a filthy condition of the skin; and it is, therefore, very important to wash the whole body with soapsuds before the ointment is applied. The same ablution should be made in the morning, before dressing. Those who are particularly nice prefer the following ointment:—

℞.—Flor. sulph. ℥i;
Ung. sperm. ℥viij;
Ol. lavend.
Ol. lemon, āā ʒi.

Mix these articles very thoroughly, the mixture to be rubbed as before directed.

The following ointment has been long employed in hospitals, to kill vermin:—

℞.—Flor. sulph. ℔ss;
Pulv. helleb. alb. ℥ij;
Nit. pot. ʒi;
Sap. moll. ℔ss;
Adip. suill. ℔iss.

Mix.

During the application of this ointment, the bowels are to be sufficiently acted on by the flowers of sulphur internally administered.

Some half-dozen writers abroad have told us a good deal about the *rapid cure of itch* by baths and sulphur ointment, &c. &c. One of the most sanguine has arrived at a sort of mathematical certainty, by assuring the public that he cures this troublesome thing in *two hours*. Now all this is mere professional gas; for it is absolutely impossible to attain to certainty in a point like this. We heard of a teacher who used to tell his class that a chill (in common ague) lasted sometimes a minute and a quarter by the watch; but nobody felt the wiser for that announcement. So of the cure of itch in two hours.

Keep the bowels freely open, abstain from animal food, keep the whole surface clean by repeated ablution, bathing, soap, chloride of lime, &c. &c., and this disease will be certainly cleared out of the system in a *reasonable* time, and that is all a *reasonable* patient ought to expect.

Sulphur ointment has been resorted to be Dr. Midaveine as a substitute for mercurial ointment, to prevent the *pitting of small-pox*. His mixture is from a drachm and a half to two drachms of the sulphur to an ounce of lard. He employs a weaker oint-

ment for *varioloid* than for *small-pox*. The surface is to be rubbed three times a day, as soon as possible after the eruption appears. The pustules shrivel up and dry very speedily. The patient is soon better, the appetite improves, and he soon gets well.—*Edinburgh Medical and Surgical Journal*, 1841.

The *sulphur vapor bath* has been very much employed, and successfully, too, in the treatment of various *cutaneous diseases* and *rheumatic affections*. It induces most copious perspiration, affecting the exhalants most powerfully. The patient, entirely naked, is placed in a tight box, having his head out and his neck so guarded that the vapors cannot reach his nostrils. The vapors are conveyed from an adjacent vessel, in which the sulphur is heated by means of a tube that perforates the box. The man is in an atmosphere or bath of warm sulphureous vapors. Very soon the perspiration starts, and a flood of sweat rolls out, inducing universal relaxation. From a quarter to half an hour suffices to make the most decrepit man experience great relief. Although he could not enter the box without help, he can now move about without discomfort. Several repetitions of this bath have completely cured rheumatics and persons affected with itch and other skin diseases. In all these cases it is desirable to keep the bowels under the influence of the flowers of sulphur.

In *psoriasis palmaris*, a very troublesome affection of the palm of the hand, in the nature of common tetter, and to which shoemakers, braziers, silversmiths, and others are liable whose work irritates the palm very often, the daily use of sulphur ointment and sulphur fumigation has been found very salutary by Dr. Burgess and others. (See his *Eruptions on the Face*, &c. &c., p. 229.)

Sulphuret of potash. Liver of sulphur—hepar sulphuris.—Made by mixing an ounce of washed sulphur and two ounces of carbonate of potash and placing the mixture in a covered crucible over a fire until union is effected. Owing to decomposition, the product is sulphate of potash, sulphuret of potash, and excess of sulphur. The sulphuret is of a dirty white color, inclining to an olive-green, having a slightly sulphurous smell, a nauseous, alkaline, and bitter taste. Diluted muriatic acid added to it gives a copious evolution of sulphureted hydrogen gas.

Dr. Carusi, an Italian practitioner, has employed the sulphuret in *asthma*. Tartar-emetic ointment to the chest had been unavailing, and the patient was cured by this medicine. Sixteen grains were made into paste with honey, and divided into four portions, one of which was given three times a day. It is stated that after the exhibition of the last dose the disease ceased and the cure was complete. The asthma was probably spasmodic, and yet we can hardly believe that the cure depended simply on

so small a quantity of the sulphuret. We are not told whether the medicine induced nausea or not, though probably it did so.

Sulphuret of potash has long been employed as a lotion for *cutaneous affections*, as *tetter*, *itch*, *tinea capitis*, &c. The prescription generally relied on is as follows:—

℞.—Sulphur. pot. ʒiij;
Sap. dur. ʒij;
Aq. rosar. ℥vii.

Dissolve the solids in the rose-water, and keep the solution in a tight vessel; to be used as a wash at least three times a day.

The sulphureous bath of Baudelocque, so highly praised in the treatment of *chorea*, is made thus:—

℞.—Sulphur. pot. ℥ij;
Aquæ, lbs. 100.

Dissolve the sulphuret, and add to it a solution of white glue in ten pounds of boiling water. The bath is to be used daily, a generous diet being allowed all the while. Several cases are cited in which the treatment was successful in from ten to twenty days. (See *Villard's Repertoire de Clinique.*)

Sulphuret of carbon, though very offensive, has been employed medicinally. It is a transparent, colorless liquid, discovered in 1796. It is, properly speaking, a bi-sulphuret, and is prepared by passing the vapors of sulphur over red-hot charcoal in porcelain tubes. The vapors of both substances unite and are condensed. It is kept in a very few shops, and is not much known. It is a complete and rapid solvent of camphor, but so speedily evaporated as to be of little use in that form.

Wertzer, and other writers in the *French Journal of Pharmacy*, speak of it in the following terms:—They call it a very energetic but diffusible stimulant, causing increased action of the heart and arteries, inducing afflux of blood to the cutaneous surface and genito-urinary apparatus, promoting the catamenial flow, being also a diaphoretic.

On account of its stimulant character, it cannot be employed in acute diseases; but its diaphoretic property has led to its use in *chronic rheumatism*. The dose is from three to eight drops in rice or barley-water, or any syrup or mucilage. Professor Otto, of Copenhagen, gave in *rheumatism* and *gout* four drops every two hours of a mixture composed of one part of sulphuret of carbon and two of alcohol. At the same time he applied, as an embrocation to the painful spots, one part of sulphuret and two of sweet oil, well mixed. From eight to fifteen days sufficed for successful exhibition.

When the sulphuret alone is applied to the surface, uncovered, its rapid evaporation induces a marked sensation of cold.

SUMBUL.—This is certainly not a word that would lead to a belief in its medicinal nature. What the origin of the name and the thing is we know not, for both seem to be as yet undecided. Dr. Todd prescribed it recently in King's College Hospital, in a case of *epilepsy*, and Mr. Savory has employed it as an *antispasmodic*. Dr. Granville has spoken of it as a root much employed, and with great success, in the *Asiatic cholera* in Germany and Russia. The samples first used in London came from Hamburg and a town in Russia, and, on comparing them, it was ascertained that they resembled calumbo, although evidently more spongy, and something like huge bungs. They had a yellowish-gray tinge, with a whitish appearance in the centre, covered with a thin pellicular bark. The root has a very strong odor, something like that of musk. Dr. Todd administered a tincture of the root in ten-drop doses, three times a day, and the lad had no return of fit after its use, although previously the fits occurred once or twice a week. The botanical origin of the root is yet unknown.—*Lond. Lancet*, June, 1850.

SUPPOSITORY.—This is an ancient contrivance to effect an evacuation of the lower bowels without a resort to injections or medicine by the mouth. It is, in fact, a local irritant applied to the mucous membrane of the rectum, and continued long enough to induce a discharge. Experienced matrons employ a piece of old paper, rolled up just thick enough to pass readily into the gut. Soap is more commonly resorted to, alone or combined. A piece of common brown soap, moulded into a circular form, an inch and a half or two inches long, will answer very well. We can readily add to this, if desirable, a little elaterium, or jalap, or ipecacuanha, or rhubarb. The end is usually accomplished by these contrivances much sooner than by internal medication, and they are more easily managed than injections.

SYRUPS.—This term is applied to water or juices highly charged with sugar. They serve not only as vehicles for the administration of medicines, but also for drinks when properly diluted with water. The more perfectly the juice is saturated with sugar, the more easily are syrups preserved; but it is important also to keep the vessel in a cold place during a warm season, to avoid fermentation.

Compound Syrup of Ipecacuanha.

℞.—Pulv. ipecac. ℥i;
Alcohol dilut. Oi.
Digest for two weeks, filter, and evaporate one-third. Then add
Syr. simp. Oij.
Mix, and simmer for half an hour. Dose, one or two teaspoonfuls.

Syrup of Senna and Manna.

℞.—Fol. sennæ, ℥iv;
Sem. fœnic. cont. ℥iss;
" anis cont. ℥iij;
Rad. zingib. cont. ℥iss;
Aquæ bullient. Oiij.
Digest for four hours, and strain. Then add

Mannæ opt. ℥vi;
Sacch. alb. ℥xx.

Mix, and make into syrup by gentle simmering over a slow fire.

Compound Expectorant Syrup.

℞.—Cochlear. armorac. cont.
Allii sativ.
Rad. scill. cont. āā ℥i;
Aquæ bullient. Oij.

Digest in a close vessel for half an hour, and strain. To the liquor add enough sugar to make a syrup by gentle simmering.

Orange Syrup.

℞.—Cort. aurant. rec. ℥ij;
Aq. bullient. Oi;
Sacch. alb. ℔iiss.

Digest the first two for twelve hours in a covered vessel. Pour off the liquor and add the sugar. Then simmer on a slow fire to make a syrup.

Mulberry Syrup.

℞.—Succ. mori, Oi;
Sacch. alb. ℔iiss.

Mix, and make into a syrup by moderate heat.

Ginger Syrup.

℞.—Rad. zinigib. cont. ℥iv;
Aquæ bullient. Oij.

Boil for at least two hours, and add water to compensate for the loss by evaporation. Filter, and add

Sacchar. alb. q. s. to make a rich syrup. This will require an additional boiling for half an hour.

Blackberry Syrup.

℞.—Succ. rub. trivial. Oi;
Sacch. alb. ℔iiss.

Mix, and make into syrup with moderate heat.

Pure Lemon Syrup.

This is readily made of any quantity of pure strained lemon-juice, to which enough sugar is added to make a rich syrup by boiling for the space of half an hour.

Coxe's Hive Syrup.

Take of bruised seneka snakeroot and squills, each half a pound; of water eight pounds, and boil over a slow fire till half the water is consumed. Strain, and add four pounds of pure honey. Boil down to six pounds, and add sixteen grains of tartar emetic for every pound of the syrup, or one grain to the ounce. The dose is from ten drops to a teaspoonful for children from six months to two years old, to be repeated as occasion may demand.

Syrup of Wild Cherry Bark.

Make as strong a decoction as possible of the fresh inner bark of the wild cherry when the berries are nearly ripe. Make it into a syrup with white sugar over a slow fire.

SYSTEM, STATE OF THE.—We introduce this phrase here because of its intimate relation to all remedial and preventive treatment. No medicine has ever yet been administered under a better philosophy than that of quackery, whose action has not been governed, in some sense, by a proper appreciation of the state of the system at the time of its exhibition. To give a dose, to advise a blister or the lancet, simply because the *name* by which the disease has been christened calls for the one or the other, is idolatry of nosology as stupid as the jugglery of pow-wowing. It is precisely on a level with the *newspaper-certificate-of-cure-philosophy* that has so long disgraced our public press. And yet it is the basis of a very large portion of the practice of many men who are regular graduates of medical schools, and who

talk of *their* experience with as much confidence as even Sydenham could evince were he now living.

Nor is this all. There are some persons, called *doctors*, and who really seem to be conscious of powers to teach, who deny the force or propriety of the phrase *state of the system*. Possibly they do not comprehend its practical bearings, and in that case, if ignorance be no crime, they are not censurable.

For the benefit of some who are honestly solicitous on this important point we shall give an illustration or two. A patient is ill and has been so for a week. You are requested to see him as consulting physician. The pulse is very small but tense, the respiration very much embarrassed; there is severe pain in the side, and there are also symptoms of biliary derangement. The attending physician applied a few leeches four or five days ago, somewhere on the chest, with a dose of calomel and Dover's powder, and the latter has been repeated several times. The consulting physician advises immediate bleeding, directing that the finger be kept on the wrist to ascertain the effect on the pulse, the orifice to be closed if the pulse sink, and if it rise the blood to be permitted to flow to eight or ten ounces. The attending physician is astounded. What! bleed with such a pulse? He has never learned the difference between an *oppressed* and a *depressed* pulse, and, supposing his patient's pulse to be of the latter description, he stands confounded. He insists that the consulting physician shall open the vein, and it is done. The pulse rises as the blood flows, and it is full and round when eight ounces have been abstracted. The patient is obviously relieved, and will probably bear to lose eight ounces more in less than that number of hours afterward. He finally recovers. It is not probable he would have done so if the Dover's powder had been continued, or any other stimulant treatment based on a *depressed* pulse, which had no existence.

A physician who denies, or knows nothing about a blistering point, because he is not competent to ascertain the state of the system, orders a blister to be applied to a patient, and then denounces the apothecary because his flies and fly-ointment were good for nothing. The plaster was applied to a system highly excited, and failed to act, or if it acted at all, served to augment the excitement, and thus did harm. This is not fancy. I saw precisely the thing here described, and the actor was a man who afterward occupied a chair in one of the oldest schools in America; and the flies denounced as worthless were of the best quality, as I knew well by frequent orders for blisters sent to the same shop and made from the same parcel. If his blisters had come in contact with a system properly reduced, vesication would

have ensued just as certainly as it had followed the action of the same flies a hundred times. Where, then, was the fault?

The same principle applies to the exhibition of emetics for the relief of croup with high febrile excitement. "*Emetics are good for croup, and croup is croup.*" This is precisely the language of the practice of not a few. They give dose after dose of tartar emetic or ipecacuanha, or both, and yet the patient is not vomited. At length the warm-bath or the lancet is resorted to, and presently comes on vomiting that is almost indomitable, and sometimes as terrible as croup itself. If the lancet, or even the warm-bath, had been employed at first, a single dose of the emetic would probably have been efficient.

The doctrine is specially applicable to the varying character of epidemics. A professor once published an elaborate essay on scarlatina, and denounced every man as a poor practitioner who could not cure every case with a few doses of ipecacuanha. The same man a few years after lost three of his own children by the same disease, in three weeks, and then began to find out that even in scarlatina there might be very different states of the system. Sydenham has definitely settled the absolute need of studying the variant features of the same disease in different seasons, and of adapting remedies to the opposite conditions of the system developed by the unseen agency. Let every physician who would prescribe understandingly make himself a perpetual student of the state of the system.

Tanacetum. *Tansy.*—This bitter vegetable, found in all our gardens, calls for no description. Everybody knows it by its intolerable bitterness and general appearance. I name it because it is a good domestic bitter, and would be appreciated if imported from Asia at a cost of two dollars per pound.

Many of the common people esteem it as an excellent tonic, especially for feeble women who are liable to abort. Perfect rest in a horizontal posture for two or three months, and daily use of tansy tea, with occasional doses of elixer of vitriol, have saved many females from the dreaded evil, and they have been enabled to reach the full term of utero-gestation. In all cases where a vegetable bitter tonic is proper, this will answer a good purpose. The cold or hot infusion, or the extract, will answer very well; and there is no fear of using too much.

Besides the *tonic* powers, some persons regard it as a valuable *anthelmintic*. How far these powers are distinct may be difficult to decide, but I incline to the belief that in many cases the vermifuge result depends on the tonic action. The oil of tansy is called an *emmenagogue*, and has been long esteemed by females of a certain description as a powerful article to effect abortion. An interesting case is given by Dr. Charles T. Hil-

dreth, in the *Boston Medical and Surgical Journal*, of a female killed by half an ounce of this oil. She was pregnant, and took the oil to promote the evacuation of the uterus; but the spasms induced were so severe that she died in about two hours. On *dissection*, a strong odor of tansy was perceptible, the blood was dark and thick, but the stomach and intestines were healthy.

More recently, a case was reported in the *New York Courier*, in which a half-ounce of the oil was taken by a colored female servant girl. Immediately the most dreadful paroxysms came on, and although suitable remedies were employed, she died in less than an hour.

Other cases have been reported in different places, and the oil has sometimes been swallowed in mistake, with fatal results.

In all cases of poisoning by this oil, the stomach-pump should be employed instantly, or some active emetic, to dislodge as much of the poison as possible, and counter-irritants should be applied to the epigastrium. The same applications may be made to the wrists and ankles, giving the patient, at the same time, gum-water, flaxseed tea, or slippery elm infusion; and, if there be much pain, a half-grain of sulphate of morphia may be laid on a denuded spot on the epigastric region.

A poultice of tansy has long been held to have considerable discutient powers. It can be made by stewing tansy leaves in vinegar, or by adding the leaves to the materials for an ordinary poultice.

TANNIN. (See *Acid, Tannic.*)

TAPIOCA.—This is the fecula or starch of the root of *Jatropha manihot.* There are two varieties of the plant, one of which, called *sweet cassava*, yields the tapioca, which is sometimes called *cassava* bread. The tapioca can be made of the fresh roots, the juice of which is readily squeezed out, and baked into cakes on an iron plate. It is also made by beating the roots into a pulp, washing this well with cold water, and allowing the fecula to subside from the milky fluid which flows from it. Being then dried on heated plates, it takes on a granular form.

The irregular grains of tapioca, of the size of large shot, are whitish, hard, and void of smell or taste, having the general characteristics of pure starch. It is dietetic and demulcent, and prepared for use very much after the manner of sago and arrow-root. It makes a good diet for convalescents, and for infants about to be weaned.

The fresh juice of the plant, unchanged by the processes detailed, is acrid and poisonous.

TARAXACUM. *Leontodon Taraxacum. Dandelion* or *Pissabed.*—This plant grows in almost every grass lot, more or less, and is therefore well known. The leaves are gathered early in

the spring, and if blanched, taste a good deal like lettuce or endive, and are highly prized by many persons. The roasted roots are not unlike chicory. The expressed juice of the leaves is slightly bitter, aperient, and diuretic. It has been long employed in *hepatic obstructions*, *jaundice*, *dropsy*, and some *cutaneous affections*.

The extract is made, as other extracts, from a very concentrated decoction. The dose is from ten grains to a drachm. Sydenham prized the root and leaves very highly for their diuretic properties, on which account he employed them in *dropsy*. The prevailing notion then existed that the blood was purified by the continued use of the vegetable, and such is the common impression now among the people at large, who use it freely in the spring as an esculent vegetable. The infusion may be made as strong as possible and drank *ad libitum*.

Tea Plant. *Thea Bohea. Thea Viridis.*—What are called black and green teas are procured from different species of the tea plant. It is not always true that the green color of tea has anything to do with the copper plates on which the drying process is carried on. For many years this process was conducted on plates of iron, and without any sort of connection with copper, and yet the tea was green as before. It is probable that the diversity in taste and other properties depends not on any peculiarity of preparation, but on the fact of a different origin. The leaves are gathered at three different periods of the year, viz., in the middle of February, the beginning of March, and early in April. They are gently dried on iron plates until quite shriveled, and when cool are packed in boxes of tin to exclude the air. In this way they are ready for sale.

Touching the constant use of tea as an article of food, there has been much diversity of sentiment. I have no doubt that those who grow up from infancy strangers to both coffee and tea, and fed on milk and water in their stead, will have more vigorous constitutions as a consequence; and hence it would be well so to train all the rising race. Yet it cannot be doubted that thousands who use these luxuries in moderation enjoy good health, and that some appear to get along pretty well who take them to excess.

Black teas are far less stimulant than green teas, and therefore less injurious by any indirect sedative influence. But they are often boiled so long as to develop decided astringent qualities, and thus may sometimes induce undesirable costiveness. This error in their preparation should always be avoided.

If strong green teas are taken near bedtime, they induce wakefulness and a train of unpleasant nervous feelings, which do not follow the use of black tea.

Some diversity of sentiment obtains in respect of the medicinal powers of tea. It is called *diuretic* and *sudorific*, as well as *stimulant*. These effects may depend in part on the heat of the fluid when drank, and partly on the quantity consumed. When the mind is depressed, tea often acts as a very pleasant and suitable stimulus; and hence the improved feeling spoken of as consequent upon the use of the beverage. There can be no doubt, too, that tea is a provocative of good feeling and conversational powers; and hence we have heard of persons who almost, perhaps quite, unconsiously emptied fifteen or twenty cups before rising from the table. The conversational and the tea-paroxysm obliterated all ideas of the lapse of time as well as of the quantity consumed.

Contrary to what we might expect, draughts of strong tea have induced *suppression of urine*, as we learn from No. 86 of the *London Medical Repository*. On abandoning the use of the article, this result was not realized at all.

The infusion of green tea has long been employed as an antidote for the poison of tartar emetic, the effect being dependent on the tannin of the tea. Dr. Edward Percival, of England, announced some time ago that a strong infusion was an excellent article to overcome *coma* and *stupor*. As coffee has been employed for the same end, we infer that tannin is the effective agent in both cases.

The infusion of green tea is an excellent wash for the relief of *subacute ophthalmia*. It is exceedingly soothing after general or local bleeding; and the application of the leaves, as a poultice, is also quite soothing. Dr. James Stuart, formerly of Philadelphia, was partial to the infusion as a gargle, to arrest *profuse salivation* and to subdue the irritation of the mouth and gums.

Dr. Sutcliffe, in his *Medical and Surgical Cases*, published many years ago, speaks very favorably of the strong infusion of green tea as a wash for the cure of *leucorrhœa*. It was applied with a sponge, and this afterward passed up the vagina.

Tela Aranearum. *Spider's Web.*—This and even the spider itself have been known, as remedies for *ague and fever*, for centuries. The web has been highly esteemed for its peculiar *anodyne* qualities, in virtue of which it tranquilizes like opium. Its application to fresh-cut wounds, for the purpose of arresting the bleeding, is an ancient practice, and is supposed to depend in part on its anodyne tendency. The dose, when given internally, is five or six grains, repeated every third or fourth hour.

The small silver-headed spider has been given in wheat dough, in form of pill, for *ague*, on ship-board, by an old sea captain, for many years. He affirms that it always arrested the disease promptly. I received this intelligence from a very respectable

merchant, who was a passenger in the vessel of the old captain, and who was cured by a single spider, as he assured me.

TEREBINTHINA. *Turpentine.*—The *pinus sylvestris*, or *Scotch fir tree*, yields turpentine by natural exudation, or from incisions made into the trees through the bark. Most of the trees of the *pine* tribe will do the same. The product is called *common turpentine*, which consists of resin and a volatile oil, known in its separated or distilled state as *oil of turpentine*. The *Chian*, or cypress turpentine, is obtained from the *pistacia terebinthus*. The *Strasburg* turpentine comes from the *pinus picea*. The Venice turpentine is furnished by the *pinus larix*. All these are stimulating *diuretics* and *detergents*. They all stimulate the primæ viæ, and prove laxative, but are seldom given internally.

The terms spirit and oil of turpentine are employed synonymously. To get the pure oil, a pint of the common article and four pints of water are mixed, and distillation is cautiously carried on. The product is the pure oil. This is held to be stimulant, diuretic, and sudorific, in doses of from ten to twenty drops. The following formula has been devised in order to remove the unpleasant taste of turpentine:—

℞.—Pulv. g. Arab.
Aquæ, āā ʒi;
Mell.
Ol. tereb. āā ʒv;
Carb. magnes. q. s. to make a soft electuary.

The dose is from thirty-five to one hundred and eighty grains in a day, in unleavened bread. (See *Bell's Bulletin of Medical Science*, 1843.)

Pretty large doses of turpentine have appeared to afford relief in *chronic rheumatism*. It may be added to sugar or honey, or made into an emulsion. A drachm, with two drachms of honey or an ounce of cinnamon-water, may be taken at one dose. From a teaspoon to a tablespoonful will act on the bowels, sometimes without irritating the urinary organs, although it will impart a violet odor to the urine. These doses are useful not only in chronic rheumatism, but in *obstinate costiveness;* and if their irritant action is dreaded, an ounce of castor oil can be added. In cases of obstinate costiveness, the mode by injection is also adopted; an ounce of the turpentine and the yolks of two eggs being added to a pint of thin starch, and the whole given in two injections, with half an hour between them.

I regard turpentine as among our best *anthelmintics*, and specially suited to young children, because of the smallness of the dose. To a child five years old, we may give five drops on sugar, three times a day, increasing the dose by one drop every day. Let it be continued four or five days, and intermit, and

give a full dose of castor oil After this has fully acted, renew the turpentine, and go on with it as before. The small thread-worm of children is dislodged by this practice effectually.

In vols. x. and xiv. of the *Edinburgh Medical and Surgical Journal* are some interesting cases of *tapeworm* cured by this remedy. In one of these, two ounces were taken at a dose, and in less than half an hour the man voided three yards of tape-worm. Violent pains of the stomach and bowels preceded the evacuation. An intemperate man took three ounces at one dose, and in a few hours the worm passed, dead.

Dr. Bellingham, physician to St. Vincent's Hospital, Dublin, gives his mode of using turpentine for the cure of tapeworm, in the *Dublin Medical Press* of September, 1842. He does not think it necessary to give the large doses which some physicians administer. He thinks the result will follow as certainly if the system be kept for a longer time under the remedial influence by a repetition of moderate doses, and only now and then giving a larger dose. When the turpentine does not purge, he adds castor oil to gain that end.

Having employed the turpentine myself for the cure of tape-worm, I feel satisfied that the ounce or half-ounce doses are best, and that they will sometimes act quite as well if as much castor oil be added. The medicine is too unpleasant to admit of long continuance, and this is avoided by employing large doses. I never witnessed any inconvenience from their use.

Large as the doses named above may seem, we have an account of four ounces swallowed at once by a patient ill of *plague*. The turpentine held in solution a drachm of camphor, and the whole was taken in mistake. The mixture had been prepared for external use, and, fortunately, it cured the man. It is more than probable that this accident led to the use of the medicine in *yellow fever*, for the arrest of vomiting and irritability of stomach.

Dr. Copeland found turpentine very useful in *malignant typhus*, in half-ounce doses given in barley-water. The remedy gave plentiful evacuations by stool and urine, and before morning the patient was decidedly better. In some cases inflammation of the bladder and urethra followed, and for several days bloody urine was discharged. I have no doubt that simple typhus, with great prostration and torpor of the alimentary canal, would be relieved by ounce doses, so as to effect the urinary organs as well as the bowels and general system. And if the local impression on the bladder did not follow these doses, I would give drachm doses more frequently. It is important to keep up irritation of the bladder for several hours, and so to concentrate morbid action there. It is on this principle we cure tetanus with cantharides.

Dr. Gilbert King speaks favorably of the use of spirits of turpentine in low forms of *bilious remittent fever*, and also in *typhus fever*, such as he saw in Bermuda.

In *diarrhœa*, or *dysentery* occurring in the progress of fever, and attended with great exhaustion, some physicians give the spirit of turpentine in doses of six to ten drops every two hours, on sugar, or with mucilage of gum Arabic. In lieu of the spirit of turpentine, the solid white turpentine has answered as well. (See *Braithwaite*, part xx.)

In obstinate costiveness, apoplexy, and acute hydrocephalus, injections of turpentine have done good by evacuating the bowels and inviting morbid action to the rectum. From half an ounce to two ounces may be added to a common purging clyster, according to the age of the patient.

Turpentine was among the hundred and one popular remedies for *ague and fever*, thirty years ago, in the vicinity of Philadelphia. I knew a young man who took a gill just as the chill was coming on, and he was nearly destroyed by it. For several hours he was manifestly deranged, but his ague was not arrested.

A much more plausible, and certainly a safer use of turpentine, is in the form of a liniment to the whole spine. Elsewhere we have noticed the good effects of mustard to the spine to prevent ague attacks, and we presume the turpentine acts on the same principle. M. Aran states, in the *Bulletin de Thérap.*, that he has deferred ague fits frequently by a liniment composed of oil of turpentine three and a half ounces, mixed with one drachm of chloroform. Prior to M. Aran's treatment, M. Bellencontre employed turpentine in the same way, mixed with laudanum. Applied hot and with some friction, the effect would probably be more speedily and signally displayed.

I know a family in which *croup* has been exceedingly troublesome. Every child had several attacks, and the parent assured me that he had learned to arrest the disease most happily by administering from twenty to forty drops on sugar. It is scarcely needful to say that the croup must have been the *spasmodic* or *non-membranous* variety. On the same principle, turpentine is frequently salutary in purely *spasmodic asthma*.

Turpentine has been highly extolled for its remedial powers in *puerperal fever*. Dr. Brennan, of Dublin, was the first physician to employ the medicine in this disease. Dr. Copeland has also given it a trial in Queen's Hospital, in doses of half an ounce and a whole ounce, which acted on the bowels and seemed to exert a good counter-irritant influence.

Injections of turpentine have been successfully administered in *amenorrhœa*, by Dr. Elliotson. He gave it to a girl aged eighteen, who had no menstrual discharge for four months. After

a moderate bleeding, he gave half an ounce of turpentine in a pint of barley-water every day, as an injection. In a few days the catamenia returned, and she was discharged well. Turpentine stimulates the rectum powerfully, and the excitement is thence carried to the uterus.

A remarkable case of *diabetes* associated with phthisis pulmonalis, and obviously relieved by turpentine, is reported in the seventeenth part of *Braithwaite's Retrospect*. The patient had diabetes for ten months, and the minimum quantity of urine discharged was nearly two gallons per day. An alarming hæmoptysis supervened, for which turpentine was prescribed. The first dose obviously lessened the urinary discharge, and after a few doses were taken the urine passed in the natural quantity. These changes were supposed to be mere casualties; but on omitting the turpentine, the quantity of urine greatly increased, as also the extensive thirst.

Turpentine is held to possess a decided *anti-hemorrhagic* property, and even to be able to correct the hemorrhagic diathesis. It appears to be well suited to the bleedings of old persons, which of course are to be regarded as passive hemorrhages. Eight-drop doses have speedily arrested hematuria of long standing; even a single dose sometimes answered this end. (See *New York Journal of Medicine and Surgery*, 1848.)

Mr. Adair, surgeon at Gibraltar, treated almost all kinds of internal hemorrhages with this medicine, with doses of from five to fifteen drops given every six hours.

The *Edinburgh Monthly Journal of Medical Science* for December, 1845, gives the history of two very interesting cases of *purpura hemorrhagica* treated by large doses of turpentine. Dr. Neligan states that "It acts as a powerful cathartic, and possesses the property of checking hemorrhage depending on an atonic state of the smaller blood-vessels, owing probably to its powers as a diffusible stimulant. In consequence of those views, I employed this remedy in the four cases that afterward came under my care while in charge of the district, and they all recovered. I prescribed the oil both in the form of draught and of enema; the usual dose for adults being from one ounce to one ounce and a half, and for children from two drachms to half an ounce, generally in combination with castor oil, to render its cathartic action more certain.

"Since that time I have employed oil of turpentine in every case of purpura which has been under my care, and its use has been invariably attended with beneficial results."

In addition to the efficacy of *turpentine* in *purpura hæmorrhagic*, and in *yellow fever*, so often epidemic at the Naval Hospital of Bermuda, Dr. Laird declares that he has had great

success with it in *jaundice* dependent on *excessive secretion of bile*. The usual dose was a drachm every two or three hours. Sometimes it was given with nitrous spirit of ether, to promote perspiration and avoid strangury. Several cases are detailed, but we have stated the substance of the treatment. For further particulars, see *Braithwaite*, part xxx. p. 68.

The *expectorant* property of turpentine has been inferred from the effects of twenty-drop doses, given on sugar three times a day, in *phthisis pulmonalis*. It can exert no real agency on this disease, and can at best only relieve a symptom. The effect is very much like that of naphtha, so recently lauded as a panacea for consumption.

Dr. Moreau, in the *American Medical Monthly*, January, 1855, speaks highly of a bath of turpentine vapor, in *catarrhal affections, rheumatism, and severe neuralgias*. The patient is shut in a room into which the vapor is introduced from without, varying in temperature from 45° to 102°. It produces copious perspiration, which greatly diminishes the temperature of the body.

Turpentine is often employed externally, and chiefly for its *rubefacient* action. Applied very hot to the throat by smart friction, and a flannel well soaked retained on the surface by means of a bandage, turpentine promptly relieves the fauces and soft parts of the throat. Hence it is a useful remedy in many cases of *cynanche tonsillaris*.

It is also resorted to by some persons as a remedy for *burns* and *scalds*, when it acts by counter-irritation. Rubbed well with basilicon ointment it constitutes Kentish's salve or ointment for burns, noticed in another place.

It is stated in the *Memoirs of the London Medical Society*, vol. v., that the vapors of turpentine cured a very obstinate *ophthalmia* of fifteen months' standing. It cannot be that the inflammation was of the acute form, as that would most likely be aggravated by the remedy.

A mixture of camphor four parts, and spirits of turpentine thirty parts, has been much extolled by M. Goffin as a remedy for *chilblains*, when the parts are swollen, shining, and covered with vesicles. It should be applied by gentle friction night and morning, the parts having first been well washed with soapsuds. (See *Braithwaite*, part xx.)

The following turpentine compound has been usefully applied to *carbuncular affections, sloughy* and *atonic ulcers*, &c. Three hundred and forty-two cases of *malignant pustule* have been treated with it since 1837, by Dr. Thielman, of Berlin. The compound is made thus:—Mix ʒi oil of turpentine with the yolk of an egg, and add ʒi spirit of camphor and ℔i chamomile tea. Apply the mixture on soft lint covered with oiled silk. At first

the application burns, but the sensation soon passes away. If the burning be severe, add more chamomile tea to dilute the mixture.

The late Dr. Joseph Hartshorne, of Philadelphia, was partial to a turpentine solution of cantharides, as an application in the *erysipelas* of persons of a relaxed habit, with a tendency to the typhoid state. One ounce of powdered flies was boiled in four ounces of spirits of turpentine in a glass vessel in a sand-bath. The product, diluted with olive oil, was applied to the affected parts by means of linen cloths well soaked in it, the application being renewed four or five times in twenty-four hours.

The following case of *poisoning* by turpentine is sufficiently interesting to find a place here:—A child, fourteen months old, swallowed four ounces by accident. In two hours after, the patient was comatose, pulse 130, eyes injected, pupils dilated, the respiration hurried, the bowels painful, and there was great pain in urination. Ipecacuanha having been administered soon excited vomiting, and this was prolonged by the use of warm water. A teaspoonful of spiritus mindereri was given every hour, cold applications made to the head, and flannels wrung out of hot water laid on the epigastrium. In a few hours there was manifest improvement, and the child passed some worms. A dose or two of castor oil completed the cure.

Dr. Maund has reported a case of fatal poisoning by turpentine, in the *Glasgow Medical Journal* of April, 1857, as we learn from the *North American Medico-Chirurgical Review* (Philadelphia) for September, 1857. He is right in his inference, that death is very rare from this cause. The case reported by him proves that such a consequence may ensue. The victim was an intemperate female, who was seen to swallow the contents of a soda-water bottle, supposed by the lookers-on to be whisky or gin, but which proved, on subsequent inspection, to have been turpentine. At the end of four hours after, she was found dead.

The probability is that not less than six or eight ounces of turpentine were swallowed by this individual, and, for aught we know to the contrary, the article may have been drugged, so as to be more poisonous. The contents of the stomach were examined for strychnine, but none could be detected.

THERAPEUTICS.—This term is generally held to be synonymous with the phrase *methodus medendi*. It comes from the Greek, and imports simply to cure. It is, properly speaking, that department of pathology which considers the application of all the means and remedies employed to prevent, palliate, or cure. The cure of a disease may be said to result from the combined agency of nature and the remedies employed for the most part. We are aware that the powers of nature alone often bring about very

manifest curative results; but, generally speaking, we look to the additional help of art as necessary. This help may be arranged under three heads, viz.:—The right direction of diet and regimen, which may be called the *hygienic* treatment; that which refers to the administration of medicines, externally and internally, which is properly styled the *medical* treatment; and that which demands the use of manual and instrumental operations, which is the *surgical* treatment.

It will be discovered by the reader that this extensive view of therapeutics has been constantly before the author's mind. Indeed, he regards this as the most important feature in the volume.

THERMIC TREATMENT.—This is the name given by Dr. Day to the practice noticed in another place under the article *Firing*. It is spoken of also as the *heated iron*. In the *London Medical Times* for August 11, 1849, much evidence is presented of a most satisfactory nature touching the efficacy of this remedy. For an abstract of the same, see *Braithwaite*, part xx. p. 54.

TINCTURES.—A solution of the active parts of any medicine in an alcoholic menstruum or in acetic acid, may be called a tincture. We call the most fashionable fluid preparation of colchicum an acetic tincture. The strongest alcohol ordinarily found in the shops is required for the solution of resinous matters that contain no gum, while diluted alcohol or proof spirit will suffice for other articles of which tinctures are commonly made. Occasionally some of the others are employed to hold substances in solution, and the products are called tinctures, or ethereal solutions.

The substance to be made into a tincture is ordinarily bruised or reduced to a coarse powder and submitted to the operation of the solvent for one or two weeks, with or without heat, afterward strained or filtered through bibulous paper. Not a few of the tinctures are directed to be made by displacement, which, however, in no sense affects the quality.

As tinctures made of alcohol or ether are easily evaporated, and so wasted, it is necessary to keep them in well-stoppered bottles, each being accurately and plainly labeled according to its proper title.

I have taken the trouble to count the number of tinctures given in two works of considerable notoriety, and find the one to contain the titles of one hundred, the other of one hundred and forty, with the modes of preparation. And of all this array, I have never, in the course of my professional life, employed twenty; nor do I believe there lives the man in this country who thinks of resorting to forty of them. When I say that I have never employed twenty, it is not to be understood that my habit

was to use anything like that number. When most actively engaged in practice, the number rarely amounted to ten, and the half of these very seldom in the course of a year.

While in an emergency any form of medicinal administration may be proper, or at least may be tolerated, it is not so in ordinary cases, where we are at liberty to make the wisest selection in view of all the circumstances. If a tincture be of such potency that the dose will amount only to a few drops, or if it be a little larger, but exceedingly offensive, so that no man will be likely to fall in love with it for the sake of the alcohol in it, there may be some show of propriety in its administration in preference to the form of pill, powder, or infusion. But if the dose be so large as to gratify the palate and the stomach, in virtue of the alcohol it contains, it should never be allowed a place in our list of remedies. My first teacher of Materia Medica, who fell a martyr to over-stimulation, was wont to declare, very emphatically, that more than half the drunkards of America were made such by the doctors. He uttered precisely what every observant physician knew. The thousands of hogsheads of brandy and wine employed as the vehicle for the administration of Peruvian bark, manufactured inebriates by wholesale; and in view of the abolition of this pernicious practice by the introduction of the sulphate of quinine, we may very justly affirm that its discovery was the most valuable ever made in Materia Medica.

We hold the exhibition of tinctures, when infusions and powders and pills will answer equally well as medicinal agents, to be a palpable dereliction of duty, excepting the restrictions and conditions stated above. We are bound, as guardians of the public health and happiness, to discountenance all prescriptions that very obviously tend to promote intemperance. We are not compelled by any lack of means to resort to even doubtful expedients, unless in times of great emergency.

Nor is this all. Some of the tinctures, when given in large doses, as a tablespoonful and oft repeated, are palpably incompatible, and have done positive mischief by their stimulating quality, when the case in hand required depleting remedies. The tinctures of senna, jalap, rhubarb, and the like, so much in favor with some physicians, are directly in point.

Tobacco. (See *Nicotiana.*)

Tomato. *Solanum Lycopersicum. Love Apple.*—This is a variety of the same *genus* that furnishes our white potato. The almost universal agreement touching this article as a part of diet is in its favor. Very few persons refuse it; and as there are many modes of preparing it, almost any taste can be accommodated. It is probably one of the most salubrious vegetables of which we partake.

A vigorous effort was made in Ohio, some fifteen years ago, to induce the belief that tomato could be substituted for calomel as a remedial agent. The vegetable was purchased by cartloads, and, as a consequence, its price was enhanced. A considerable amount of capital was expended in giving notoriety to the new operation, and thousands of boxes of pills were manufactured and vended in the West. But when a careful analysis was made, it was ascertained that the extract of tomato, so highly praised for its alterative qualities, was a fabrication of pill mass from a number of ingredients, while the real tomato played either no part at all or one of the sheerest insignificance. As a thing of course, the cheat being exposed, the discovery went to the tomb of all the Capulets.

TONICS.—This comes from a Greek word, meaning to *strengthen*. It is applied to all such means as increase the tone of the muscular fibre and impart vigor to the whole system, or to any part of it.

Tonics are not only found in the mineral and vegetable kingdoms, but equally so in those mental emotions which excite the body, as confidence, hope, and any pleasurable amusement. While their use is decidedly proper and necessary to elevate the system from debility to a sound, healthful state, they are just as improper when the system is excited either transiently or more permanently above the natural standard.

TORMENTILLA. *Potentilla Tormentilla. Root of common Tormentil.*—This is a very ancient remedy, and had considerable reputation with the Greeks. The root is quite knotty, tuberous, abounding in radicles, brown on the outside and red within, having very little smell, but a strong, astringent taste. It contains tannin enough to give it marked astringency, also some volatile oil, coloring matter, and gum. It has been resorted to in the process of tanning. From half a drachm to a whole drachm of the powdered root has been given, for an adult dose, in *diarrhœa* and *chronic dysentery*. In Guy's Hospital the decoction of the root has lately been used successfully in *hemorrhage* from the bowels. An ounce or two to a quart of boiling water will furnish a decoction of which one or two ounces may be given every three hours.

TOUS LES MOIS.—This is the title of a very fine variety of fecula, or starch, obtained from the *canna coccinea*, and sometimes called *canna starch*. It is not the same article precisely as arrow-root, although apothecaries have sold the latter for the former. It does not require the tenth part of preparation, as an article of diet, that is bestowed on arrow-root; and, as I know by experience, it is decidedly more pleasant. It is manufactured

in large quantities in the island of St. Kitts, and can be obtained in the best drug stores.

TREATMENT.—The use of all our remedies and advice refers to treatment; and, in truth, they would seem to be synonymous expressions. We speak sometimes of *curative* and *remedial* treatment; but these are evidently the same in kind, and embrace all measures that tend to restore patients to health. They differ, of course, from those appliances called *palliative* and *preventive*, and which have been noticed under their appropriate captions, though briefly.

The terms *empirical* and *rational* are not so well appreciated by the profession as are the foregoing, and therefore we notice them a little particularly. When do we prescribe empirically, and when rationally? Is it ever just and proper to prescribe empirically?

We reply that all our treatment is empirical, for which we cannot give, even to ourselves, a valid reason. A case is exceedingly obscure, and, with all the research we can bring to bear upon it, the mystery continues. What are we to do? We cannot see our way, and hardly can we feel it. Under such circumstances, something must be done. We may fall back on first principles; but still the way is dark, and we must do the best we can. Our prescription is made, but it is in the dark. We think, on the whole, that it will suit the case, but that is all.

Now, the difference between this sort of empirical practice and that of sheer quackery consists in the settled habit of the latter to practice by guess, and in the fact that the regular physician never does so but by necessity. Empirical practice is the practice of the quack all the while, but it constitutes the exceptions only of the regular physician.

We pursue a rational course when we adapt our means so plainly to the end that we feel confident what the result will be. We have defined the premises exactly, and feel sure that we are right. We are not operating in the dark, but see our way from first to last. This is fairly exemplified in all those cases in which the diagnosis is easily and certainly made, as in pleurisy, pneumonia, and the like. Comprehending the difficulty precisely, we act in the most rational manner in bringing our appliances to bear upon it. To do all this in the best practical manner calls for a sound, discriminating judgment, fortified by good common sense, the whole being based on a well-ordered preliminary and collegiate education. These, in happy union, and vigorously exercised, constitute the radical difference between the every-day empiric and the enlightened, cultivated physician.

TREPHINING.—The introduction of a surgical appliance in such a work as this may excite some surprise; but regarding it

as I do as a very happy therapeutic means for accomplishing an end not always reached by ordinary medical treatment, I hold it to be as legitimate an object of attention as calomel or opium. I am induced the more to give it a place because the compilers of works on the theory and practice of medicine, from whatever motive is not material, pass it over almost in silence. Some of the most noted standard books do not even name the subject, so common is the habit, and so inveterate, too, of stereotyping the old matter of centuries gone by, as if it were absolutely unimprovable. To such stupid infallibility I will not subscribe.

My object is not merely to draw attention to the ascertained value of the trephine as a means of curing epilepsy, but also to do justice to *American* practitioners who have ventured the operation and succeeded with it. Introductory to this, however, it is proper to say that Aretæus, Themison, Rhodius, La Motte, Burserius, and other old writers, speak favorably of this plan of treatment, and that Elliotson and other foreigners in later times have cured epilepsy by the trephine. All this has long been matter of record, and yet unnoticed by most of the recent writers and compilers.

To Professor Benjamin W. Dudley, late of the medical department of Transylvania University, in Lexington, Kentucky, belongs the credit of introducing this method of cure in this country. He supposes, and very correctly, that his repeated success has established the following principles, viz., that the brain will bear severe mechanical irritation for a great length of time without fatal disorganization, and that the use of the trephine under such circumstances may restore the organ to its former healthy condition.

The first paper from the pen of Professor Dudley has been public property for more than twenty years, having appeared in the *Transylvania Journal of Medicine* in February, 1828. The first of his reported cases presented itself in 1818, in the person of a carpenter, who for nine months had been afflicted with severe pains of the upper and posterior portions of the skull. In two months after this, he became epileptic, and his convulsive seizures were so frequent as to excite apprehensions of speedy death. Mercurial treatment was pushed pretty far, but only with the effect of making matters worse.

A careful examination detected two sensible depressions of the skull, attended by great sensibility of the integuments, and yet these were not referred to any accident or injury. On the 16th of April, 1819, two circular pieces of bone were removed from the immediate vicinity of the depressed spot, and in three months

after the patient was fully restored to health, having had only two very slight attacks after the operation.

The next case is that of a young man, aged twenty-one, who, when only five years old, received a severe blow on the upper and middle portion of the left parietal bone. On the ninth day after the accident he became apoplectic and paralytic, and finally epileptic. The physicians of the country differed as to the real nature of the case, and some proposed an operation. Professors Physick and Chapman were at length consulted by letter, and they discouraged the idea of an operation altogether, advising only a very abstemious diet.

The trephine was applied in this case, and so happily that the patient was able to travel from Lexington to his home, a distance of five hundred miles, in the month of July, having been restored to perfect health.

The other patients named in this paper were obviously relieved, but not known to be cured at the date of the article.

A successful case is reported by the same gentleman in vol. v. of the same journal. The injury which set up the epilepsy was a gunshot wound of the head. The fits were so severe as to justify the patient in submitting to the operation of trephining, which completely restored him to his former state of health.

In vol. iii. of the same journal is an extract of a letter from Dr. Cartwright, of Natchez, furnishing the case of a cotton planter who had severe epilepsy, caused by an injury of the head. The operation of trephining was done by Dr. Elliott, and there was no return of epileptic fits. This case occurred in the fall of 1828.

In the *North American Medical and Surgical Journal* for 1826, is a very interesting case, reported by Dr. David L. Rogers, of New York. The man, aged forty-six, had been epileptic for the space of fourteen years, and was fast sinking into idiocy. The disease resulted from a severe wound of the anterior portion of the skull, and he was trephined over the spot in July, 1825. Nine months after the operation, the patient was entirely free of his convulsive attacks; he had nearly regained his memory, and could attend to his ordinary business without inconvenience.

In the *American Journal of Medical Sciences* for May, 1829, we find a report of a case by Dr. James Guild, of Tuscaloosa, Alabama, who, from the fact of being a graduate at Lexington, Ky., no doubt learned the importance of the treatment from Prof. Dudley. This case is the more important because the disease had no known connection with any previous injury. No mark of depression could be seen, nor was there any reason to suppose an injury had been sustained. The man was forty

years of age, and had very frequent epileptic attacks. He had long suffered severe pain in the left side of the os frontis. The trephine was applied on the painful spot, and in thirty days after, the patient was discharged, perfectly cured. In view of the facts, Dr. G. very properly suggests the probable utility of the trephine in many cases of lunacy and incipient idiocy as well as in epilepsy. We entertained the same view long before we learned that such a sentiment had been advanced by any one. In every inveterate case refusing to yield to treatment of the usual kind, and likely to progress to a fatal issue, we think the trephine applied anywhere on the head may be useful. Should it remove a piece of bone with a projecting spicula an inch or more long, as has been done, it would no doubt cure the patient; and at any rate the removal of one or two pieces of bone would relieve the brain from undue tension, and might thus do much good to the patient.

In the days of our pupilage we saw a man in the Philadelphia Almshouse very frequently, who had been terribly epileptic for many years, and who finally died of the disease. Dissection showed a spicula of bone an inch and a half long penetrating into the brain, and which was doubtless the occasion of the fits. Had the trephine been applied in that spot, the man might have been cured.

As epilepsy depends on various causes which cannot be noticed here, it is suggested that the most careful examination be instituted, and that when all our best endeavors fail to relieve, in conformity with the more ordinary practice, a trial be made of the trephine. That it will always cure is not pretended, but that it will often succeed is certain.

The most recent and successful use of the trephine for the relief of disabilities caused by injury of the head, occurred in the Philadelphia College of Medicine. The patient was a female, residing in a neighboring county, who was injured by a stroke on the head when a child. She had suffered severe pains in the head, and had realized frequent inability to articulate, with various nervous spells not unlike convulsions. The trephine succeeded in giving speedy relief, and her cure was complete. The operation was performed in the spring of 1849.

We may add, without offering any sort of claim to originality, that while a pupil we knew a student with a very large head, but who was exceedingly dull, and in whose case we often suggested that the brain had not room enough for mental development, and as a remedy we proposed to trepan him, and by removing part of the cranium to allow more ample motion of the contents of the skull. This suggestion, wholly disconnected with any know-

ledge of the actual use of the trephine as above, by the ancients, was of course not carried into effect.

Ulmus. *Elm. Ulmus Campestris. Ulmus Fulva.*—These two species refer to the *common elm* and the *slippery elm*, both of which are well known to the people at large. The slimy juice of the inner bark of the common elm has long been used in affections of the kidneys as a demulcent. It has also been employed for the cure of *burns* and *scalds*, and various cutaneous irritations, just as collodion is now. Both act in the same way.

The decoction is usually made by boiling four ounces cut into small pieces in four pints of water, down to two. The dose is from four to eight ounces three times a day, and will prove a good demulcent in urinary affections.

The slippery elm contains a very large quantity of pleasant mucilage, which renders it valuable in medicine and surgery. If the bark be chewed a minute or two, the mucilage is separated copiously. The inner bark, cut or broken into pieces and suspended in a pint of water, will soon impart its mucilage, giving a viscid consistence to the fluid. The Shakers prepare the inner bark by making it very fine, and then packing it very tight in papers, for sale. Thus prepared, it makes a good mucilaginous diet for invalids.

The *expectorant* quality of this bark depends on the ready evolution of its mucilage, by chewing portions carried in the pocket for that purpose.

The infusion or decoction is employed in *dysentery* and *strangury*, because of its demulcent quality. It may be taken *ad libitum* by the mouth and per anum. Made very strong, it constitutes the basis of a good poultice.

Dr. McDowell, formerly of Virginia, has published a good paper on the surgical uses of the slippery elm. He made bougies, catheters, tents, &c. from it, which, by the development of their mucilage when dipped in hot water, are readily introduced. A very small amount of skill is requisite in order to prepare these utensils. The thin inner bark is very easily rolled into due form, which remains as long as may be desired.

Urtica Dioica. The *Stinging Nettle.*—The disease called *urticaria* has been so named because it resembles the effects induced by the stinging nettle on the skin of some persons; for all are not affected alike. This vegetable has been much praised for its good effects in certain chronic diseases of the skin, the system being in a cachectic state. It has long been known as a diuretic and anti-scorbutic, and doubtless these properties are developed in the use of it as named above. The decoction and extract are employed. The first is made by boiling an ounce of the leaves and stems in a quart of water, to a pint. The dose is a fourth

of a pint daily for a patient sixteen years old. The extract is made by gradual evaporation of the decoction, and its dose is five grains for a person of ten to twelve years old, twice a day.

Patients of all ages, from four to forty, were treated with this remedy for *psoriasis diffusa*, *lichen agrius*, *chronic lepra*, and various scaly diseases of the skin, with good effect. One or two months were required to give efficacy to the medicine. During this treatment the bowels were kept in a proper state, and the skin was the subject of warm bathing and various ablutions.—*Association Medical Journal*, November, 1854.

Uva Ursi. *Arbutus Uva Ursi. Whortleberry. Bearberry.*—The leaves are generally employed, the taste of which is rather astringent, with some bitterness blended with a sweetish impression. It is affirmed that they have no smell when recent, while the dried leaves have somewhat the odor of green hay. The sapid matter of the leaves depends on the presence of a gummy rather than a resinous matter, as its virtues are much better extracted by water than by alcohol. The powder of the dried leaves is of a light-brown color. The watery extract is bitter and astringent, having a dark-brown color, and a smell like the extract of dandelion or honey. The aqueous infusion of the leaves is blackened by sulphate of iron, owing to the presence of tannic and gallic acids; hence the incompatibility of iron preparations. It is because of the presence of the acids named that uva ursi has been employed in Russia in the process of tanning.

The medicinal properties of uva ursi appear to reside in its astringency and bitterness, and hence it has been used profitably in affections connected with laxity of fibre, as fluor albus, menorrhagia, diabetes, diarrhœa, general debility, &c. More recently it has been employed in *calculous affections*, *nephritic* disease, and *dyspepsia*.

It is sometimes called a *tonic diuretic*, but I have not found it a very active diuretic, unless combined with nitre in the proportion of a drachm of the salt to a pint of infusion of the leaves. The dose of this mixture is a wineglassful every four hours. From a half-ounce to an ounce added to a pint of boiling water will make the infusion, which gives all the virtues of the plant. If needed for dyspeptics, it should be taken cold.

The dose of the powder of the leaves is from ten to sixty grains three times a day, given in sweetened water or syrup. From two to ten grains of the extract may be taken at once.

A notion formerly obtained that, owing to some peculiar quality of the blood in *gout*, uva ursi was far better suited to the nephritic form of that disease than any other medicine; and, for aught I know, it may be so.

Vaccinium Oxycoccos. *Cranberry.*—The scarlet American

cranberry is known to every lover of cranberry tarts. It is introduced here because of the very grateful drink it affords when water is added to the fruit stewed with sugar. In regions where fevers are most abundant, it is desirable to have a large variety of agreeable drinks to allay thirst and subdue the unpleasant state of the mouth and throat. If a tablespoonful or two of the cranberry, as ordinarily prepared with sugar, be added to a pint of water, we have a drink that most patients will relish, while it rarely does harm.

VALERIAN. *Valeriana Officinalis. Wild Valerian.*—This is an article with a tuberous root and very numerous radicles, or very small roots shooting in all directions. The root of the wild sort is much more fragrant than that of the cultivated plant. It has a bitter, acrid taste, a very penetrating odor, which is quite unpleasant to most persons, though not so to all. It contains a volatile oil, which has been extracted and is in use; in addition, it is known to contain resin, extractive, &c. The oil is of a greenish color, with a very penetrating odor and an aromatic taste, not unlike that of camphor. When the root is distilled with water, there passes over, in addition to the oil, a peculiar acid, fatty matter, called valerianic acid, having a disagreeable smell and somewhat the appearance of oil. This acid forms salt having a sweetish taste and quite soluble, and has been much employed in the manufacture of the valerianate of zinc. It has also been combined with quinine to form the valerianate of quinine, which is supposed to be a valuable medicine in cases requiring stimulating nervous tonics.

The infusion, tincture, and *ammoniated tincture* have been employed, but the latter has been preferred. It is the medicine so highly praised by the author of *Confessions of an Opium Eater*, and alluded to under the article *Opium*. It is thus prepared:—Take of the valerian root, bruised, four ounces; aromatic spirit of ammonia, a quart. Macerate for two weeks, and strain. The dose is from a half-drachm to two drachms two or three times a day, or oftener.

Valerian is held to be a diffusible *stimulant* and *antispasmodic*. The powder of the root may be given in doses of twenty to forty grains; and of the volatile oil from three to five drops may be administered.

VANILLA. *Vanilla Aromatica.*—This is a native of Peru, Mexico, Jamaica, and Cuba. Notwithstanding the strong odor of this fruit, no volatile oil can be procured from it by distillation. The bean, as it is generally called, is employed in this country to give flavor to ice creams, and is sold for this end in the form of what the apothecaries style *vanilla extract*, a liquid that is often of little worth.

It has long, however, been employed as a medicinal agent, being regarded as an aromatic stimulant, exhilarating to the mental functions, preventing sleep, increasing muscular energy, and exciting the sexual feelings. It has been administered chiefly in asthenic fevers, rheumatism, hysteria, impotence, and melancholy. The dose given was from eight to twelve grains.

A German writer commends it in *adynamic fevers*, *hysteria*, &c., in which he employed an infusion made by putting a drachm of the vanilla into three or four ounces of boiling water, digesting in a close vessel for half an hour, and sweetening the clear liquor. The whole to be taken in teaspoonful doses in the course of twenty-four hours.

Veratrum Album, Niger et Viride. *White, Black, and Green Hellebore.*—These articles are now seldom employed in practice, and, apart from their proximate principle, *veratria*, are not entitled to serious attention. The most prominent and dangerous features relate to its action on the nervous system generally, and to its violent irritation of the Schneiderian membrane. We speak now of the white species, a particle of which snuffed up the nose induces violent sneezing. On the nervous system it operates so as to occasion tremors, vertigo, syncope, convulsions, and fatal spasms. These effects have led to its use in small doses, in the treatment of mania, epilepsy, and various convulsive affections, but without obvious success. Several cutaneous diseases are reported as having yielded to its influence.

The following case of poisoning by white hellebore merits attention. A man swallowed, by mistake, about half an ounce of white hellebore in powder, thinking it to be cream of tartar. The paper containing the powder was marked "poison," but this was not noticed at the time. Feeling sick and in pain, he sent for aid about four hours after the blunder. Emetics and clysters soon restored him. The symptoms were purging, pain at the stomach, burning sensation of the mouth and throat, but there was no vomiting till after he took the emetic. There was no giddiness or other cerebral disturbance. (See *London Lancet*, September, 1857, page 290.) We may remark, in passing, that any man of half ordinary sense ought to have known that he was not taking cream of tartar, by the taste alone. We cannot imagine how such a mistake could occur.

The black variety is less energetic, and has been employed with success as a vermifuge, a diuretic, and emetic. The dose is from two to eight grains.

The veratrum viride, or green hellebore, is an indigenous plant found in our swamps, and, though similar in some respects to the white variety, is not purgative.

Dr. W. C. Norwood, formerly of North Carolina, has written

on its virtues, about which he is pretty sanguine. In the July number of the *North American Medico-Chirurgical Review* is a short article, by Dr. Pope, of Alabama, in which he expresses a very favorable opinion of the tincture of the plant in the treatment of the low form of pneumonia. He employed opium and brandy also, treating forty cases successfully. The dose of the tincture was six drops.

Touching the proximate principle, *veratria*, we refer to the article *Colchicum Autumnale*.

VIENNA PASTE.—This caustic is now so often mentioned in the journals as to create a necessity for introducing it here. It is composed of five parts of pure lime and six of pure potash, made into a paste with alcohol. (See *London Lancet*, December 2, 1843.) Dr. Mitchell (of Ireland) is very partial to this article in the treatment of ulcers of the os and cervix uteri. Gendrin prefers to have the lime and potash in fine powder, in a tight bottle ready for use, to be made into paste as it may be wanted. He applies the paste on a small bit of adhesive plaster. Dr. M. prefers to attach the paste to the end of a glass rod to be passed through the speculum, so as to lodge the paste on the ulcerated spots.

WATER CURE.—It is not our intention to waste pen and ink on the mania that has recently marked *hydropathy*, or the water cure. We have taught our pupils that in centuries gone by fevers of all grades were treated almost exclusively by the internal and external use of cold water, and that so soon as it became the *one idea* of medical men, it fell into disuse. Currie, in more recent times, wrote a pretty large volume on the curative powers of cold water; and every wise physician knows the worth of the remedy as *one* of the *many* means within his reach. Under the article *Aqua* we have set forth the medicinal powers of water in no dubious point of light.

Any one who will refer to the *London Lancet* (New York edition) for February, 1846, will see that *rheumatisms*, *colds*, &c. &c. were treated in Yorkshire, England, by wrapping patients in sheets wrung out of cold water, after which they were put to bed, to remain there for hours with their cool investiture, so long ago as 1738.

We have not now for the first time to apprise our readers that sudden and most unexpected deaths have occurred under the actual operation of the water cure, even when assurances of recovery had been repeatedly made. The facts teach very plainly that the remedy is not a *panacea;* and they as clearly confirm the old saying, "what is one man's meat is another's poison." No man who regards his own life, or that of his relative or friend, as it should be regarded, should ever consent to such an expe-

dient until the soundest medical opinions in its favor for the given case could be obtained.

WHEY.—We have spoken of *alum* whey, and now introduce a very useful article, viz., *wine* whey. And we notice it here because it is so frequently prepared in an improper manner. To make good wine whey, a new white earthen vessel should be selected, and a pint of new milk should be boiled in it over lively coals, the vessel being covered tight. While in the act of ebullition, remove it from the fire and pour in the wine, (a half-gill or more,) and set the vessel aside. When nearly cool, pour the whole on a fine gauze to separate the whey from the curd. Let the clear whey be made palatable by nutmeg and sugar, as may be most agreeable.

WHISKY.—We name this product of the still as a good external medicine, alone or combined. Heated over red-hot coals and rubbed smartly on the skin, or applied by flannels repeatedly soaked in it, the physician will find it a good embrocation. In some places *burns* and *scalds* are treated with cloths soaked in whisky, which are said to give speedy relief.

In the western country it used to be a practice of travelers on horseback, in very cold weather, to pour strong whisky into their boots just before drawing them on. Whether the custom was really a wise one I am not prepared to say, but I presume that good results followed it. Certainly the liquor was safer there than in the stomach.

Whisky holding cayenne or black pepper, or camphor in solution, furnishes a very good external application to painful parts, and is therefore much employed by old rheumatics. Let it be restricted to the external use and it will rarely do harm.

WITCH HAZEL. (See *Hamamelis Virginiana.*)

XANTHOXYLUM FRAXINEUM. *Prickly Ash. The Bark.*—This plant is a native of North America, and may be found in most sections of our country, growing in woods and thickets, and flowering in April and May, before the leaves appear. It is quite a small shrub, with alternate branches, and armed with short and very strong thorns or prickles. The flowers are small and greenish, and have rather an aromatic odor. The entire plant would seem to be possessed of active qualities; the leaves and fruit abound in a fragrant volatile oil, and the bark is acrid, pungent, and aromatic. The latter yields its properties to boiling water and to alcohol, and hence the infusion or tincture. Chemical research has detected a peculiar crystalline principle or substance called *xanthoxylin*, which is not unlike piperine.

This article is an acrid *stimulant*, and has been much employed as a domestic remedy for *chronic rheumatism*, *flatulence*,

and *colic*. Externally it has also been employed in the treatment of *indolent ulcers*.

The dose of the powdered bark is from ten to twenty grains. The decoction is made by boiling an ounce of the bruised bark in three pints of water, down to a quart, a pint of which may be taken in the course of twenty-four hours. To make the infusion, digest two ounces in a gallon of boiling water for ten hours; of the clear liquor, take a pint in twenty-four hours.

I knew a *respectable* drunkard who was confined to his chamber and watched to prevent the use of ardent spirits, who found a hidden quart bottle of saturated tincture of the leaves and bark of the prickly ash, so exceedingly hot and irritating that no sober person could more than taste it. This man contrived to swallow the whole in the course of two or three days, to gratify his love of strong drink.

The strong tincture would be a safe and salutary rubefacient, and in small doses a good antispasmodic. Half a teaspoonful might serve this purpose.

Yeast. *Cerevisiæ Fermentum*.—The brewer's yeast is produced from the fermentation of malt, and consists of a frothy scum and a sediment. It is called *barm*, in Great Britain, more frequently than yeast. It is quite a complex substance, containing some alcohol and water, carbonic, acetic, and malic acids, potash, lime, and a saccharine mucilaginous extract. Its most important ingredient is a mass of microscopic globules, regarded as organized cells and endowed with life. A prominent quality of yeast is that when in contact with saccharine solutions at 75° Fahrenheit, it induces fermentation, and a conversion of the sugar into carbonic acid and alcohol. As this property depends on the presence of the cell structure, the drying of the yeast very much impairs it, and a heat of two hundred and twelve destroys it wholly.

It was supposed that an agent thus endowed with vitality, and competent to produce such changes as those referred to, might be useful as a medicinal appliance, and hence it has been frequently resorted to.

It was employed in the city of Philadelphia, in the time of my pupilage, by the late Dr. Parrish, in the treatment of *typhus fever*, which proved so fatal in the suburbs. By reference to the *Philadelphia Medical Museum* of 1810, it will be seen that the remedy was employed by other physicians in the same disease, with success. It was given in tablespoon doses every half hour as a stimulant and tonic. Dr. Christison speaks of it as given formerly by the mouth and by injection, in *typhoid fever*, by which probably he meant the same as *typhus*.

Having witnessed the practice of Dr. Parrish, and been fre-

quently in the rooms of the patients, I feel somewhat qualified to say that the practice was a good one, the effects of the remedy being speedily apparent. And more than this, I have employed the yeast myself in like circumstances, and therefore am prepared to commend its administration.

Dr. Stoker, a physician of Great Britain, who has had very large experience in the management of typhoid fevers, says that yeast may be given whenever it can be retained by the stomach, even when the existence of inflammatory complications prevents the use of other stimulants; and that it is generally easily taken alone, or with any other medicine, or in any vehicle that may be deemed advisable. In the worst forms of typhus, when it is most needed, he states that it is rarely rejected, but, on the contrary, is much relished; and that it is moderately laxative, often superseding the use of purgatives. If it prove not sufficiently aperient, he gives a little tincture of jalap in it; and if the bowels are too much relaxed, a few drops of tincture of opium are added to each dose. It appears to Dr. Stoker to correct the morbid contents of the alimentary canal, and the consequent symptoms of putrescence; petechiæ and black tongue being more effectually removed by it than by any other means. He has, therefore, substituted it for bark and wine when they could not be employed on account of inflammatory symptoms, and has conjoined it with them when there was no such counter-indication. He prescribes the yeast in doses of two tablespoonfuls every third hour, with an equal quantity of camphor mixture. If administered in enemata, three times the above dose may be employed. Dr. Stoker, whose experience of this treatment has been long and most extensive, observes that instead of increasing the tendency to tympanitic distension, by promoting fermentation, as may be objected, it actually prevents the accession of this symptom; and that, in the most obstinate instances of typhoid tympany, he has found enemata of yeast and assafœtida the most efficacious remedies.

The following preparation has been very useful in *typhus fever* of Ireland, as we learn from a report by Dr. Lamprey. When the discharges from the bowels were very fetid, and the petechiæ became quite livid, he gave the following mixture:—

℞.—Cereviss. ferment. ℥x;
Camphoræ, ℥ss;
Spt. nit. dulc. ℥ss.

Mix. Give an ounce every hour, or every two or three hours, according to circumstances.

It stays the septic or putrefactive process, and is a decided stimulant. It not only corrects the fetor of the discharges, but lessens their frequency. The mixture soon becomes so agreeable

to the palate that it is anxiously desired, and there is danger of the patient using it too freely. (See *Braithwaite*, part xx.)

Not a few foreign physicians report decidedly good results from the use of yeast in *malignant scarlet fever*. After ammonia, the mineral acids, chlorate of potash, &c. have failed, as well as the free use of nitrate of silver, one or two tablespoonfuls of fresh yeast frequently given, say every half hour or every two hours, according to the malignancy of the symptoms, have been speedily efficacious as an antisepect and stimulant—*Lond. Med. Gaz.*, Jan. 10, 1851.

The common *furunculus*, or *boil*, which frequently baffles ordinary means, has yielded quickly to a tablespoonful of good yeast in a little water, taken five or six times a day. The remedy is safe, at all events; and if we do not exactly know its *modus curandi*, what of that?—*Braithwaite*, part xxvi. page 294.

Its *antiseptic* and *disinfectant* qualities render it suitable, by way of injection, to correct the foul discharges that often attend *dysentery*, and to stimulate the system gently in the low form of that disease.

But yeast has also been advantageously employed as an *antiemetic* for the relief of a decidedly irritable stomach. From a tea to a tablespoonful may be given every ten or fifteen minutes.

The *yeast poultice* is often usefully applied to *foul*, *fetid*, or *malignant ulcers*. Flour and good brewers' yeast, or Indian meal and the same article, may be blended together, taking care to have as much yeast as the flour or meal will absorb. Apply immediately, and repeat three or four times a day. I regard this a pleasant and salutary expedient.

ZINCUM. *Zinc. Spelter.*—The only medicinal application of the metal is in the construction of galvanic batteries for medical use, and it is not necessary to speak on that point here. We may simply remark that suituble machines are manufactured and for sale in all our large cities, and they can be safely transported to any point of the country at a small cost.

The preparations recognized in practical medicine are the oxides, carbonate, acetate, sulphate, valerianate, chloride, iodide, and cyanide, to each of which we intend to devote a few remarks.

The oxides employed are the pure oxide, called *flowers of zinc*, *pompholix*, *nihil album*, *philosophical wool*, &c. &c.; and the impure oxide, called *tutty*, or the gray oxide.

The pure oxide, or flowers of zinc, are prepared by exposing metallic zinc to a high temperature, by which they are oxidated rapidly. The same oxide is also made by precipitation with liquid ammonia added to a solution of the sulphate of zinc. The salt is decomposed, its oxide thrown down, and sulphate of ammonia held in solution.

The pure oxide is colorless, insipid, and insoluble in water, though readily soluble in most of the acids. Its adult dose is from two to ten grains, joined to some of the bitter tonics. It is held to be a tonic and antispasmodic, and thence employed in the treatment of *chorea*, *epilepsy*, &c.

The *colliquative sweating* in *phthisis* has been happily arrested, according to Dr. T. Thompson, by the use of pills made of oxide of zinc and ext. bellad. āā four grains, divided into two pills, taken at bedtime. This medicine has an advantage over other means, in that it does not give rise to those severe attacks of diarrhœa which supervene on the arrest of profuse perspiration.—*Lond. Lancet*, April 1, 1854.

The foregoing is confirmed by the following testimony in this country, as follows:—

Dr. S. L. Abbot, of Boston, reports in the *Boston Medical and Surgical Journal* the result of the use of the oxide of zinc, in combination with the extract of conium or hyoscyamus, in the treatment of the night-sweats of phthisis. In all these cases, one only excepted, the sweats were readily brought under the control of the remedy presented, being either completely checked or greatly diminished. His usual dose was four grains of the oxide to three of the extract, given in two pills at bedtime. In a subsequent number of the same journal, Dr. J. B. S. Jackson, of Boston, relates his confirmatory experience of the benefits to be derived from the use of the oxide alone. It was administered freely whenever there was perspiration enough to require treatment, and without any regard to the stage of the disease. Seven grains were given in substance, generally at bedtime, but also during the day, at intervals of three or four hours, if necessary. Sometimes ten grains were administered without any unpleasant effects being complained of. Dr. Jackson also states that excessive perspiration may probably be successfully treated by the zinc when it occurs in other diseases. He himself employed it, with beneficial results, in two cases, one being that of a person who suffered from copious night-sweats while convalescing from intermittent fever, the other that of a strong, healthy man, under an attack of acute rheumatism, who had the profuse perspiration that so often accompanies this disease. He has also seen perspiration checked under its use in a case of cancer of the womb.

Sometimes the oxide is rubbed with lard, to form an ointment to be applied to ulcerated surfaces, and the fine dust of the oxide is useful to excoriated parts. The impure oxide is also employed in making ointments.

Carbonate of zinc, or calamine, or prepared calamine, is a light, pink-colored, earthy-looking substance, chiefly employed in the formation of the *ceratum epuloticum*, or Turner's *cerate*, or

healing salve. A drachm of the fine powder intimately rubbed with an ounce of simple cerate or lard will give a very good article of this kind.

The fine powder of calamine has also been used to prevent the pitting and scarring of *small-pox;* but it is not so good an application as the tincture of iodine or nitrate of silver.

Sulphate of zinc is the best known and most important of all the zinc compounds. It is sometimes called *white copperas, white vitriol,* &c. The action of diluted sulphuric acid on zinc filings or cuttings will give rise to this salt. On evaporating the solution thus made, crystals of the sulphate are deposited. For commercial purposes, it is manufactured largely from the sulphuret of zinc by roasting and exposure to the air. The sulphur is changed to sulphuric acid, the zinc oxidated by absorbing atmospherical oxygen, and the two uniting give birth to the salt.

Pure sulphate of zinc is white, astringent, and has a nauseous and metallic taste. It dissolves in less than its weight of boiling water, and in rather less than thrice its weight of water at sixty degrees Fahrenheit. It is not decomposed by anything below a red heat, which drives off the acid and leaves the oxide free.

Sulphate of zinc is employed internally as a tonic and emetic, externally as an astringent. In cases of defective tone of the stomach and bowels, it is exhibited advantageously in quarter-grain doses, twice or thrice a day, with an eighth of a grain of sulphate of morphia. It is believed by some physicians to be preferable to all other mineral tonics, in all diseases of debility associated with subacute inflammation, because less apt to excite arterial action, thirst, or other febrile symptoms.

Braithwaite's Retrospect, part vi., presents some useful hints on the happy agency of the sulphate for the relief of *flatulent colic* dependent on enlargement and debility of the colon.

Favorable mention is made in the *London Lancet* for 1843, of the use of sulphate of zinc in doses of from two to ten grains, in the treatment of *chorea.* The dose named was given three times a day for several weeks.

In subsequent numbers of the *Lancet,* and in other journals, we find abundant proofs of the salutary influence of this medicine in the same disease. Drs. Addison and Barlow are quite positive as to the happy agency of the sulphate. It is believed to exert very much the same kind of influence on the nervous matter that iron produces in the blood. A very good account may be seen in *Braithwaite,* part xxiii., page 75, and in the *London Lancet* for January 11, 1850.

Pertussis, or *hooping-cough,* has often been relieved by an eighth of a grain of the sulphate dissolved in a teaspoonful of

a strong solution of sulphate of quinine and given two or three times a day. The solution of sulphate of quinine for this end should consist of ten grains to an ounce of water. Mosely's celebrated remedy for hooping-cough consisted chiefly of the sulphate of zinc.

Gargles of the sulphate have been frequently recommended for *ulcerated sore throat*, or for simple inflammation, or relaxation of the soft parts, as the fauces, uvula, &c. But its very unpleasant taste renders it quite objectionable, unless some addition be made to counteract it. In place of an aqueous solution in simple water or in rose-water, let the following be tried:—

℞.—Sulph. zinc, ℈i;
Aq. rosar. ℥vi;
Syr. scill. ℥i.

Mix. Let this be shaken well, and employed as a gargle several times a day.

Sulphate of zinc is called a *prompt* emetic, because of the rapidity of its action. On this account it is employed to dislodge opium and other poisons from the stomach. It rouses, in a remarkable manner, the dormant energies of the stomach, and is therefore a valuable medicine. The mode of using it, as a prompt emetic, is to dissolve a drachm in a teacupful of warm water and to give one-fourth, and repeat in ten minutes if necessary.

A solution of five grains in five ounces of rose-water makes a good wash for *inflamed eyes*, after proper depletion by the lancet, or by cups and leeches. A like solution is sometimes applied to arrest discharges behind the ears of infants; but care should be taken to purge freely two or three times a week at the same time.

The practice of using strong solutions of sulphate of zinc in *gonorrhœa* is often very injurious, by inducing stricture of the urethra and swelled testicle. They should never be employed until after inflammatory action has been subdued, and even weak solutions are to be preferred.

The sulphate has been reported as a good remedy for *polypi*. Dr. Turner relates, in the *London Medical Gazette* for July, 1836, the following case:—A young lady consulted him in March about a polypus of the gelatinous kind, with a broad foot-stalk, extending from the middle chamber of the nose far back to the posterior nares. She was directed to use the following lotion:—

℞.—Sulph. zinc, ℈ij;
Aquæ, ℥vij.
Mix.

The quantity of the sulphate was gradually increased, and the solution employed by soaking lint in it and passing it down

to the polypus, morning and evening, and to remain all day. The lotion was also applied by means of a syringe, occasionally. In two months the polypus was completely cured. Probably the remedy acted as an astringent.

Mr. Pretty notices the plan of Deschamps for the abortive treatment of *coryza*, and then adds what he thinks a more easy method. He directs a solution of sulphate of zinc, containing three grains to an ounce of water, to be injected into the nose. An ounce syringe is employed, and part is thrown up each nostril, the patient leaning over a basin. One injection often suffices, and seldom is it needful to inject more than three times. A coryza of several days' standing has been arrested in ten minutes, in this manner. (See *London Medical Gazette*, July, 1849.)

Sulphate of zinc has been mistaken for sulphate of magnesia. The difference of taste should prevent an error of this kind, as the bitterness of the magnesian salt is a sufficient characteristic. The chemical differences require more care than practitioners can give to a matter of this kind.

The most obvious incompatible of sulphate of zinc is the sugar of lead, and it is so, because the mixture is so frequently prescribed. Double decomposition ensues, acetate of zinc being held in solution and an almost insoluble sulphate of lead being thrown down. The mixture is far less active than either of its constituents, *per se*.

Orfila speaks of a female who accidentally drank a solution of two ounces of sulphate of zinc at once. The dose caused an excessively astringent taste, contraction of the throat, burning in the stomach, cold extremities, pale countenance, irregular pulse. Vomiting came on and continued for some time, after which emollients and bland drinks allayed the existing irritation. Metzger relates the case of a woman who died in consequence of eating part of a cake that had been baked for the destruction of an old man, and highly charged with sulphate of zinc. Both were seized with vomiting, but the man got well.

The *morbid appearances* detected after death were slight effusion of blood on the lining membrane of the stomach, and green spots in the course of the bowels. The other parts were natural.

The *treatment* advised, when the salt has been swallowed, is to promote vomiting so as to throw off all the poisonous matter. Give emollient drinks, and particularly milk, which seems possessed of a decomposing power over the sulphate. If there be inflammation, bleeding, both local and general, should be employed; and, if needful, anodynes to allay irritation.

Acetate of zinc is sometimes employed in practice. It is always formed when sulphate of zinc and acetate of lead are

mixed in water. The clear supernatant fluid being evaporated, yields the acetate in the form of white, silky-looking crystals. These are quite soluble in water, and effloresce a little in the dry atmosphere. From two to five grains in an ounce of water make a good solution.

Valerianate of zinc has been much employed in Europe in the treatment of neuralgic affections, and we doubt not that it is a good preparation, although we have never used it. As long ago as 1843, M. Cerulli, an Italian physician, administered it in a good many cases. In three patients affected with supra-orbital and infra-orbital neuralgia, a cure was effected by doses of a grain and a half daily, divided into two pills, to be taken at the moment when the paroxysm came on. In one, the cure was complete in thirty days, in another, in forty, and in the third, in fifty days. (See *Gaz. Med. de Paris*, January, 1844.)

Neligan regards the valerianate of zinc as a tonic antispasmodic of much power, and suited to neuralgias attended with loss of tone in the system at large. In facial neuralgia and in vertigo it has been eminently useful, but, most of all, in hysterical neuralgias. According to Neligan, the medicine may be exhibited not only in pill, as already stated, but in a solution of orange-flower water, or in distilled water flavored with syrup of orange-flowers. It should be recollected that the crystals of the valerianate do not easily dissolve in cold water, and hence it is best to rub them first in a mortar with a very little water.

All acids, the solid carbonates, most metallic salts, and astringent vegetable infusions and decoctions are incompatible.

To make this salt, take two pounds of bruised valerian root, eight pounds of water, three ounces and a drachm of sulphuric acid. Macerate for two days, and distil until the liquid no longer reddens bibulous paper. Let the product be exposed one month to the air, after which put it in a matrass with a half-ounce of recently-precipitated and perfectly pure hydrate of zinc, and digest for ten hours in a sand-bath at 176°, stirring occasionally. Filter the warm liquor, evaporate to three-fourths of its volume, pour into porcelain capsules, and expose to the heat of a stove until crystals are formed, which are to be dried with filtering paper.

An elegant article of this salt is manufactured by Messrs. Rosengarten and Sons, of Philadelphia, and on sale at their establishment. When pure, it is in light, pearly, crystalline scales of brilliant whiteness, with a feeble valerianic odor. It is soluble in fifty parts of cold, in forty of hot water, and in sixteen of alcohol.

Lactate of zinc is a very white salt recently introduced. It is manufactured by the house named above, and will no doubt

prove a good tonic antispasmodic. It has not been sufficiently tested to enable us to speak definitely of its value.

Cyanide or *cyanuret of zinc* is a compound of zinc and cyanogen. It is prepared by the double decomposition of sulphate of zinc and hydrocyanate of potash, which gives a triple hydrocyanate of zinc. This is to be calcined at a dull-red heat, which converts it into cyanide of zinc.

This preparation is affirmed to be an excellent *vermifuge*, in the dose of from an eighth to a quarter of a grain. A writer in *Hufeland's Journal* for 1823 says he has often combined it with jalap as a vermifuge, with happy result, in proportion of one grain to five or six grains of jalap. In *nervous affections* and *cramps of the stomach* he employed it with calcined magnesia, and regarded the mixture as well suited to many cases of *dyspepsia*.

A writer in the *Provincial Medical Journal* speaks highly of an ointment of cyanide of zinc for *ulcers of the cornea*. It is made with one grain of cyanide and twenty-five of lard, and is applied with a fine hair pencil.

Chloride of Zinc. Muriate of Zinc.—Metallic zinc dissolves readily in diluted hydrochloric acid, evolving hydrogen gas and forming the chloride, which is obtained by evaporating the fluid. A purer kind is obtained by dissolving a hundred grains of granulated zinc in a sufficient quantity of muriatic acid, to which five parts of nitric acid have been previously added, and then evaporating to dryness. The residuum is redissolved in water, five parts of powdered chalk being added; and, after being in contact for twenty-four hours in a cold place, the fluid is to be filtered and again evaporated to dryness.

Chloride of zinc thus procured is in white, friable masses. It has no smell, but a sharp, saline, styptic, metallic taste. It dissolves readily in water, alcohol, and ether, and its solutions have an acrid reaction. It is the most deliquescent salt known, and must be kept in the best-stoppered vessels. It is an efficient *escharotic*.

The chloride has been called a *tonic* and *antispasmodic*, but is rarely used internally. M. Gandriot called it a specific for *gonorrhœa*. He employed a solution for men and a suppository for women. The solution consisted of from twenty-four to sixty drops of the liquid chloride in four ounces of distilled water. These were mixed and filtered through paper, and the clean liquor injected into the urethra two or three times a day. The suppository was made of five drops of the liquid chloride of zinc and a half-grain of sulphate of morphia, mixed with six parts of mucilage of gum Arabic and three of sugar, so as to make a paste. Two or three injections for as many days gene-

rally cured males; a suppository passed up every day for a week, sufficed in women.

The celebrated surgeon Guthrie employed the chloride with success in *necrosis*, to soften the bone and enable the operator to get at the sequestrum.

One of the simplest uses of the chloride is in *toothache*. Dr. Stanelli applied it by means of a fine pencil to the cavity of a tooth, and promptly arrested the pain. It is affirmed to be generally successful.—*London Medical Gazette*, 1844.

Phagedenic ulcers of the septum nasi have been promptly relieved by the chloride. A grain and a half dissolved in an ounce of pure water makes the solution, which is to be painted on the diseased spots three times a day with a fine hair pencil. At the end of a fortnight the disease was arrested, and in four or five weeks quite cured. (See *Edinburgh Monthly Journal of Medical Science* for 1843.)

Dr. Fell, an American, it is said, has caused a wide-spread sensation by his treatment of cancer, fungus hæmatodes, &c., with chloride of zinc, in the British metropolis. The chloride is applied in form of weak solution, and by its escharotic power promptly destroys cancerous tumors without inducing much pain at the time, although, if reports be true, the pain is sometimes dreadfully severe a few hours after. An eminent artist of our own country has been under this treatment, and there was entertained a prospect of recovery. We understand that the common blood-root (sanguinaria Canadensis) enters into Dr. Fell's formula.

After the above was penned, the interesting article of Prof. Gibson, on the case of the *sculptor Crawford*, was laid before us, and it has led us to doubt the correctness of previous rumors touching the probability of his recovery. We are inclined to regard Dr. Fell's practice as sheer quackery.

Still later, our attention has been called to a review of Dr. Fell's book on Cancer in the *London Lancet* for September, 1857, and we feel more confirmed in the sentiment expressed above, and are not a little mortified at the developments made by the reviewer. They certainly do not flatter our national pride.

The *Montreal Medical Journal* for 1846 speaks well of the chloride of zinc as an excellent article for the preservation of subjects for dissection.

Iodide of zinc is readily made by heating a mixture of iodine and zinc filings in a close vessel. The compound is white, dissolves readily in water, and is changed to iodate and hydriodate of zinc. The iodide of zinc has been recommended by Dr. Ure, for reducing glandular swellings, in the form of ointment. This is made by rubbing a drachm of the iodide with an ounce of

hog's lard. A drachm of the ointment is to be rubbed into the swelling two or three times a day. A grain, dissolved in an ounce of water, constituted an injection sometimes employed in *scrofulous gonorrhœa.*

Dr. Barlow has treated *hysterical chorea* with syrup of the iodide of zinc, with full success. The patient was sixteen years old, and had been ill for a considerable time. As hysteria complicated the case, aloes and tincture of valerian were also given.

The treatment was continued nearly twelve weeks, at the end of which every vestige of disease had left her. Half-drachm doses of the syrup were given in mint-water three times a day, and the bowels were kept in a soluble state by the use of calomel and colocynth, and also decoction of aloes.—*London Lancet*, Dec. 31, 1853.

We close our remarks on this subject with a few considerations on the injurious tendencies of metallic zinc. It was formerly believed that zinc would be a perfectly safe substitute for lead in domestic economy, and hence a substitution of zinc for leaden pans in dairies. An individual who made one of the first trials of the substitute, found that although the zinc pans raised more cream than the leaden vessels did, the milk was so seriously affected that he threw it to the pigs. Nor was it very difficult to perceive that if the milk acquired any injurious property from the zinc, the pigs could not but feel the effects more or less, and that ultimately man must suffer. And who can doubt that, in this country at least, where every one aims at making the most money he can, instead of the pigs getting the zincky milk, it would be scattered among those who are in the habit of purchasing that article for family use?

There are some experiments on record, in the 17th volume *Annales d'Hygiène*, leading to the inference that roofs of zinc may contaminate rain-water, and thus render deleterious the water of cisterns, which, in many places, is used largely. It is stated, on the other hand, by a writer in *Siliman's Journal*, vol. xxxi., that no traces of zinc could be found in water collected from a zinc roof. The subject is one of much importance; for it should be remembered that the oxide of zinc, said by some to be formed in this way, is poisonous in large portions.

Zinc is no doubt improper for utensils designed for processes of cookery. It is easily oxidated by exposure to the air, and, in contact with vinegar or acescent matter, the acetate of zinc will be formed. Vauquelin and Degeaux assert that an oxide is produced if water be allowed to remain in a zinc vessel for some weeks, owing to the decomposition of some of that fluid. The same chemists have given it as their decided opinion that it is not safe to employ zinc for culinary purposes.

ZINGIBER. *Ginger. The root.*—It may seem strange, and yet it is true, that the natural history of ginger is involved in obscurity. It is questioned whether the black and white ginger are the products of the same or different plants, whether or no they result from difference of manipulation. Hence it is affirmed that the one sort comes from the East, the other from the West Indies. The prevailing opinion is that the white Jamaica ginger is the best.

It is very certain that the plant can be propagated by cuttings of the root-stalk. The green ginger, as imported into this country and sold under that name by the confectioners, could be cultivated beyond doubt. Some of the roots, as we get them, are evidently sprouting, and require only a good soil to insure the right development.

All the imported ginger is remarkable for a heating, pungent, aromatic property, that is persistent even after the article has been long dried and pulverized. All the qualities are readily imparted to water and to spirit. The watery preparation is the basis of the syrup which is so extensively employed. The essences of ginger are only so many concentrated preparations by the aid of pure spirit or fourth-proof brandy.

A very fair *tincture* can be made by macerating, for a month, (the longer the better,) four ounces of bruised ginger root in a quart of rectified spirit. The dose may be from ten to sixty drops, taken on loaf sugar; and it will prove to be a good carminative, relieving occasional pains of the stomach very promptly. The *essence* of ginger is only a variety of well-prepared and highly concentrated tincture. It was a very popular medicine during the prevalence of *Asiatic cholera* in 1849, in Philadelphia, and I have no doubt was of great service by allaying fears and relieving intestinal disquiet. For these reasons, if for no others, it may be regarded in the light of a good family medicine.*

The *syrup* of ginger is made sometimes from a strong infusion and sometimes from a tincture. Either will answer sufficiently well. I prefer the strong infusion, made by boiling four ounces of ginger root in a quart of water for the space of four hours, adding water as evaporation goes on. To the filtered liquor add enough refined sugar to make a rich syrup by the help of heat. This syrup will be unchanged by time if kept in a cool cellar. The addition of one or two tablespoonfuls to a tumbler of cold water, well stirred, makes a pleasant draught, and one that may be repeated, in hot weather, advantageously. The syrup is also an excellent vehicle for the administration of medicines whose qualities require concealment.

* The finest article of the kind I have used, is the preparation of Mr. Frederick Brown, of this city.

A very pleasant drink, called *ginger beer*, is readily made as follows:—Take thirteen pounds of sugar, twelve good lemons, or an equivalent of lime-juice, eight ounces of bruised race ginger, the whites of six eggs, well beaten, and ten gallons of water. Mix these, and boil for at least twenty minutes, skimming carefully before the boiling commences. Add an ounce of isinglass and a spoonful of balm, and put the whole in a cask. In ten days it will be ready for bottling.

Externally applied, the decoction and tincture of ginger will act as a *rubefacient*. To accomplish this, a flannel soaked thoroughly in the heated liquid should be applied and bound down by a good bandage. In persons whose skins are very delicate there will not only be decided redness induced, but sometimes actual vesication.

We have alluded to the aromatic, warming, carminative operation of the medicine, taken internally, and can cordially recommend it in all these relations. The fine powder is sometimes an available *errhine*, while the solid root is a good substitute for tobacco, being anything but offensive to the person chewing it, or to others.

We may add that ginger is an article of great antiquity, and was always prized as we value it now. In short, there is no substance, vegetable or mineral, that can be an adequate substitute for it.

The powdered or ground ginger of the shops is frequently adulterated with Indian meal, turmeric, and fine wood saw-dust. For this reason the root should be preferred.

THE END.