Lectures on Some Points in the Treatment and Management of Neuroses.

BY

E. C. SEGUIN, M. D.,

PROVIDENCE, R. I.,

CORRESPONDING MEMBER OF THE SOCIÉTÉ DE BIOLOGIE OF PARIS, AND OF THE VEREIN FÜR INNERE MEDICIN OF BERLIN, ETC.

REPRINTED FROM

The New York Medical Journal

for April 5, 26, May 17, 31, 1890.

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DELIVERED BEFORE THE MEDICAL SOCIETY OF THE UNIVERSITY OF TORONTO, MARCH 11 AND 12, 1890

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E. C. SEGUIN, M. D.

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THE NEW YORK MEDICAL JOURNAL

NEW YORK

D. APPLETON AND COMPANY

1890

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LECTURE I.

Introductory Remarks.—Therapeutics is generally considered as the highest department or function of medicine. In a certain sense it is true that we become physicians for the express purpose of battling with disease, of wholly overcoming it, or at least of retarding its progress and of alleviating the sufferings of the sick and wounded. All the complicated education, preparatory and strictly medical, which we go through tends to prepare us for the successful practice of what is often known popularly as the *healing art*. While an exact diagnosis is an indispensable preliminary to rational treatment, and while the making of a correct diagnosis in obscure and rare cases of disease is a source of just pride to the practitioner, yet nothing can compare with the satisfaction, both for ourselves and for the patient and his relatives, which is afforded by the successful issue of a well-planned treatment, or the judicious alleviation of suffering in incurable cases.

How do we learn therapeutics? I put it in this way, gentlemen, because I am still learning the art, and expect to go on learning more and more of it to the end of my

professional life. There are several correlated sources of instruction in therapeutics. We first are taught the natural history and physico-chemical characters of the drugs to be employed; that is materia medica or, better, pharmacology. In many medical schools students are now required to handle and personally examine the plants and substances used as drugs. Happy those of you who have the opportunity of spending a few months at work in a pharmacy acquiring a practical knowledge of these elements of therapeutics. A summer vacation or two thus employed would amply reward you for the loss of amusement and rest. This branch of elementary teaching should include, which it rarely does, I regret to say, the subjects of diet, hygiene, and more mechanical therapeutic agencies—such as water, massage, electricity, physical exercises, ventilation, etc. Next we are taught the physiological action of the more potent drugs upon the animal and human organisms. It is only in a few schools that a separate chair and laboratory exist for this important part of the curriculum. Usually we learn this somewhat piecemeal from the professors of physiology and of therapeutics. Still, there remains much more to learn—viz., the laws of compounding of remedies and of their application to manifestations of disease, or to what are called indications (usually disturbed physiological functions). This we learn partly from the professor of therapeutics, and in part also from the teachers of practical or clinical medicine at the bedside. Hence the reason why a professor of therapeutics should be a practical and experienced physician; his teaching should be a happy combination of experimental knowledge and of sifted practical experience. While I regard careful and well-controlled tests on man as the final criterion of the utility of a drug, I am not one of those who scorn the aid of the laboratory or of graphic records of the action of drugs on animals, high

or low in the scale. By all means, let us have all the light we can in this difficult and still uncertain branch of knowledge, and let us be prepared to base our trials of a drug on human beings upon knowledge of its nature and of its action upon the nervous and circulatory apparatuses, etc., of animals.

Thus far, as students and as young graduates in medicine, can you go, but after a few years of practice new views open to you, and you thirst for still further knowledge of a more special sort. You want the results of the personal experience of physicians who have devoted years to a closer study of certain diseases, and their treatment by potent remedies, chemical or mechanical, to help you in your daily practice, or to assist you in original observations of your own. Now, this higher, or more refined, or better sifted knowledge of therapeutics, for which there is not room in text-books, you obtain through medical journals, by reading new works on clinical medicine, whether in book or pamphlet form, and, lastly, by listening to special lectures embodying the results of many years of patient observation. In this more specialized study of therapeutics you will have to read and perhaps listen to a good deal of raw and useless matter, you will meet with a multitude of premature announcements as to the virtues of drugs or operations, and you will also have to encounter and criticise the honest enthusiast, who reports only favorable cases and believes that everything supports his plan of treatment. You will also have to meet the flood of fashionable remedies, floated and pushed by hasty medical experimenters and by interested producers. To extract the wheat from this chaff will require good judgment in your reading, and careful conservatism in your experiments upon patients. Always seek for the other view of a therapeutic claim, inquire for the unsuccessful cases, and make your own tests quietly

without promising yourself or your patients too much from a new remedy or operative procedure. Time and repeated tests will settle the question safely, and you will thus save yourselves self-reproach and just criticism by others.

The mite which I now contribute to the admirable course of instruction at this University, by the courtesy of the council of your medical society, is in the nature of a *résumé* of considerable personal experience with the treatment and management of functional nervous affections or neuroses. In three lectures I can not, of course, treat systematically so large a subject—one requiring much detailed explanation to make one's experience of value to others. All I can do is to consider some important sections of the topic, partly in a positive way, advising you what to do for neuroses; and partly, also, in a negative way, warning you what not to do, or to do most cautiously in these affections. Every statement I shall make will be based upon clinical experience, uninfluenced, I hope, by theory and fashion, and my warnings relative to the abuse of certain agents will be given without fear or favor.

As announced, the course will consist of three lectures, the first treating of some details of treatment of neuroses; the second, of the diet, hygiene, and moral management of neuroses; the third, on the abuse of certain drugs, more especially the bromides, morphine, and alcohol, in the treatment of neuroses.

Let us enter at once upon the question of the treatment of some of the more important neuroses.

I. Epilepsy.—This formidable affection has no uniform pathology; it is as yet only a symptom, which may be produced by numerous pathological conditions. Of organic or symptomatic epilepsies, some are due to encephalic disease or injury; others depend upon a peripheral (*i. e.*, non-encephalic) disease or injury; and, lastly, they may represent

toxæmic conditions, as the uræmic (falsely so-called), gouty, etc. It is usually not difficult to recognize such cases, and to subject them to a more or less rational treatment, based upon the causal indication revealed by our analysis. But there remain many cases of epilepsy in which the most careful examination fails to reveal the presence of any gross lesion or toxæmic state; and these go to make up the group of idiopathic epilepsy. The aggressions of scientific pathological research and perfections in diagnosis tend constantly to reduce this group. There are also cases in which, during many years, the epilepsy appears idiopathic, and finally, perhaps in the course of a few weeks or months, definite symptoms of cerebral disease appear and enable the physician to properly classify the case. In this connection I might cite the case of the wife of a physician who had for several years been under the care of Brown-Séquard, and who had been examined by several other eminent physicians. Her attacks consisted of *grand* and *petit mal* of the most vulgar kind, usually with an epigastric ascending aura; the spasms were bilateral and typical in kind (tonic followed by clonic movements); in the *petit mal*, staring, drooling, and swallowing movements were prominent. Her facies and manner were those of a common epileptic. Yet, about the time she was placed in my hands, right hemisymptoms (numbness, anæsthesia, and paresis) appeared, and under observation choked disc began and developed fully. Autopsy revealed a gliomatous formation involving the left thalamus and internal capsule. My belief is that the new formation was present from the very onset of the epilepsy eleven years before, that it at first grew very slowly, and toward the last very rapidly. Thus, a case may, owing to imperfections in our methods of diagnosis, appear as idiopathic at one time and symptomatic or organic later on.

Idiopathic epilepsy presents itself to the careful student

with numerous pathological signs or stigmata, no one of which can safely be pointed out as the chief or truly causal factor. Thus we notice in many epilepties the existence of hereditary taints of various sorts, apart from occasional direct inheritance of the disease. The child's progenitors have been debauched, addicted to sexual and alcoholic excesses; the victims of syphilis or of chronic starvation The patient himself is frequently microcephalic, or has a marked cranial asymmetry; his teeth are deficient or deformed; his head and long bones may exhibit signs of rhachitis; or his head may be abnormally large from hydrocephalus, or it is indented by pressure of forceps or pelvic bones during delivery. In some cases there is a history of asphyxial state at birth, with or without convulsions. Other conditions found which may play a part—how important we should be very cautious in stating—are defective eyes (refractive and muscular deficiencies), undeveloped uterus, feeble or diseased heart, etc. Acquired habits, such as early and excessive self-abuse in both sexes, the precocious use of alcohol or tobacco, undoubtedly lead to epilepsy in predisposed subjects. The same may be said of severe acute diseases, and the occurrence of an accidental (toxic, reflex, or febrile) convulsive seizure in infancy. Other attacks follow, in some cases within a few months or a year, in others several years after, and then the seizures become more and more frequent, constituting chronic epilepsy. In these cases we may, of course, suspect that a cerebral injury or lesion caused, accompanied, or followed the first eclamptic attack, but we can not always prove its existence; and, besides, it should be remembered that a great many children have one or several eclamptic attacks during early infancy, in what I have termed the period of convulsibility,*

* N. Y. Medical Record, vol. xx, Aug. 6, 13; and Opera Minora New York, 1884, p. 549.

without ever having a recurrence. The element of hereditary predisposition here plays a most important part in giving efficacy to an exciting cause.

I have made this somewhat extended analysis of the pathological conditions observed in the victims of idiopathic epilepsy, because upon them we may sometimes base rational treatment of an accessory or co-operative sort. While the routine anti-epileptic treatment is being systematically carried out, these secondary conditions may be—yes, should by all means be—studied and corrected. An epileptic may present several such conditions simultaneously—viz., defective eyes, dysmenorrhœa, and indigestion—each condition no doubt playing some part in the genesis of attacks. I say *attacks*, because in these cases the true cause of the *disease* lies deeper and at the present time beyond our ken, while the exciting cause of attacks is sometimes recognizable. Another reason for dwelling on these morbid states or secondary causal conditions is to warn you against attaching too great an importance to any one of them and being thus led into a one-sided, unscientific treatment of epilepsy. We are just now witnessing the decline of such an attempt. A few years ago a very able oculist* persuaded himself that eye-strain was the cause of epilepsy in a large proportion of cases, and his subsequent experience has been forced to come to the support of this preconceived and limited view of the pathology of epilepsy. He has treated a large number of patients by withdrawing their bromides, giving them glasses, and cutting their ocular muscles or tendons on a large scale. And the results?—at first, as usual with the therapeutic outcome of blind enthusiasm, fifty per cent. of cases were reported "cured."† You may imagine the astonishment of the profession at such a claim.

* George T. Stevens, in New York Medical Journal, April 16, 1887.

† *Loc. cit.*

Yet since the publication of the paper referred to in 1887 the inventor of the treatment and his followers have not published another case of "cure." *

This treatment was tested by a commission appointed by the New York Neurological Society, which, after two years and a half of work conjointly with Dr. Stevens, reported last November. Of the nine epileptic patients, not one was cured or much improved, three were slightly improved, and the majority unimproved. And it should be added that several cases (not counted because they did not submit to treatment for four months) withdrew because they were very much worse. One patient (under my own observation) would probably have died in *status epilepticus* had not the bromides been resumed. The question is thus apparently settled that treating the ocular defects of epileptics will not cure epilepsy, though it may reduce the sum total of exciting causes of attacks in some patients.† Yet

* Dr. A. L. Ranney is a firm believer in Dr. Stevens's teaching with reference to the ocular theory of epilepsy, yet, after treating many cases after Stevens's method, he can only give us the following summary of results in his excellent Lectures on Nervous Diseases, New York, 1888, p. 482: "That a persistence of epileptic attacks for years does not necessarily render recovery impossible is proved by the fact that I have personally had three cases where convulsive seizures have been thus far arrested by tenotomies which I performed upon the eye muscles. All of these cases had been kept constantly under bromides for several years without apparent benefit before they were placed under my care. Over a year has now elapsed since two of them have taken any drugs or have had an epileptic fit, and the third has passed several months without an attack." The author does not expressly say that these cases are "cured," and very wisely, for any one familiar with the natural history of epilepsy knows that (1) in some rare cases inexplicable long intervals occur without treatment: (2) that a case should not be reported as cured until at least five years have passed without *any kind of epileptic seizure*, not merely convulsive ones.

† *Vide* Report of Commission (a non official and imperfect report) in Journal of Nervous and Mental Diseases, November, 1889.

the practice—an unscientific and injurious practice, as I do not hesitate to call it when indiscriminately applied—is still in full blast; necessary bromide treatment is suspended, muscles are cut and recut, an impossible (?) balance of ocular muscular forces being sought for, and glasses are ordered and re-ordered for the same patient. It will take some time yet for this local treatment to find its true level. The defective eyes of epileptics should be corrected, but there is the same demand on the part of the pathologically conditioned stomach, ovary, foreskin, etc., of our epileptics. In these diseased or disordered or defective and strained organs arise secondary causal influences which should by all means be removed; but from that to "curing" epilepsy is a long, long way. And while these causes of irritation are treated the bromide should not be withdrawn, or not wholly.

The same remarks apply to that other fashionable treatment of epilepsy and hystero-epilepsy, now also happily declining—viz., that by removal of one or both ovaries. What outrageous cases of useless mutilation have thus occurred under the pressure of medical authority and of popular craze for novelty and fair promises! The operation of castration in women is undoubtedly sometimes justified, and some few cases of hystero-epilepsy are relieved by it, but it is a measure to be resorted to only upon the most exact and clear indications, never haphazard or as a fanciful last resort.

Thus, gentlemen, I would make a strong plea for an attempt at a rational treatment of idiopathic epilepsy by a searching examination of the patient and by the careful removal of the various secondary causes or exciting conditions you may discover. In close connection with this lies the hygiene of epileptics, a subject with which I shall deal in a subsequent lecture.

I now pass to the consideration of the routine or pallia-

tive treatment of epilepsy, a treatment necessary in both the symptomatic and the idiopathic forms of the disease. I refer to the systematic use of the bromides and allied anti-epileptic (or anti-convulsive) drugs. It is here that I may be able to offer you the fruits of many years of practice and of many experiments as to substances and modes of administration. I shall fully state the drawbacks and uncertainty of the treatment, and try to enable you to carry it out successfully. It is a matter requiring much care and tact on your part, as well as intelligent co-operation and unusual perseverance on the patient's part.

Right here let me state that I am a pessimist as to the curability of idiopathic epilepsy, and have not yet published any case as *cured*. I have records of patients, and have patients actually under observation, who have had no seizures of any sort for periods varying from eleven to three years. Yet, only a year ago, an old patient wrote me of a recurrence of attacks after eleven years (several of which were without treatment) of freedom. Other cases have shown recurrence after seven years, five years, and many after two years of absolute freedom from any manifestation of the disease. Of course in these cases the bromide treatment had been discontinued, sometimes by my direction, sometimes by the patient, who had grown to have a false security or disregarded my warning. Whether a long-continued bromide treatment can cure epilepsy is a question which I believe can be answered in the affirmative, but this result is obtained, alas! only in an exceedingly small proportion of cases. Nearly all the so called cures which you will hear of and read are prematurely reported (and this applies particularly to cases treated by surgical means). In my opinion, as regards medical cases, an interval of at least five years without the slightest seizure, with a gradual reduction of the medicines during the fourth year and one

year without medicine, should be the necessary preliminary condition to a report of cure. With respect to surgical cases, it would be wise to wait at least two years before placing them on record as cured. How many observers have placed such checks on their results?

The Routine Bromide Treatment of Epilepsy.—In undertaking the care of a case of this affection, you should stipulate for plenty of time to study the case in all its aspects, and for rather frequent visits at first for the purpose of adjusting the doses, securing proper hygiene, etc.

In the first place, remember that you are prescribing the drug not against the disease as a sort of entity or tangible enemy, but for the individual patient to reduce the excitability of parts of his nervous system to a certain point. The susceptibility of persons to the action of bromides varies very greatly. From these two considerations you readily perceive how delicate a matter it is to find the right dose for a given patient; it sometimes requires one or two months of experimentation. I have made it a rule to require epilepties who reside at a distance from me to stay in New York, or come in twice a week for one month at least. To see a case of epilepsy once and prescribe a bromide treatment is a most reprehensible, careless practice; the patient either receives too little of the remedy and attacks continue, or else he is brominized with sad if not dangerous results. In any case the end is failure, which throws discredit upon the physician and fortifies the opponents of this treatment. Allow me to state several laws relative to the dosage of bromide which I have worked out from my experience, successful and unfortunate. We learn much by our errors.

(*a*) Subjects vary greatly in their capacity for resisting bromides. I have known unpleasant bromism produced in an adult woman by thirty grains a day for a week or

two; while, on the other hand, I have given as much as one hundred and fifty grains *per diem* to a girl fifteen years of age, and to one strong youth of twenty, from one hundred and sixty to two hundred grains *per diem*, with no marked bromism. These extremes teach caution.

(*b*) Children, little children particularly, bear much larger doses of bromides proportionately than adults (as is the case with the iodides). Many epileptic children of from two to six years will need between forty and sixty grains *per diem* to arrest attacks; and take these quantities without bromism. The salt is probably absorbed more quickly and excreted more thoroughly than in adults.

(*c*) There is a certain proportion, in adults, between the size and weight of the patient and his capacity for resisting drugs. The lady I have referred to as having been brominized by thirty grains a day was much below the usual size and delicate in every way. This rule is one which is followed in physiological experiments on animals; in modern researches the weight of the animal experimented on is always noted. There are exceptions to the rule, but it is of some help in giving your first directions.

(*d*) The existence of organic cardiac disease, or of simply feeble heart with a sluggish, relaxed state of circulation, generally decreases the ability to withstand bromides; hence the necessity of examining your patient's heart and arteries before prescribing, and of occasionally combining digitalis with the bromides.

(*e*) Organic cerebral disease of any sort increases susceptibility to bromism; hence in cases of symptomatic or organic epilepsy, in which you should always give *some* bromide while the rational indication treatment is being carried out, you should be extremely cautious; bromism may supervene with moderate doses, sometimes very rapidly, thus blurring the diagnosis and leading to a premature fatal prognosis.

(*f*) Acne should never serve as a guide to the dosage of bromides. Its appearance does not depend as much upon the quantity of the drug given as upon peculiarities in the patient, as, for example, an unhealthy state of the skin with over-development of the sebaceous glands, and deficient excretion of the bromine by other channels. Just as with iodides, a patient may have much acne while taking small doses of bromides, and *vice versa*. In some persons, fortunately, the acne shows most on the back and chest. Acne can be much controlled, though rarely entirely prevented, by giving the drug according to my method of large dilution in alkaline water, and by administering full doses of arsenic from time to time. We occasionally meet with individuals who develop extremely severe acne of the confluent form, giving rise to the condition I have termed *ulcus elevatum*,* more especially on the legs and arms. In such cases we should substitute some other anti-epileptic medicine in a way to be detailed further on.

(*g*) Impending bromism is indicated by loss of reflex action in the palate and throat (and we should aim to obtain this effect in all epileptics), somnolence during the day, weakness, staggering gait, a dull, expressionless facies, partial aphasia, partial dementia, increasing knee-jerk, feeble cardiac action and reduced arterial tension, a peculiar foul breath, coated tongue, and anorexia. In the more advanced stages, hallucinations with associated delirium (sometimes active), increased difficulty in speaking, heavily coated brown tongue, and a typhous state appear. Death may ensue. In a subsequent lecture I shall dwell at some length on bromism as a factor in diagnosis and prognosis. In the treatment of idiopathic epilepsy we aim to keep up a slight degree of bromism, and this requires extreme care in the first dosage and in directing the necessary variations in

* Opera Minora, p. 629.

doses from time to time afterward. I may be mistaken, but I consider it one of the most delicate tasks in medicine to keep a patient steadily at the point of therapeutic bromism for several years, avoiding truly toxic effects, and not allowing the nervous apparatus to re-acquire enough excitability to permit of an attack. In some cases we can never attain this happy mean, something in the patient's condition or in his mode of life causing inexplicable oscillations.

A frequent objection to bromide treatment by parents is that it tends to produce dementia and insanity. The reply to this is that scores of years before the bromides were used in medicine it was known that dementia and insanity were frequent results of the disease—its termination in many cases. This danger is inherent in the disease, and I do not believe that more epileptics become demented now than did fifty years ago; probably fewer, as we certainly control the disease better and almost cure it much more often than our predecessors. A judicious bromide treatment does not, I firmly believe, produce or hasten dementia in epileptics.

(*h*) Now let us consider the choice of bromide and method of administration. My own conclusion, based on a good deal of experimenting, is that it is best to use a single bromide and to administer it simply dissolved in water. I have failed to become convinced that there is much difference in the anti-epileptic action of the different bromides,* or that there is any advantage to be gained by combining them. The bromide of sodium has seemed to me less irritating to the gastro-intestinal tract, and, when freely diluted, it presents the advantage of being almost tasteless. In using bromide of potassium we have, besides the bromic effect, a depressing influence upon the heart from the potassium. Many years

* If there is any theoretical chemical difference it is in favor of sodium bromide, one atom of which contains seventy-eight per cent. of bromine, while potassium bromide contains only fifty-three per cent.

ago I gave up the complex formulas which were then in vogue (*e. g.*, Brown-Séquard's celebrated mixture, etc.), and wrote for a simple watery solution. Having many cases to treat in clinic and private practice, I resolved to adopt a standard solution so calculated that one teaspoonful should contain about fifteen grains of the bromide (single or combined). This formula has remained useful since I adopted, six years ago, the metric system; one teaspoonful contains about one gramme. By means of such a formula I have found it easy to follow up the systematic treatment of many patients. The doses can, of course, be varied infinitely between extremes simply by directing so many teaspoonfuls or half-teaspoonfuls to be taken in the day, and if the patient (often seen only at long intervals) tells or writes you how many teaspoonfuls he is taking, you can at once calculate the quantity of bromide which is being used without referring to records or prescription-stubs. I see no reason to regret having adopted this plan, and can cordially recommend it to you. The formulas are:

Apothecaries' Weight.

℞ Sodii bromidi..... ℥ iss.;
Aquæ..... ℥ vij.

One teaspoonful contains about fifteen grains of the salt.

Metric Weight.

Sodium bromide..... 45·00;
Water..... 200·00.

One teaspoonful contains nearly one gramme of bromide.

The calculation is based upon the assumption that ℥ vij, or 200 grammes, contain from forty-seven to forty-nine teaspoonfuls.

The small errors which occur in such formulas, and such as arise from awkward or careless measurement by the patient, can only amount to one or two grains per dose, and are of no special importance, because you feel your way

along with increasing or decreasing doses until the desired effect is obtained. As it is, however, extremely important that the same measure be constantly employed by a patient during the course of his treatment, I usually direct that a measuring or medicine glass, clearly marked in teaspoonfuls, be used, because teaspoons vary a great deal.

Accessory medicines, such as belladonna, arsenic, digitalis, nux vomica, etc., I almost always give by separate prescriptions, so that their doses may be varied independently. With reference to the vehicle, I may say that I have been thanked numberless times by patients for omitting syrups, bitters, and even flavored water from the prescription. Of course, any of the common soluble bromides may be given by the same formula. The bromide of zinc and monobromate of camphor are better administered in capsules.

(*i*) Perhaps the greatest peculiarity in my method of giving the bromides has been to insist on large dilution of the dose. I believe that much of the gastric irritation reported by physicians as obstacles to a thorough bromide treatment is due to the giving of from twenty to forty grains of bromide in an ounce or two of water. I have met with patients who by direction used only an ounce of water with each dose. I direct that the smaller doses, say up to thirty grains, be given in half of a large tumblerful of water, and the larger doses, from thirty to sixty grains, in a big tumblerful; to be drank slowly in all cases. At this degree of dilution the salty taste of the drug is hardly perceived, and I believe that it is most quickly absorbed even by a delicate stomach. At least I can state it as a fact that I have seldom had gastric derangement in my epileptics.

As regards a choice of liquids for dilution, ordinary drinking-water will do, but I believe that a slightly alkaline water favors the rapid and easy absorption of the remedy, and prevents its decomposition in the stomach. Conse-

quently I usually order the dose to be taken in artificial Vichy water (siphons), or in Buffalo or Londonderry lithia waters.* Where a more decided alkaline effect is desirable, imported Vichy water ("Célestins" or "Hôpital" best), or the "still" lithia water made by the Hygeia Company, of New York, which contains a useful amount of carbonate of lithium—viz., twelve grains to the U. S. gallon of distilled water, or 1 to 5,000.† For poor or clinic patients I direct that a pinch (a quarter of a teaspoonful) of bicarbonate of sodium be added to the glass of water. The bromides may be administered in milk, and I frequently order this in the case of little children.

(*j*) Time of administration. This varies more or less according to the nature of the case in hand, and you should choose the hours of giving the bromide only after a careful study of the symptoms, particularly as to the chronology of the attacks. It is partly for this purpose that during the first two or three interviews with the patient you should endeavor, with the help of his relatives or companions, to construct a table of the attacks which have preceded the first interview, so as to have, as far as possible, a graphic representation of the order and frequency of attacks. This can seldom be done except for a few days or weeks prior to the first visit, because of want of any record and imperfect recollection by patient and friends. However, as the case progresses under your care, such a diagram is gradually constructed and proves of much help in practice. My first general rule is to give as few doses *per diem* as possible.

* For more details on the utility of alkaline waters as a vehicle for certain remedies, see Archives of Medicine (New York), vol. vi, August, 1881, and Opera Minora, p. 529.

† We still need from our enterprising manufacturers a supply of pure (distilled) waters, "still" and sparkling, containing *efficient* quantities of remedies, such as lithium and potassium carbonates, arsenic, iron, etc., singly or in combination.

This is partly to make punctual taking more easy, partly not to interfere with the patient's occupation or school-work, and also in some cases to keep the treatment concealed from those out of the family circle. A second rule is to give most, or even all, of the bromide destined to influence the patient for twenty-four hours at a time within four to six hours of the time when attacks are most likely (judging by the record) to occur; very much as we give quinine for intermittent fever. In a few cases all attacks occur in the night, between 10 P. M. and 7 A. M. In such cases it has been my practice to administer all the day's bromide at one dose of forty, sixty, eighty, or even over a hundred grains, properly diluted, at some time during the evening—between immediately after the evening meal (7 or 8 P. M.) and midnight. In some cases, where the seizure is most probable just before rising, I have the patient roused at 2 or 4 A. M. to take part or the whole of his dose. In many cases both diurnal and nocturnal attacks occur distributed with some regularity; and in these I give the larger part of the total daily dose from four to six hours before the most dangerous time. Thus it is very common for me to order (to an adult male patient) two teaspoonfuls (= 30 grains) of the bromide solution on rising, and two or three, or even four teaspoonfuls after supper, or *vice versa*. This often suffices to keep up a varying degree of therapeutic bromism, deepest during that half of the day when attacks are most to be apprehended. In some cases no sort of regularity can be ascertained; attacks are liable to occur at any time. Then the bromide must be given three or four times a day in about equal doses.

The first dose of the day I almost always direct to be taken on waking, in order to secure a bromic influence as early as possible in the day. It should here be remarked that while this early dose largely diluted is very acceptable to and easily absorbed by most patients, it occasionally

causes gastric irritation, and must be postponed until the patient shall have had some food. Other doses during the day I always give after food, except, of course, the bedtime dose.

A small point of practical importance which I might mention here is that a dose of Carlsbad salts, or drops of nux vomica, may with great advantage be given with the early morning dose to many patients.

In the case of patients who are obliged to travel about, and of those who need only one dose at bedtime, it is well to have the bromide put up in powders of the proper size. Sodium bromide is sometimes deliquescent, but this difficulty is obviated by using waxed paper, and keeping all the powders in a tightly closed tin box. In the same cases effervescent salts of lithia or potash may be used to make the alkaline solution at the time of taking.

Having thus spoken of the exhibition and division of the daily dose, I will now consider the question of uniformity of dosage from day to day, week to week, etc. In a few cases, particularly those of *grand mal*, in which attacks occur only at night, after you have discovered the dose necessary to produce therapeutic bromism, it is not necessary to make any change for months or even years. I have had patients doing well (*i. e.*, perfectly free from attacks and in good health) taking four teaspoonfuls (= 60 grains of NaBr) of the solution, or an equivalent powder, at bedtime for three years and more. Many cases have attacks at intervals which may be quasi-regular—*e. g.*, pre-menstrual, fortnightly or weekly (approximately). In such cases much good may be done by increasing the daily dose just before the dangerous period and keeping this up for a few days then returning to a minimum quantity. In this way the bromism is made to follow a curve corresponding to but anticipating that of the attacks. In many female epileptics, whose epilepsy is not at all of reflex origin, many more at-

tacks are grouped about the beginning of the menses or occur just before. In such cases very small doses (from ten to twenty grains twice a day) will suffice for the majority of the days in each month, if the dose be raised to forty or sixty grains twice a day for the four or six dangerous days.

There are many other reasons which demand a temporary increase or decrease in the daily dose of bromides in epilepsy, and you should always bear these in mind. Only by unceasing vigilance can you prevent relapses or avoid plunging your patient into a deplorable state of bromism.

Reasons for increase of dose: 1. Increasing age and size of young patients; particularly the approach of the menstrual function. A chronic case of epilepsy which, at the age of ten or twelve years, has been doing well with from twenty to sixty grains of bromide a day, will need an increased dose every two years at least (unless, of course, the attacks have been completely suspended). 2. The exposure of the patient to unusual excitement or fatigue. Thus, in a chronic case, I direct an extra dose of ten, fifteen, or twenty grains to be taken before the patient goes to a party, or to the theatre, or before starting on a journey. This little precaution is, I believe, of much service, and enables you to keep the ordinary dose down to a minimum. Reasons for reducing the dose of bromide: 1. When a patient has been three years without *any* manifestation of the disease, I begin a systematic reduction of the bromide, taking off from a half to one teaspoonful (7 to 15 grains) every three or four months. This brings the dose down to a very small quantity by the end of the fourth year, when, in very promising (*i. e.*, perfectly healthy) subjects the medicine may be altogether omitted and strict hygiene alone enjoined. But, even then, after four years of perfect freedom from *grand* or *petit mal*, I believe that it is well to give some bromide occasionally, when the patient is to be exposed to

excitement, worry, or fatigue. 2. The seasons of the year, by their influence on health and bodily strength, make some difference in the dosage. Thus, maximum doses are well borne in autumn and winter, while in the hot, debilitating summer months a marked reduction should be made in many cases, under penalty of pathological bromism. 3. Temporary ill-health. One of my cardinal rules, and one which I enjoin most emphatically upon the patient and his friends at the beginning of treatment, is that the bromides may be reduced, but must never be wholly omitted—at least, not without the direct order of a skilled physician. During common colds, attacks of diarrhœa, simple acute febrile diseases, and surgical affections a certain reduction should be made, as under these conditions bromism easily ensues. Besides, we know that injuries and acute diseases of themselves act as anti-epileptics, and that there is little danger of an attack until convalescence is advanced. Still, a small quantity should be given every day. In case of very severe illness, especially those in which a typhous condition or tendency is present, the drug may be discontinued for a few days, to be resumed in small doses as soon as recovery begins.

(*k*) It is extremely difficult to insure the necessary regularity in the taking of bromides, and without absolute exactness in this respect success is impossible. One difficulty lies in the forgetfulness and feeble-mindedness of many epileptics; they mean to take their medicine regularly, but often forget it. This obstacle I have to a great extent overcome in my practice by insisting that the doses shall be given, even to adult patients, by another person—a relative or friend of the patient. I now make this a condition of my assuming charge of a case. I make some one else than the patient responsible for the dosage. It causes trouble to the family, but the results are gratifying. Be-

sides the element of forgetfulness, there is the danger, by no means imaginary, that the patient shall take an extra dose, or a double dose when he has the fancy. Occasionally we have to deal with a friendless patient, or one who is exceptionally well-balanced and exact; in which cases we must or may allow him to take the medicine himself. The adjuvants to the treatment may usually be left in the patient's hands, except often the arsenic. Other obstacles consist in the over-confidence, discouragement, or ignorance of the patient. Very often, when a person has been taking bromide for several months, or a year or more, and has been free from attacks, he will of his own accord cease or intermit the bromide, with the certain result of relapse. Or, after seeking the proper dose for many weeks, the epileptic attacks continue or unpleasant bromism is produced, and in such cases only full confidence on the patient's part and frank statements of the difficulties by the physician can insure continuance. Ignorance of the nature of the attacks is a considerable difficulty in the way of successful treatment. Frequently the patient knows next to nothing of his disease, or thinks that he "faints," or has "dizzy" or "nervous spells," and naturally he rebels against the rigid hygiene and exact dosage you direct. Occasionally, in the case of a very docile child, it may be well to keep the nature of the ailment secret, and trust to parental authority and watchfulness to secure thorough treatment. Usually, however, the better plan is to tell the patient, in guarded terms, that he has epilepsy, or that his attacks resemble or threaten epilepsy. By tact the physician can, in this, as in cardiac disease, tell the patient enough to insure obedience without producing alarm or despair. More especially is this frankness necessary when patients are from sixteen to thirty years of age, a time when courting is in order and when a matrimonial engagement may be

contracted with or without the parents' knowledge. Much misery may be prevented by letting the patient know more or less about his ailment, and making him understand that an engagement should not be thought of until a cure has been obtained. A difficulty, also due to ignorance, is that patients, relatives, and even the family physician, refuse to admit the epileptic nature of very slight attacks. I have known a physician allow his own daughter to go on for twelve years with *petit mal* without making any attempt at treatment or seeking advice.* Travel sometimes stands in the way of continuous treatment, but it need not if you are careful to give written directions to your patient, and see that he goes off with a sufficient supply of medicines and with prescriptions. In order to insure regularity in the treatment, my custom has been to explain the nature of the case, and the absolute necessity of faithful, exact treatment, to the patient and his responsible relatives or friends, and to tell them that I shall give up the case unless everything is done precisely as ordered. Besides, to avoid any excuse for neglect, I give written directions at each visit about the medicines, diet, hygiene, and amount of work to be allowed. This means trouble and the expenditure of a little more time, but, gentlemen, it also means success, relative or absolute. More especially is it desirable to give written instructions to cases which, as they are doing well, you see only a few times a year.

From these statements you perceive that I am in favor of what has been termed the continuous dosage of bromide as against the intermittent giving of larger doses. Most emphatically I am. The latter plan must, of necessity, be to a great extent a hap-hazard or "hit-or-miss" plan of treatment.†

* Opera Minora, p. 547, Case IX. Also in N. Y. Medical Record, Aug. 6 and 13, 1881.

† Dr. L. C. Gray, in an excellent paper on this subject (N. Y. Med.

I would have you always bear in mind that the problem is to give just as little bromide as shall secure the patient against attacks; a distinct therapeutic bromism is to be produced and kept up, and pathological bromism avoided.

It may seem to some of you that I have gone into the question of the administration of bromides at an unnecessary length, but I think I am justified in this by the fact that the books accessible to practitioners do not, and indeed can not, give necessary details, and that I have found the failure of excellent physicians in cases of epilepsy to be due to want of knowledge of many of the points I have brought to your attention. I trust that this will be an acceptable excuse for being so prolix. Besides, I trust that I have succeeded in impressing upon you that the successful management of a bromide treatment requires extreme attention to details and ceaseless vigilance, besides knowledge.

The question is often asked, Can you not give some other drug besides bromides to subdue or control the attacks? In some cases this is asked because the patient is tired of taking bromides, or has a prejudice against them, but in other cases the reason is much stronger, and consists in the fact that the patient is unfavorably affected by bromides, severe confluent acne (*ulcus elevatum*), persistent indigestion, undue somnolence from small doses, or dementia being produced. Such cases are rare, but are just those that tax our resources. A few years ago the answer would have been negative; no drug was then known which controlled epilepsy in a manner at all comparable with that of bromides. Belladonna, zinc, nitrate of silver, nux vomica, arsenic, etc.—an endless number of drugs—have been proposed for the treatment of this disease, but not one of them will secure long intervals of freedom. Some of them,

Jour., June 28 and July 5, 1884), has likewise reported his failure with the intermittent plan.

particularly belladonna and nux vomica (or their alkaloids), are useful as adjuvants to the bromide treatment, and should not be neglected.

In the year 1882, guided by the well-known efficacy of chloral hydrate in eclampsia of adults or children, and in *status epilepticus*, I began incorporating some of this drug with the bromides, substituting a certain amount of chloral for a like amount of bromide. I adopted two formulas on the same plan as my simple bromide solutions, viz.:

(1) A weaker solution:

Apothecaries' Weight.

℞ Chlorali ..... ℥ ij;
Sodii bromidi ..... ℥ x;
Aquæ ..... ℥ vij.

Metric Weight.

℞ Chloral ..... 7·50;
Sodium bromide ..... 37·50;
Water ..... 200·00.

One teaspoonful of this solution contains about three grains of chloral and twelve grains of bromide.

(2) A stronger solution:

Apothecaries' Weight.

℞ Chlorali ..... ℥ ss.;
Sodii bromidi ..... ℥ j;
Aquæ ..... ℥ vij.

Metric Weight.

℞ Chloral ..... 15·00;
Sodium bromide ..... 30·00;
Water ..... 200·00.

Each teaspoonful contains, approximately, 5 grains of chloral and 10 grains of sodium bromide = 15 grains (1·00) of anti-convulsive drugs.

I have been credited, through a friendly mistake, with

proposing chloral as a "cure" for epilepsy. Such a claim would be absurd; I have never referred to any drug as a "cure" for epilepsy. But I have found this new combination of much utility in the long continued treatment of some cases of epilepsy; that is all. In a few cases I have gradually increased the chloral to an equal quantity with the bromide, or even more. What are the indications for the use of a chloral-bromide solution in preference to a simple bromide solution?

First and foremost, the occurrence of very severe acne, of confluent form, with resultant large, elevated, fœtid ulcers on various parts of the body, more especially the legs. In 1882 * I gave a description of this lesion, which is extremely painful, and which can hardly be cured while the patient is taking useful doses of bromide. Later I learned that the lesion had already been described by Voisin.† In several such cases I have substituted chloral for a large part of the bromide, with remarkable results, the ulcers healing rapidly under a simple antiseptic dressing, the patient's general health improving by cessation of pain and better sleep, and, equally important, the attacks being prevented fully as well, perhaps better, than by the free use of bromide alone. In the last ten years I have had under my care a case of incurable chronic epilepsy (from three to six attacks a year), in which simple but deeply-marking acne of the face had repeatedly led the patient to give up bromide treatment, with the usual result of aggravation of attacks each time. Her face was and is still extensively scarred, as if by small-pox. In the last two years, taking a solution (same standard strength) of equal parts of bromide and chloral, she has

* Opera Minora, p. 629; or Archives of Medicine (New York), October, 1882.

† De l'emploi du bromure de potassium dans les maladies nerveuses. Paris, 1875.

had fewer attacks than at any previous time, and hardly one pustule a month has appeared.

Another indication for this general substitution of more or less chloral for equivalent parts of bromide is unusual debility and mental dullness from the amount of bromide found necessary to control the attacks. If, in such a case, we reduce the bromide even by half a teaspoonful (7½ grains, or 0·50), convulsions recur. Now, with such a patient, you will be surprised at the improvement which follows giving some chloral (never as much as for severe acne). The first few doses may produce a (quasi-normal) sleepy feeling, but this soon wears off; the circulation improves, the patient grows stronger, and the memory and other mental functions rapidly regain as much power as they had prior to saturation by bromide. This category of cases is quite large, and in feeble, demented epileptics I often begin treatment with the weaker chloral-bromide solution, using the stronger later, if bromism is too easily produced.

Occasionally we meet with a case in which the cessation of epileptic seizures through bromide treatment is followed by the appearance of mental disturbance, usually mania. I have not seen such a case (they are excessively rare out of asylums) since beginning to use chloral, but I incline to the opinion that its substitution, in part or wholly, for the bromide might control both the physical and psychical manifestations of the disease.

I am confident that chloral is as good an anti-epileptic or anti-convulsive agent as the bromides, and that it is much better tolerated by some patients; it certainly affects the cardiac nerves and cortex of the brain less unfavorably.

Occasionally, I may say rarely, ocular irritation has been produced by the chloral, but no other bad effect

has been observed. The narcotic effects of the drug are not noticed, or very slightly, after a few days or weeks of use.

This lecture is already so long that I can only refer very briefly to a few of the many other points of interest in the treatment of epilepsy.

I have already expressed my opinion as to the value of castration, ocular treatment, and the administration of the numerous drugs which from time to time have been fashionable, and from which each originator expected so much. These are accessory or adjuvantial treatments or remedies, each one useful in well-selected cases, and we should endeavor constantly to discover indications for their use; but I beg you never to depend solely on any one of these measures or drugs, however lauded it may be by its advocates. In idiopathic epilepsy (and to a less degree in the symptomatic form) a continuous systematic treatment by bromides, alone or combined with chloral, is indispensable, and I believe that it is criminal to omit it. Without it our patient is sure to have more and more attacks (even if a temporary long interval be at first obtained, as in a few of the cases treated by section of ocular muscles and by glasses). With the bromide treatment, carefully watched, we are able to relieve almost all cases of *grand mal*, and in a certain proportion of cases to obtain intervals of from one to five years free from seizures—almost a cure. The evil effects of bromide saturation are avoidable in ninety-nine out of one hundred cases by watchfulness and by co-operative medication, and especially by attention to hygiene and diet (*vide* next lecture).

The treatment of *petit mal* is much less satisfactory than that of *grand mal*, and frequently it is not at all checked by reasonable doses of bromides, or even when bromism is well marked. Although there is a slight tonic

spasm in nearly all *petit-mal* seizures, the motor zone and apparatus are less involved than in *grand mal*, so that remedies like bromides and chloral which diminish the excitability of those parts of the brain are not theoretically sufficient, and seldom succeed in practice.

I have derived good results from combining with a very moderate bromide course the free use of strychnine and atropine or belladonna, giving usually the sulphate of strychnine dissolved in dilute nitro-muriatic acid, gr. ij to ℥ j (0·10 to 30·00), the dose to vary from six to sixteen drops after meals, well diluted. Atropine is conveniently given in the shape of pills or granules of $\frac{1}{300}$ grain (0·0002), which are manufactured by several reliable firms. I give from three to four or even six a day—enough to produce a decided effect on the pupils and mouth. Digitalis, ergot, and ergotine have seemed to succeed in some cases of *petit mal*, and I am inclined to think that it is in such cases that accessory treatment of existing ocular defects may be of greatest use. In this may lie the reason for the success of atropine or of strychnine in diverse cases. In some there is weakness of accommodation and feebleness of the interni (exophoria); these will be benefited by nux vomica or strychnine, which has, as I have been led to believe by several years' observation, a specific effect upon the third cerebral nerve, strengthening it and its attached muscles (internal recti and ciliary muscle). In other cases, where the externi are weak (esophoria), belladonna or atropine, by producing a paretic condition of the third nerve and dependent muscles (including the iris), relieves the strain and brings relief. I desire to enter a caveat also as regards the beneficial action of these two drugs in different cases of headache and of cephalic paræsthesia (many cases of so-called cerebral hyperæmia) from eye-strain. The drugs atropine or strychnine may be used in such cases for diag-

nostic as well as for therapeutic purposes. Allow me to repeat that I believe that strychnine strengthens the third cranial nerve and its muscles (especially the internal rectus and ciliary muscle), while atropine (also gelseminm and conium and mydriatics generally) produces a paresis of the same nerve and muscles. Thus one drug acts as a tonic of special local action and of considerable duration, while the other relieves strain by relaxing or weakening the same nervo-muscular apparatus. These organic affinities are not more singular than others which are well known in the fields of experimental and practical therapeutics. Let me ask you to make a trial of these two indications in your treatment of headaches, bad feelings about the head (occipital usually), and epilepsy—overactive interni and ciliary muscle calling for atropine, weak interni and ciliary muscle calling for strychnine.

Digitalis, strophanthus, and caffeine * are especially useful prescribed occasionally for patients whose hearts are diseased or weak and whose peripheral circulation is sluggish. They also best counteract some of the worst effects of too much bromide.

A word about arsenic. It is invaluable as a remedy for the acne which annoys epileptics so much. Some authorities advise giving small doses (from three to six drops) of Fowler's solution with each dose of bromide for long periods, but I have obtained better results by directing that a arger dose be taken for a short time occasionally; thus, at one-twentieth-of-a-grain arsenious-acid granule after each meal for one week in each month. Thorough washing of the face with a good soap and with a little ammonia added to the (warm) water should be practiced daily.

* Pure caffeine only should be used, the citrate being a doubtful salt of very uncertain strength.

Ointments are of little use, the best being those containing sulphur.*

Iron and cod-liver oil are frequently called for in the course of a long-continued antiepileptic treatment. I shall refer more at length to the use of cod-liver oil while speaking of diet. One of the remedies to which I attach much importance, particularly in idiopathic epilepsy in children whose teeth are bad or notched or typically Hutchinsonian, is the bichloride of mercury. I give it for long periods of time in doses of from $\frac{1}{100}$ to $\frac{1}{30}$ of a grain (0·0008 to 0·002) in an elixir of gentian or calisaya bark. My experience with iodide of potassium in such cases has not been satisfactory, though I mean to make further experiments in this direction.

A number of drugs which at one time had a transient run owing to hasty reports by enthusiasts—such as oxide and sulphate of zinc, borax, curare, nitrate of silver—are now believed to be nearly useless, and are seldom prescribed; they certainly should never be depended upon to the exclusion of bromide.

I have taken up so much time with the details of the treatment of epilepsy that I can add but little of what I had intended saying about the treatment of some other neuroses. Consequently I may be pardoned if I put the result of my experience in this matter in the form of brief didactic statements.

II. Chorea.—(*a*) Our mainstay in the treatment of this affection is still arsenic. I have long taught that one reason

* The following modification of Dühring's formula has seemed useful:

℞ Sulph. precip. ..... ʒ j (4·00);
Camphoræ ..... ʒ ss. (2·00);
Cerati. simpl., } .....āā ʒ ss. (15·00).
Ungt. aq. rosæ, }

M. Sig.: To be applied at bed-time.

why the medicinal treatment of chorea has seemed to be of little utility, and why a belief has grown up that the disease might terminate spontaneously, or only with the help of hygiene and tonics about as quickly as when strong drugs are used, is because physicians, almost without exception, give nearly useless doses of arsenic (Fowler's solution). Case after case has come to me, pursuing its semi-chronic or positively chronic course, while the patient was taking from six to ten drops of the solution. I have satisfied myself that chorea can be greatly shortened by the proper exhibition of arsenic, but that to obtain a striking result it is necessary, in most cases, to go beyond fifteen drops three times a day.

In many choreic patients when the dose of ten or twelve or fourteen drops of Fowler's solution three times a day has been attained, gastro-intestinal disturbance and redness of the eyes are apt to appear and necessitate a cessation of the treatment for two or three days. The important practical point to recollect is that after this interval of rest you can and should begin again *with the dose at which you left off*, and then go on to the really efficacious doses of from eighteen to twenty-five, or even twenty-seven, drops after each meal. Few cases of chorea, in my experience, show much improvement until a dose of sixteen to eighteen drops *ter die* is reached. In the case of arsenic, even more than in that of iodides and bromides, very free dilution of the dose is necessary; a large tumblerful of alkaline water, "still" or effervescent, should be given with each dose. Another error in practice is to oblige the patient to drink the dose at once. There is no necessity for this, and it is much better borne if it is taken in divided drinks during the hour following a meal.

As regards the evil effects of arsenic, I have only once in my large experience found albumin or albumin and casts

in the urine of choreic patients, even when their eyes were puffy. In this single case the patient was an adult, and it is very probable, from the nature of the casts found, that renal disease existed prior to the administration of the arsenic. Herpes is said to be an occasional result of the excessive use of arsenic. I have had only one case in which, while the twelve-year-old child was taking about twenty-five drops *ter die*, there appeared a large vesicle on one side of the right thumb just back of the nail, which left quite a deep scar. Symptoms of multiple neuritis or of optic neuritis I have never seen from the medicinal use of arsenic. It is still my practice, however, to examine the urine of choreic patients from time to time during the arsenical treatment.

(*b*) A most important factor in the successful treatment of chorea, especially in its chronic and relapsing forms, is rest—absolute rest. I can not overestimate its value. In many cases of simple recent chorea (first attacks of less than six months' duration) I have obtained a complete cure in three weeks by a combination of absolute rest, full dosage of arsenic, and nutritious food. The patient must not be allowed to play or read in bed, but should be amused by other persons by conversation and reading. Nor do I allow several members of the family (especially other children) to be in the same room at one time. The rest should be mental as well as physical. Some of these patients are sleepless at first, but a few evening doses of chloral or of hyoscyamia will procure quiet sleep, and may soon be omitted or given only twice a week. When the choreic movements have entirely ceased, the arsenic should be stopped at once rather than gradually, but release from the rest should be done only in the most cautious manner, and even during later convalescence for two or three months it is well to have the patient lie perfectly quiet for an hour or two in

the latter part of the afternoon. Of course many choreic patients are anæmic and need iron, cold sponging followed by hard rubbing (but not massage). Again, others with weak hearts need digitalis or strophanthus as an adjuvant to the arsenical treatment. Except in cases where great irritability or sexual excitement exists, I consider the bromides as contra-indicated and injurious. Chorea is essentially a disease in which nerve power, particularly the inhibitory cerebral action, is deficient, and in such a condition the bromides only perpetuate or aggravate the evil. Circumcision is necessary in some cases; treatment of vulvar irritation in others. Of all the other modes of treatment of chorea, there is only one which I desire to speak of at some length. I refer to the correction of ocular defects. This is really an important matter, and Dr. Stevens deserves great credit for having so strongly called the attention of the profession to the desirability of examining by strict modern methods the refraction and oculo-motor functions of the eyes in all choreic subjects.* His idea of the importance of ocular defects or eye-strain in the genesis of chorea is, I think, extravagant, and I doubt if any case of general chorea has ever been or can be cured within a month by ocular treatment alone. Of the five cases of chorea treated by Dr. Stevens for the commission of the New York Neurological Society,† only one was cured (? a trace of chorea reappears in this patient [No. 1] ‡ about the time of each menstrual period), and one (No. 4 of Report) was decidedly improved, but both these patients had been thirty months under treatment, had each had from thirteen to fourteen

* George T. Stevens, Functional Nervous Diseases, New York, 1887, p. 87 *et seq.*

† Journal of Nervous and Mental Diseases, New York, November, 1889.

‡ *Idem*, December, 1889; full histories of cases are there given.

tenotomies performed, and had worn from eight to twelve pairs of glasses! In one of these cases (Case 1) improvement really began at about the thirtieth week of treatment, and in the other (Case 4) after the fifty-second week. One of these cases (No. 1) had resisted a treatment by arsenic and rest (?) of three months' duration, but the other (No. 4) never had a thorough arsenic course and was not put to bed (they were both patients of mine), but was turned over to Dr. Stevens within twelve weeks after my taking charge of him. In one other case (No. 11) some improvement appeared, leaving two cases unimproved. These results show conclusively that we can not depend on ocular treatment alone for the cure of chorea. I believe, however, that eye-strain here, as in epilepsy, is an accessory or secondary cause of much importance, and that every choreic person should be tested for defects and those found thoroughly corrected. It is possible that the rest-treatment to which I am so partial acts partly by relieving the patient of eye-strain, and what has been stated would also serve to explain why school-work is so injurious to choreic children and so often causes relapses. But the true pathological cause or condition of chorea, gentlemen, lies deeper than in ocular defects, or phimosis, or self-abuse, or cardiac disease. There is in all cases a fundamental, preliminary defect in cerebral power, often associated with anæmia; a weak brain (often small) supplied with thin blood by a weak heart are conditions (besides inherited neurotic tendencies) which I hold to be fundamental in chorea, and which you should study most carefully in each case. On a brain so conditioned exciting causes of various sorts act powerfully, and a truly rational treatment demands their discovery and removal.

(*c*) Is exercise good for choreic children? In the ordinary sense of the word, I would reply emphatically No. Many a time have I observed immediate improvement in a

choreic child from stopping such exercises as tricycle riding, running games, etc., without enforcing strict rest, and before much arsenic had been taken. The question is different with respect to systematic gymnastics. This has been and is still recommended as a cure for chorea, but my experience with it has been unfortunate, perhaps for want of judicious instructors. Only this winter I cured a case of chorea of two years' duration (a chronic case) by partial rest (one hour in the forenoon and two hours in the afternoon) and arsenic, cod-liver oil, and cold sponging, in seven weeks, this period including a week's illness from influenza. When convalescence was well marked and only very slight jerks were visible occasionally, I sent the child to a special gymnasium in New York where the drill was personally directed by a lady physician, but in a week the child was much worse. Still, I am inclined to think that, during convalescence from chorea, the practice of a few gymnastic movements under a teacher's or parent's guidance, and with no one else present, may prove of advantage. The movements I have them do are (1) deep inspiratory acts with simultaneous outstretching of the arms to the fullest extent so as to expand the thorax thoroughly—from four to ten such inspirations are enough for one *séance ;* (2) forward and backward movements of the arms; (3) stooping forward so as to touch the toes with the finger-tips ; (4) rising from a squatting posture. Every movement should be slowly done *with force* and *completely finished.* A *séance* of five minutes twice a day is long enough, and a few minutes of rest should follow. Very light wooden dumb-bells may be used, or weak rubber straps attached to the wall (a simple "parlor gymnasium") are not objectionable, but Indian clubs I do not allow, because they must be used with rapid and rather bewildering movements.

(*d*) The prophylaxis of chorea after a first attack is a

subject of much importance, as too many cases relapse year after year, usually after two or three months of school-work in winter, or after over-exertion during the summer vacation. Hygiene, including sufficient nutritious (animal and fatty) food, is here of prime importance, as it has been my experience that a period of anæmia and debility ("running down," as the popular phrase is) often precedes the reappearance of choreic jerks. If the child have defective eyes, they should be re-examined before the beginning of every school-year and necessary changes made in glasses; but, above all, the child should be made to wear the glasses (in spectacle-frames much better) constantly, or exactly as ordered by the oculist. With these and other precautions it is not necessary to withdraw a child from school (unless the school-room is seriously defective in light, ventilation, etc.) after a first attack of chorea; yet it is well to forbid such children making unusual exertions to compete for prizes, indulging in violent play, etc.

III. Migraine.—Writing in 1877,* I made a strong plea for the systematic and prolonged use of cannabis indica in this disease. I was then strongly impressed with the idea that, besides the (unknown) central functional lesion in this disease, conditions of mal-assimilation and lithæmia played an important part in the pathology of the attacks. It is a fact that a considerable number of the victims of migraine are gouty, and present from time to time deposits of oxalate of lime, uric acid, and positively excessive urates; and I still believe that this indication should be met by diet, exercise, and medicinal treatment.

But since the publication of that essay a new and most

* A contribution to the therapeutics of migraine, Opera Minora, p. 242; New York Medical Record, December 8, 1877. Cannabis indica was first recommended as a remedy (given in continued doses for months) for migraine by Dr. Greene in the Practitioner, vol. ix, p. 267, 1872.

powerful light has been thrown upon the pathology of migraine by the researches of oculists and neurologists. Thomson and Weir Mitchell * had already called attention to the importance of ocular defects and consequent nervous strain in headaches (they did not specify migraine), and suggested that they be treated by glasses. These observers and many oculists since were not aware of the powerful eye-strain resulting from the ill-balanced action of the external ocular muscles, which probably is just as important a factor as errors of refraction. It is here that the profession owe a debt to Dr. Stevens,† of New York, for his methods of testing the ocular muscles and for the persistence with which he has urged treatment of eye-faults in migraine and other headaches. The proportion of subjects of migraine who have ocular defects is amazing; very nearly all have either errors of refraction or muscular insufficiency, or both combined. This was noticed before Stevens's name was known in connection with the subject, for in 1882 I received from Dr. G. C. Savage,‡ of Jackson, Tenn., a very courteous letter challenging me to furnish a case of migraine in a person with normal eyes. I have not yet met with one, though I have been told of two or three by oculists in whom I have confidence. Of course the statement as to the invariable concomitance of eye-faults with migraine presupposes that the patients have been examined *thoroughly—i. e.*, under the full effects of atropine for refractive errors, and by Stevens's method for muscular insufficiency. I regret to say that there are still oculists of good

* Headaches from Eye Strain. Am. Jour. of the Med. Sci., 1876, i, p. 363.

† Functional Nervous Diseases, New York, 1887.

‡ Shortly after this, Dr. Savage published an article entitled Headache caused by Eye-strain, in the Philadelphia Medical and Surgical Reporter, July, 1882.

standing who examine the eyes of headache cases in the most careless way, ordering glasses without having used atropine, and ignoring the muscles altogether. This has happened under my observation in New York within six months. Better no glasses than to procure them (often at considerable expense) without a searching examination; headaches are aggravated, other distressing feelings are produced in the head, and the disgusted patient flings away his glasses and can only rarely be induced to submit to another trial of treatment in this direction.

The fact that subjects of migraine have defective eyes partly explains the remarkable transmission of the disease through several generations in one family, particularly in the female members, who are more apt to strain their eyes than males, because their needle and piano work requires very exact fixation and accommodation for long periods of time. Another argument in favor of the ocular origin of migraine is that other remarkable fact that in many persons of both sexes the attacks diminish and cease between the ages of forty and fifty years. It is at this period that the power of accommodation becomes exhausted and a large part of the unconscious strain which has been going on from early youth is removed. Still the gouty or lithæmic disposition is also hereditary, but perhaps not as extensively so as ocular defects.

With reference to the good effects of cannabis indica (also belladonna or atropine) when used systematically in the largest doses the patient can comfortably bear, I could in 1882 give no explanation; but now it seems to me that the *modus agendi* is pretty clear. The principle involved I have already referred to—viz.: that mydriatics (belladonna, atropine, cannabis indica, hyoscyamine, etc.) exert a sedative and even a paralyzing influence on the third cerebral nerve and its attached muscles (including the ciliary).

Now, in many cases of headache, whether of the migraine type or not, there is an (usually) unconscious effort or strain in accommodation, expended chiefly upon the ciliary muscles and the internal recti. It is by this effort, costing the expenditure of so much nervous force or energy, that the ocular defect (hypermetropia, hypermetropic astigmatism, myopic astigmatism, or astigmatism; weakness of the interni or a combination of this with ocular defects) is overcome and corrected more or less successfully for longer or shorter periods of time. This theory of the genesis of headache explains its first appearance (as a rule) when the patient first begins to pursue studies requiring much reading or begins to apply herself more to needle-work (from eight to fifteen years of age); its remarkable diminution in frequency and its frequent cessation when the accommodative power is lost (between forty-two and fifty years of age); but also the more puzzling phenomenon of the late appearance (between twenty and thirty years of age) of a first paroxysm followed by others more or less frequently. In these cases of late headaches, the patient, being in good health, is able to expend a large amount of nerve force through the third nerve apparatus, and successfully corrects the ocular defect so as to render reading, writing, etc., fairly easy. But let this person have an acute illness (pneumonia, typhoid fever, lying in, etc.), or be obliged to nurse a child, or lose vitality in other ways, or has to use the eyes excessively for a time—the nerve power falls to a minimum, the strain relatively becomes much greater, and headache or paræsthesiæ about the head appear. From very exact study of a number of cases of headache and of paræsthesiæ about the head (often falsely denominated cerebral hyperæmia), I feel sure that a healthy person may bear with ocular defects and the strain necessary to nearly overcome them until far along in adult life, or even until accommodation begins to

fail, before the symptoms show themselves. It should also be borne in mind that these two groups of symptoms due to eye-strain may develop very rapidly—almost suddenly—in an adult. I have observed several cases in which the patients traced the onset of symptoms to one particular day, when something seemed to give way in the head, and thereafter they had never been quite free from pain, pressure, fullness, numbness, etc., in the head.

I beg that you will excuse this digression, but I was anxious to have a chance to lay before you a theory of headaches, and especially of paræsthesiæ about the head, which I have long entertained. But do not forget in these cases the deeply rooted or hereditary fault in the central nervous system, and in some cases the influence of lithæmia, wrong diet, and inert habits.

To go back. It is in these cases of migraine and of non-typical headaches that the mydriatics do good, and they do good by reducing the accomodative effort and relieving the strain. Of course, by themselves they afford only partial or temporary relief; but, when combined with correction of the ocular defect by appropriate glasses and in some cases tenotomy, and, if a reduction in the use of the eyes can be secured, a cure results.

Allow me to add one word about a class of cases of paræsthesiæ about the head, in which the symptoms are most pronounced when the patient is on the street, or in a large room, or at the theatre and church; in other words, when his eyes should receive impressions from a distance, especially from moving objects (people, carriages, etc.), distinctly and easily upon homologous parts of both retinæ. In these cases, besides refractive faults, there is very often, if not invariably, weakness of the external recti, or the condition designated by Stevens as esophoria. Sometimes a pseudo-agoraphobia results also; the patient

is afraid to go out, or into theatres and churches. If he perseveres, the head symptoms are intensified, and great general nervousness, even a hysteroid attack, is brought on. In these cases the mydriatics (given by the mouth) exert a most happy influence; and section of one or both of the internal recti may at once produce an apparent cure. I qualify the word, because the rapid healing of the divided muscle (or tendon) usually brings about a relapse and necessitates other operations. We do not yet feel sure that the operative treament of these cases affords more lasting relief than the use of prisms and of the appropriate internal remedies for long periods of time. This question of the relation between ocular defects and cephalic symptoms is one of the most interesting practical ones of the day, and the more skilled physicians engage in its study, the sooner shall we arrive at definite therapeutic rules which may be applied deductively to future cases, which form a by no means insignificant proportion of the chronic diseases we are called upon to treat.

Two precautions are necessary previous to beginning the treatment of a case of migraine by cannabis indica: First, to make sure that a good extract is used to dispense the pills; and, second, that the patient continues to procure the same quality of extract during the entire treatment if possible. Extract of Indian hemp is one of the uncertain preparations, and I have been in the habit for several years of specially writing for Herring's English extract. Squibb's preparation is also good, and I doubt not that a number of others may be equally so. The reason for always using the same quality of extract for a given patient is that, as you increase the doses, very unexpected and sometimes decidedly unpleasant effects may be produced through a change of extract by the druggist.

I usually begin by ordering a sixth of a grain (0·01)

alone or in combination with arsenious acid—a sixtieth of a grain (0·001)—or with iron, or with digitalis, according to indications, in pilular form, to be given three times a day, before meals usually. Each week I increase the dose by a sixth of a grain (0·01) until the maximum of toleration is reached—*i. e.*, a dose a little less than that which produces a light-headed, semi-drowsy, dreamy state. Most adult male patients are able, after some training, to take a grain (0·06) of the best extract three times a day; women seldom more than a third or half a grain (0·02 to 0·03). This maximum dose is to be kept up for many months, a year, or longer. Occasionally, as in the continuous giving of bromides, the patient develops, from some change in his condition, a greater susceptibility to the drug, so that it is sometimes necessary to vary the maximum dose. During this prolonged treatment the patient's eyes may be corrected, his diet regulated, physical exercise gradually carried to considerable proportions, and, in some cases, the use of the eyes in reading, sewing, etc., reduced to a minimum.

When I refer to regulation of diet, I mean with reference to the lithæmia (oxaluria) which is manifest in so many cases of migraine, and I do not refer to ordinary indigestion. I must take this opportunity of saying that few quasi-medical notions have been so mischievous in practice as that which explains attacks of migraine and epilepsy by indigestion or "biliousness." The chief support of this notion (it is not worthy of the name of theory) is the fact that in migraine, and in some cases of epilepsy, vomiting (of partly digested food or of bilious material) is a prominent accompaniment of the attack. Careful observation and theoretical considerations long ago led me to look upon this vomiting as a result or as one of the symptoms of attacks of migraine and epilepsy; and neurological authori-

ties agree in supporting this view. Migraine and epilepsy continue in spite of most careful regulation of diet based on supposed dyspepsia, and in most cases the vomited matter contains only good food partly digested. The rejected mass is very sour, but this is normal; bile is also ejected if the act of vomiting is severe, but this is only due to strong prolonged muscular effort, and in no wise indicates a "bilious state." The same critical remarks apply, to my mind, to the real relation of vomiting to sea-sickness; the gastric disorder is usually secondary and of no pathological importance. Besides, we well know that the headache of indigestion is diffused, often frontal; the pain dull, with a tendency to drowsiness or even stupor—characters in sharp contrast to the neuralgic, unilateral, and paroxysmal (quasi-periodical) pain of migraine. I beg that you will pardon this digression, but I have been led to make it because I have met with so many cases of migraine, and some few cases of epilepsy, which had been either neglected or maltreated because of the physician's belief in this popular notion.

The treatment of migraine which I have outlined—viz., that by the continued use of cannabis indica (or belladonna), by the correction of ocular defects, and of lithæmia—constitutes the general or interparoxysmal treatment. During a paroxysm it is best to suspend the medicines for twenty-four or forty-eight hours.

In the suffering of the attack of migraine, often excruciating, patients clamor for relief, and not in vain. We are able to do much for their comfort. First of all, let me entreat you never to give morphine or opium. Patients who have tasted of this forbidden but delicious fruit will ask you for it at once, urging all sorts of reasons. The objections to the use of morphine in this and other neuroses I shall consider at length in a subsequent lecture. The two most successful remedies for the attack are antipyrine and caffeine.

These should be given as early as possible—even before the onset of pain, as can be done in those cases which present optic or sensory precursory symptoms, or even only a sense of *malaise*. I believe that antipyrine was first given in migraine by Dr. T. S. Robertson,* of New York, though his paper on the subject appeared somewhat later than that by Dr. White,† of England. With Dr. Robertson, I believe that it is best to give a massive single dose of the remedy (at least after a preliminary trial has not revealed any undue susceptibility to the drug), say of fifteen (1·) or twenty grains (1·50) to a female patient, and twenty (1·50) to thirty grains (2·) to a male patient. In the last year I have always given some digitalis—from five to ten minims—with each dose, to counteract the depressing effect of antipyrine on the heart. In many cases such a dose cuts short the attack. Unfortunately, some patients find that the drug loses its efficacy after a while. Still, it is at present our most successful remedy.

Caffeine is very efficacious in cases which have an optic aura or premonitory symptom—such as hemianopsia, hemichromatopsia, or hazy vision for a few minutes before the neuralgic pain appears. I formerly gave the citrate of caffeine, but some three years ago became convinced that this was a very unreliable preparation, and began giving pure caffeine with much better results. To an adult male patient I give, at the first warning of attack, or when the pain begins, a grain and a half (0·10) every quarter of an hour until the pain ceases or five doses have been taken. This often aborts the attack. In some patients the drug produces an excited, tremulous condition, which, however, is preferred to the pain. The granular effervescent salt of bromide and caffeine (so-called bromo-caffeine) is of much

* N. Y. Medical Record, 1887, vol. I, p. 517.

† Cited in Medical News, July 10, 1886.

inferior efficacy, and I advise you not to use it, unless you can not procure caffeine.

Paullinia or guarana, as powder, fluid extract, or elixir, occasionally succeeds also; but full doses must be given—a teaspoonful of the fluid preparation every half-hour till four or five doses have been taken. Its efficacy depends upon caffeine, which is its active alkaloid (four to five per cent.).

Nitrite of amyl by inhalation has been proposed and used, but my experience with it has been unsatisfactory. It was advised on a theoretical ground which I believe to be unsound—viz., the vascular theory of migraine, first advanced by Du Bois-Reymond. According to this theory, which has had the support of several distinguished names, there are two varieties of migraine—one angeiospastic, in which the arteries of the face, eye, and brain (on one side) are in a state of spasm, and the parts supplied by them ischæmic. In the other variety, termed angeioparalytic, the same arteries are relaxed and the parts are hyperæmic. In the angeiospastic form (which is said to be the more common) nitrite of amyl is theoretically indicated. Unfortunately, gentlemen, clinical observation does not justify any such classification. For my part, as regards the state of the arterial circulation in migraine, I believe that there is always a spastic or contracted state of the arteries at first (as in epilepsy), and that this is followed by dilatation or relative paralysis of the vessels.* Practically it has been proved that amyl rarely relieves the pain, and never (in my

* There are many reasons for thinking that the arteries usually contracted in migraine are the posterior cerebral and its branches which supply the sensory areas or divisions of the hemispheres, and the caudal fasciculi of the internal capsule. In cases where hemianopsia precedes the pain, spasm of the occipital artery (supplying the cuneus on one side) may quite surely be assumed to occur.

experience) cuts the attack short. In some cases it increases the suffering.

When the pain is fully developed there is very little to be done except to keep the patient in a darkened room, perfectly quiet. Sometimes Duquesnel's aconitine, a granule of one two-hundredth of a grain every hour till some numbness appears, gives relief. I have also obtained relief from bromides, chloral, croton-chloral, and sulphonal, in full doses. A hypodermic injection of crystallized hyoscyamine (one fiftieth of a grain) sometimes gives relief for several hours, and is not objectionable, as morphine is, because habit is never entailed by its use.

External applications (cold, heat, sinapisms, the menthol cone, galvanism, etc.) have given relief in isolated cases, but so rarely as not to be of much value. But by all means try everything in a given case, except to give morphine. This will relieve the pain, but assuredly increase the frequency of the paroxysms and the (apparent) severity of the pain, each attack being "worse than the last," and requiring more of the fatal remedy. The end for the patient is the morphine habit; for you, the reproaches of the patient and his relatives.

The question is often asked, Is it better to give up to an attack of migraine, or to struggle against it and go about one's duties as far as possible? You will have to decide this question for each case by a study of the attack and of the patient. Most patients, particularly women, do best if they retire to a quiet, dark room and try to rest during the paroxysm. Others, usually men, with strong will-power and attacks of moderate severity, can go about their daily duties tolerably well and are no worse off. Everything here depends on the patient's susceptibility to pain and his power of reaction, or, to put it psychologically, upon the relation existing between his sensibility and his volitional energy.

In this way, by a rational continuous treatment between paroxysms and the use of a few harmless drugs to cut short or moderate the attacks, the life of most subjects of migraine can be made absolutely or relatively comfortable until the age of spontaneous cessation of the disease is reached.

A very interesting point in the natural history of migraine is its occasional aggravation and transformation into constant headache, usually occipital, between the fortieth and fiftieth years. I have not the time to enter upon a consideration of this singular phase of the disease, which is as yet unexplained, and which taxes the physician's resources to the utmost.

Allow me, however, just a moment to make a general remark about the symptom headache. We are almost daily asked to prescribe for headache at one *séance*, off-hand as it were, and with the expectation of success. Not only is this done by patients, but physicians bring or send headache cases to a specialist with the idea that an hour of careful examination will reveal the pathology of the headache, and that the advice given must lead to relief if not to cure. I would here express it as my deliberate opinion, as the result of much study of the subject, that there is no problem presented to the physician so difficult as that of the pathology and therapeutics of a chronic headache. Frequently several days of study of the patient, with the assistance of the best ophthalmologist, are required to solve the problem; and there are cases in which, after months of study and trial of remedies, we are obliged to give up in despair; we have not discovered the pathology of the case, and all our remedies, including ocular treatment, fail to give relief. I would urge you to study every case of chronic headache presented to you patiently and thoroughly before giving an opinion or beginning a systematic treatment. The pallia-

tive remedies may, of course, be prescribed at once, but truly curative measures should only be adopted after sufficient observation.

What I have said of the use of caffeine at the onset of an attack of migraine should be supplemented by the statement that very strong black coffee (infusion) may also succeed. The addition of lemon-juice recommended by some is useless. As in many cases of migraine nausea and vomiting are present at quite an early stage, preference should be given to caffeine, as being less bulky than antipyrine. Besides, caffeine powders may be carried about in the pocket and used early if an attack begins during the day while the patient is away from home.

If you will allow me another digression, I should like to refer to a matter of great importance in general practice—viz., the use of coffee in dyspepsia, fermentative dyspepsia more particularly. If there is one direction more often and more emphatically given than any other to dyspeptic people it is to drink no coffee or tea. In some way the use of tea and coffee has come to be looked upon as highly injurious to digestion by the laity and physicians. Yet I believe that there never was a greater medical delusion. It may have originated from the fact, which I recognize, that the abuse of very hot drinks (tea, coffee, and I would say soups also) may give rise to chronic gastritis. The chief reason, however—very good so far as it goes—is that dyspeptic persons feel worse after taking what is *called* coffee at breakfast. Some eight or ten years ago I began to suspect that the reason why breakfast coffee disagreed was because its composition made it a liquid favorable to fermentation. The cup of coffee which almost every one takes at breakfast (and tea at breakfast or lunch) is a mixture of coffee, ridiculously weak usually, milk or cream, and sugar. This "cup of coffee" is unquestionably bad for dyspeptics,

and perhaps not overdigestible for any one. After my return from Europe in 1883 I began giving dyspeptic patients good strong coffee, without milk, cream, or sugar,* with their breakfast of meat or eggs, and very little bread (no other farinaceous food, of course). It was at first difficult to induce patients to make the trial, as they were so prejudiced by former medical statements that coffee was bad for their digestion and for their "nerves." The results were extremely gratifying, and I have gradually made it a part of my diet *régime* for all patients suffering from evident fermentative dyspepsia, with or without catarrh, and from so-called nervous dyspepsia. I direct that they shall take one large breakfast-cup of strong (dark-brown) coffee, made without boiling, not too hot, without sugar, cream, or milk, with their breakfast. In cases where nervous prostration and early morning mental depression are marked I order, in addition, a small cup of the same coffee, with a two-grain pill of quinine before rising and attempting to dress. I have induced two or three of my professional friends to try this revolutionary practice, and they are so far satisfied with the results.

Why should not plain infusion of coffee be beneficial to dyspeptic, nervous, worn-out subjects? It contains no element of fermentation, and, if made without boiling, hardly any tannin. We introduce into the patient's stomach so much hot water (which is well known to be favorable to digestion), *plus* a certain quantity of caffeine. Now, caffeine is a cardiac tonic, an exhilarant, and a diuretic—three properties which meet indications presented by these patients—viz., feeble, irregular cardiac action, nervous and mental depression, insufficient renal action. In this lies the advantage of coffee infusion; it stimulates the heart

* One third or one quarter of a grain of saccharin may be used to sweeten.

and kidneys. Dr. S. Weir Mitchell recommended, many years ago, a cup of black coffee in the early morning for cases of neurasthenia; but his main object was to obtain a stimulating action on the intestines; it does favor the occurrence of daily alvine evacuations. But I think that the indications which I say it fills are much more important. What are the objections to coffee? It may cause so much cerebral excitement as to postpone or banish sleep; but this objection does not hold as against coffee at the beginning of the day. It causes tremor or, popularly speaking, "nervousness" in some persons; but this, I think, is rare, and is usually caused by the use of excessively strong coffee. Caffeine and coffee have, in the last ten years, assumed a justly prominent place in our list of potent physiological remedies. I can and do urge you to make a trial of black coffee in your dyspeptic and nervous cases. In some cases the effect of the very early cup of coffee is wonderful; the quasi-melancholia passes off; the patient rises, takes her cold sponge-bath and dresses with comparative ease, and comes down to breakfast with some energy and ambition.

LECTURE II.

V. Trigeminal Neuralgia or Tic Douloureux.—In this affection, as in epilepsy, we have cases in which there is recognizable gross disease of the nervous system, and others in which the most careful examination reveals only subjective symptoms—viz., pain and hyperæsthesia. In other words, we have symptomatic and idiopathic cases. The latter are by far more common, and it is about this form of the disease, in its aggravated chronic type, that I desire to lay my therapeutic experience before you.

You are all doubtless familiar with the disease. Paroxysmal pain, often of the most intense, piercing, darting character, affects one of the large divisions of the fifth cerebral nerve, or more than one; rarely all its branches, lingual and deep auricular included. The paroxysms recur every few moments while the patient is awake, and last from a few seconds to two or three minutes. Lacrymation accompanies pain in the ophthalmic division, salivation appears when the inferior division is involved. At the onset of pain, speech is suspended, the patient contracts his features, closing the eyes and drawing up the mouth on the affected side (an automatic, protective, associated movement which has given rise to the utterly unfounded belief that the facial or seventh nerve is involved and that there is a morbid spasm); he often claps one hand tightly over the seat of pain, or rubs it violently; he may groan or cry out aloud in his

agony. These signs are so striking that almost always we can make a diagnosis without asking a question by observing the *facies* of the patient.

Such cases, of months' and of many years' duration, have long been deemed beyond the reach of drugs, and have been (during this century at least) placed under the surgeon's care for operative treatment. Some cures have been obtained by exsection of pieces of the affected nerves, or by removal of Meckel's ganglion, but the large majority of cases relapse after an interval of a few months. The disease has been one of the *opprobria* of medicine.

I am, however, glad to be able to tell you that in the last thirteen years we physicians have been able to cope fully as well as surgeons with this dread disease. Some cures have been obtained, and numerous patients greatly relieved by the use of that potent alkaloid, aconitine. It was first used for this purpose in France by Professor Gubler, who published a short paper upon it early in 1877.* I immediately had some of Duquesnel's crystallized aconitine imported by a New York pharmacist who always displayed zeal in furthering the use of new and rare drugs,† and began using it. A first report upon its use in trigeminal neuralgia was made by me to the New York Therapeutical Society ‡ in October, 1878. Out of six cases treated by myself and other members of the society, all severe and of long standing, two were cured (?), three slightly relieved, and one unaffected. One of the cured cases had existed for seven years.# I have since learned that we did not

* Gazette hebdomadaire, 9 fév., 1877.

† The late Mr. Neergaard.

‡ New York Medical Journal, December, 1878.

I should add that two or three years after that report a relapse occurred and the patient has never been free from pain since. She now occasionally reports at the Manhattan Eye and Ear Hospital, having thus been faithful to me for fifteen years.

then give enough aconitine or persevere long enough in its use. From quite a large experience since, I am able to say that very few cases are not relieved by aconitine, and that a fair proportion can be cured, or at least given intervals of from one to three years—results which, I think, compare very favorably with those obtained by surgical measures.

For the treatment of these cases I have come to rely upon the combined uses of aconitine and "mixed treatment," so-called.

The alkaloid is now readily obtained in any part of the country, or can be procured by the country practitioner from one of the great cities in a short time. It is one of the few drugs which I think it best to order as made up by the large manufacturers. McKesson & Robbins and Schieffelin, in New York, make pills of Duquesnel's crystallized aconitine (the kind you should always specify in your prescriptions) of the strength of one two-hundredth of a grain, which, by repeated tests at different times, I have found to be absolutely reliable. I might say that, being moderately sensitive to the drug, I make it a duty to test the pills or granules of these firms on myself once or twice a year. Two of these pills will produce in me distinct tingling numbness in the face, tongue, and extremities for two or three hours, also a disagreeable sense of chilliness or coldness, most marked along the spine. These pills, thus known to be strong and uniform at different times, I give in progressive doses to a patient with trigeminal neuralgia until the numbness is felt throughout the body, with chilliness, and in some cases nausea and faintness. Begin cautiously with this drug, gentlemen, but, after finding that your patient is not abnormally affected by it, proceed to the fullest doses fearlessly if you wish to succeed. Nowhere in medicine is there more demand for cautious temerity (if I may be pardoned the expression) and confidence in the use of your

weapon than in the dosage of aconitine. I have had no fatal result from it, in spite of many bold experiments.* At first I give one pill twice a day to women (who occasionally exhibit undue susceptibility to its influence †), and three times a day to male patients. These doses usually produce no effect, remedial or toxic, so I increase gradually but steadily until in some cases I give twelve pills a day (two every three hours) before obtaining the universal numbness, etc., which denote the full physiological effects of the remedy. During the spring of 1889 I gave, on one day only, as many as fourteen of these pills (equal to fourteen two-hundredths, or, roughly speaking, one thirteenth of a grain (0·0045)) to a large young girl twenty years of age. She felt numb through the whole body, was a little faint, and was nauseated. In the majority of cases two pills three or four times a day will produce physiological effects and suspend the pain even of severe trigeminal neuralgia. Having thus found the dose which is both tolerated and efficacious, I keep it up daily for several weeks after the pain has ceased, and in convalescence direct the patient to take a large dose—two or three pills—at once on the least return of sharp pain.

The "mixed treatment" which I now always give simultaneously with the aconitine to patients with trigeminal neuralgia, whether they give a syphilitic history or not, ‡ needs

* The Physiological Effect of Aconitia in Posterior Spinal Sclerosis; Can it become an Aid in Differential Diagnosis? Opera Minora, p. 492, and Journal of Nervous and Mental Diseases, July, 1881.

† Case of a woman unpleasantly affected by one dose of one four-hundredth of a grain (0·00015), by Dr. Andrew H. Smith; cited in Opera Minora, p. 601, and Archives of Medicine (New York), June, 1882.

‡ *Vide* The Efficacy of Iodide of Potassium in Non-Syphilitic Disease of the Nervous System, Archives of Medicine (New York), June, 1883. And I believe that mercury also has a similar efficacy in some cases.

only a few words of explanation. I combine the red iodide of mercury, in doses gradually increased from one twentieth of a grain (0·003) to one sixth or one fifth of a grain (0·01) with from twenty to forty-five grains (1·50 to 3·00) of iodide of potassium in water, ʒ j (4·0), largely diluted after each meal. Though I have several times given the larger doses of potassium iodide—from 60 to 150 grains (4·0 to 10·0) three times a day—I think that is rarely advisable. This medication I continue for two or three months steadily, then give a month's course of it every few months afterward.

Very often, if not always, as a case of trigeminal neuralgia approaches cure there are spots or areas on the face or head that are exquisitely sensitive to touch, and irritation of them gives rise to a momentary return of more or less of the original pain. This hyperæsthesia can readily be overcome by blistering or lightly cauterizing the part. In the last ten years I have several times successfully employed this accessory treatment; in the last case, during the past winter, a hyperæsthetic and algogenic spot on the lower lip was rendered normal by one application of the Paquelin cautery.

It has also been my custom to give an abundance of nutritious food to these patients, and cod-liver oil as well. They often present themselves in an emaciated, anæmic condition from starvation. Chewing is impossible in many cases, and swallowing is so painful that they take as little food as possible to escape paroxysms of neuralgia. In this stage, before the pain is subdued, I order stated quantities of rich milk, or cream and milk, to be taken in twenty-four hours; also so many eggs (from four to eight) taken raw, or beaten with the milk, or slightly cooked. Often it is well to allow some brandy or whisky with the milk. I also urge the patient to take the expressed juice of beef,

strong coffee, and oatmeal porridge. Under such a diet, with relief of pain by the aconitine, the patient rapidly regains color, weight, and strength; his nervous system is better nourished and less susceptible to the molecular vibrations which cause pain. Thus food (including cod-liver oil) becomes a part of the treatment.

Some cases of trigeminal neuralgia, not always the oldest ones, resist this treatment. I have had two such under my care in the last sixteen months, one of them being that of the young lady who was able to take fourteen pills of aconitine in one day. The inferior maxillary nerve was finally resected in this case, but, after an interval of seven months of perfect freedom from pain, it reappeared last November, and again resisted treatment.

Still I maintain that the present standpoint of the medicinal therapeutics of this disease is vastly advanced from what it was ten years ago.

VI. Basedow's Disease.—Although I know that I am trying to crowd too much into these lectures, I feel that I must add something which may be novel to you in the treatment of the obscure neurosis known by this name, or as exophthalmic goître. The usual treatment by iodide of potassium, iron, etc., and by galvanization of the neck, is familiar to all. The two new measures I wish to call your attention to are, first, the systematic employment of aconitine, and, second, bandaging of the protruding eyeballs. In 1884 I rather accidentally discovered that aconitine (the crystallized aconitine of Duquesnel) exerted a powerful reducing influence on nervous or irritative fast pulse—*i. e.*, a fast pulse with high tension and normal heart, easily distinguished from the fast pulse of cardiac disease or general debility or fever.* Aconitine, in granules of one two-hun-

* Of course it has been long known that aconite reduces the pulse. I refer to a very decided effect upon a special sort of pulse.

dredth of a grain, greatly reduces the pulse-rate and also the arterial tension. In Basedow's disease I give from three to eight pills a day—enough to produce slight tingling in the lips and extremities—for days and weeks, occasionally stopping for a few days. On the average, it is necessary to give two pills three times a day; under this the pulse-rate steadily falls from the upper limits of 160 or 140 a minute to below 100. After that the fall is slower, but in many cases goes on until 90, 80, and even 70 beats are recorded to the minute. At the same time the eyes and neck usually improve. This treatment occasionally fails, but it never does any harm. I have used it in quite a number of cases, some without goître and exophthalmia, since 1884, and it has been tried with good results by several of my professional friends. At the same time iodide of potassium or iron may be given and galvanism applied in the usual way.

Bandaging of the eyes has never to my knowledge been practiced. In the last two years I have tried it in two cases with excellent results; complete reduction of the exophthalmia in one case. A carefully molded pad of soft cotton is placed over each eye, filling the orbit, and a light (of not more than three turns) flannel bandage applied with gentle but decided pressure. At first I do this for only an hour twice a day; later for periods of two or four hours. In one of the cases the bandage was applied at 10 P. M. and allowed to remain all night. During the progress of the second case, which, though it has existed for at least three years, is much improved, I have made occasional ophthalmoscopic examinations without detecting any damage due to the pressure. The pressure should not be great, as it is intended simply to counteract the dilatation of vessels in the orbit which is the usual immediate cause of the exophthalmia.

The Diet and Hygiene of Nervous Patients.

Much has already been written, and most ably, by my friend Dr. S. Weir Mitchell on this subject, chiefly in his books on the treatment of nervous diseases in women,* which no practitioner should be without. Other physicians have given their views on the topic in detached journal articles. I am therefore excused from treating the matter systematically, and shall only refer to a few measures which have interested me very much and have been reasonably successful in my hands:

I. Diet.—In considering the diet advisable for a victim of one of the neuroses, a consideration of prime importance is to bear in mind the constitution of the nervous tissues—brain, spinal cord, nerves, and ganglia.

The first point I desire to bring to your attention is the fundamental one, that the central nervous system and peripheral nerves are very largely made up of fatty substances. These are complex in their composition, some including an atom of phosphorus. Cholesterin alone (which is a non-saponifiable fat) makes up 52 per cent. of the dried white substance of the brain according to Petrowsky. This substance makes up 18·6 per cent. of the gray substance, which contains nearly twice as much lecithin (17 per cent.) as the medullary matter. Albuminoids preponderate in the gray substance (55 per cent. in the gray to 24·7 per cent. in the white). Cerebrin, which is a fat united to a molecule of nitrogen (it is perhaps an acid in its relations), is abundant in the medullary substance (9·5 per cent.) and almost absent from the gray (0·53 per cent.). Thus, in general terms, it may be said that albuminoids preponderate in the gray

* Fat and Blood, Philadelphia, 1877. Lectures on Diseases of the Nervous System, especially in Women. Philadelphia, second edition, 1885.

substance (cortex and ganglia), while fats and fatty acids are much more abundant in the medullary or myelinic substance. An extraordinary quantity of phosphoric acid and phosphates exists in the ash of cerebral substance—viz., 93·57 per cent. (Breed). We know very little of the normal or actual combinations, relations, and genesis of these substances.

Funke and Wundt think that the force-producing or combustion capacity of these substances must be very great, and that the tissue metamorphosis must be very rapid. Singularly, though writing in 1887, Wundt* ignores the strongest evidence we have of the activity of nutritive (chemical) processes in health—viz., the demonstrations by Lombard and Schiff that cerebral activity is always accompanied by a local rise of temperature—a rise which is relatively great and which takes place almost instantly.

In neuroses there is no active tangible lesion, but the nervous system is ill-nourished and exhausted. The malnutrition may be congenital, produced by severe infantile disease, or due to bad diet, or to want of power to assimilate the food elements which go to repair the nervous tissues. In other cases excessive nervous action, such as acute or chronic excess, leads to functional exhaustion which undoubtedly is inseparable from chemical waste. We are not yet, unfortunately, in possession of any chemico-pathological data in this direction, as autopsies are rare in neuroses, and they do not now include a chemical analysis of the nervous organs. Furthermore, I doubt if the normal chemical composition of nervous matter is well enough known, and if our methods of analysis are yet good enough, to enable us to gather such data. Perhaps we shall learn something in this direction some day. One remarkable

* Grundzüge der physiologischen Psychologie, 3te Aufl., i, p. 39 *et seq.*

fact has been ascertained in the way of pathological anatomy—viz., that the brain and spinal cord do not participate to any great extent in the atrophy and visible waste of organs and tissues in marasmic conditions. This may be owing to the peculiar physical conditions, as regards atmospheric pressure, in which these organs are placed. The contents of the skull can not vary in their entirety. If the solids are reduced, serum or lymphatic fluid must at once replace them; so that, very probably, chemistry will some day reveal a real marasmus of the gray and white substance, which is concealed by excess of water in the tissues. I can not conceive of a case of extreme cerebral neurasthenia without chemical changes (especially in the cortex of the brain). We must, therefore, now proceed upon theoretical grounds in stating the indications, and upon a careful estimate of empirical results.

The great fact that the nervous tissues are largely made up of fats and of phosphates should not escape our attention while planning the diet of a case of nervous disease.

Now what are the results of empirical practice or "experience"? They are open to sources of error, chiefly from the bias and narrow enthusiasm of specialists who report their experience, yet it is chiefly upon them that we should base our dietetic treatment; and it must be so until physiological chemistry shall have made much more progress. I shall offer you my own experience.

Before proceeding to state what neurotic patients should eat, it will be instructive to inquire into their previous habitual diet.

In the first place, in working up the history of your cases of migraine, ordinary neuralgia, neurasthenia, and hysteria, more especially, you will be struck with the number of patients who have "always" disliked fatty foods, and eaten hardly any, except butter. Even this is almost total-

ly omitted by some. On the other hand, many of these patients have eaten or drank an excess of substances made up of carbon and hydrogen (starches, sugars, and alcohol). These statements are especially true of women who complain of various neuralgias with a neurasthenic basis. Another peculiarity of these patients is that they drink very little water; and some of them have actually lost the sense of thirst—are "never thirsty."

If you examine the urine of such patients you will find it of high specific gravity, with deposits of crystals of oxalate of calcium; often also uric acid, and, of course, amorphous urates when the amount of water is deficient.

To put it another way, lithæmia and oxaluria are frequent concomitants of the neurasthenic state, more especially in those presenting neuralgic symptoms. In the great neuroses the occurrence of these deposits is less frequent and not at all regular. It is, as you know, an unsettled question at the present day, as it has been for forty years, whether the deposits are the result of the neurotic state, or whether they are more directly produced by improper food and hygiene, and themselves cause the symptoms. At the present time the weight of expert opinion is in favor of the latter view, so that the question of diet assumes an immense importance in the treatment of neurasthenia, neuralgia, etc. The theoretical question of the relation between aliments and oxaluria (lithæmia, gout, and diabetes also) is one which appertains largely to physiological chemistry and would require an elaborate chemical statement for its proper understanding. The best literature on the subject consists of Bence Jones's classical book,* a clinical lecture by Professor William H. Draper, of New York† (who has taught this doctrine continuously for the last twenty-five years), and

* Lectures on Pathology and Therapeutics, London, 1867.

† American Clinical Lectures, No. 12. 1875.

the clinical work of Cantani, of Naples;* the last an admirable work, though as regards the dietetic treatment of oxaluria and gout the author is apparently unaware that physicians in New York were many years in advance of him, and does not do justice to Bence Jones. For my part, I have for a long time been thoroughly convinced that the excessive use of starchy and saccharine foods, so prevalent in this country, is a potent cause of oxaluria and lithæmia, and thus indirectly of neurasthenia; my practice has been based on this belief, and I have no reason to modify it.

Another instructive consideration in approaching the question of the proper diet of nervous patients lies in what we now know of alcoholism and the almost exclusive use of rice (starch) as food. These hydrocarbons, taken in excess continuously, give rise to a very peculiar, easily recognized disease—viz., multiple neuritis, or multiple degenerative neuritis. We constantly see sporadic cases of this sort in persons who have reduced their solid healthy food to a minimum and have lived on alcoholic beverages. In some persons no very great quantity of alcohol is needed to set up the diseases, provided that it has been used steadily day after day in *relative* excess. We ignore the *modus agendi* of alcohol in setting up inflammatory (?) changes in the cylinder axes and segmental degeneration of the myelin in a large number of cerebro-spinal nerves in the same subject. Probably it is a toxic action exerted through the blood and lymphatic channels. Though endemic multiple neuritis, affecting large numbers of persons in one country, or town, or on a ship (so-called beri-beri in India, China, and South America; kakki in Japan) may be caused, as some think, by a special poison (microbic?), there can be no doubt as to the influence of exclusive rice diet. This has been proved

* Specielle Pathologie und Therapie der Stoffwechselkrankheiten, German edition, Bd. ii, Berlin, 1880.

in Japan, where, in the last six years, the reduction or omission of rice from the dietaries of the army and navy and of penal institutions (bread being substituted) has almost eradicated the disease, which had assumed enormous proportions up to 1884.* In 1886 I published three cases of beri-beri † developed in Cuba, Central America, and Para, in Brazil. My Para patient, a very intelligent merchant, told me that in his family, as in others of well-to-do and of poorer people, rice was eaten in various forms, from liquid to solid, five times a day; it was the staple food. That something besides the rice is required to produce beri-beri is indicated by the fact that the disease first appeared in Brazil as late as 1864, and was traced by some people to the use of rice imported from China.

Still, it is a most important and interesting fact that an abuse of carbonated food or drink may give rise to an inflammatory or degenerative affection of nerves widely spread throughout the body, and sometimes fatal by involvement of the pneumogastric, phrenic, and intercostal nerves. Admitting this, how can we escape the conclusion (which I firmly believe to be just and applicable to our daily practice) that a lesser abuse of the same substances (starch, sugar, and alcohol) must cause malnutrition and irritation of the nervous system, with, in some cases, slight neuritis? (Some cases of neurasthenia and of neuralgia exhibit symptoms which can be best explained by admitting a mild and restricted neuritis of one or several nerves.)

These considerations—viz., the neglect of and distaste of nervous patients for fats and water, the frequent presence of oxaluria in the same patients, the evil effects of the

* B. Scheube, in Deutsch. Archiv f. klin. Med., xxi, p. 141; xxii, p. 83.

† Notes on Three Cases of Tropical Beri-beri, Phila. Med. News Dec. 18, 1886.

exclusive use of starchy and alcoholic substances, besides the theoretical chemical explanations included in the modern doctrines of oxaluria and lithæmia—have led me to the adoption of the following rules of diet for nervous patients in general, but more especially for sufferers from neurasthenia (not, of course, in cases in which an evident peripheral or accidental cause exists), neuralgia, and nervous dyspepsia:

1. The use of much water, at least three pints a day, not including the black coffee at breakfast. Good common water will do, but you can secure obedience better by ordering a mild medicinal water—as Apollinaris, the Buffalo or Londonderry lithia waters, Poland Spring water, the Giesshübler of Carlsbad (not laxative), etc. Some water should be used with the food, but the best time to take a tumblerful is between three and four hours after meals. The water then helps to clear the stomach of remnants of the meal, besides furnishing the liquid required by the blood and tissues. In some cases, where subacute or chronic gastric catarrh exists, it is best to order hot water, to be taken as above stated—part with food, part four hours after. Undoubtedly, the Salisbury system had a partial scientific foundation, both as to the exclusion of starchy foods and the free use of water. It is, however, a ridiculous and often injurious practice as usually carried out.

2. I take every opportunity and use every artifice to make most of my nervous patients eat fatty food: pork, fat of roast beef, butter, cream, cod-liver oil. Many of them fight against this direction, but you must insist, and speak of it as a strictly medicinal matter; you order an extra quantity of butter, or cold pork, or cod-liver oil as medicines. Usually the patient yields, and in a few months becomes quite reconciled to his diet. In many persons this dislike for (and supposed inability to digest) fatty sub-

stances is due to nothing except a bad example set in early life by some parent or other relative. The expression, "Oh, I can't bear" that, or "I can't eat" this article of food is quickly caught up by the child, and by association and habit (repeated hearing and witnessing) grows into a firm belief that the article of food is bad or that he can not digest it. Many persons imagine that they can not take cod-liver oil, yet ninety out of a hundred are laboring under a delusion. I insist on a trial, sometimes only at bed-time, beginning with a teaspoonful, which is to be gradually increased to a tablespoonful, or even two. Emulsions I almost never prescribe; the phosphates, etc., with which the oil is mixed being inert. Some emulsions which contain other definite remedies—quinine, iodine, etc.*—I occasionally order, but I much prefer to have the patient take the pure oil (the purest, clearest oil), and to give the remedies separately in sufficient doses. A good way to take cod oil is to float the dose on a little iced water. Chocolate and lemon-peel are the best substances to remove the taste. Whisky should never be given simply to make the oil more desirable, only when a clear indication exists for the use of alcohol. The time relation between the dose of oil and meals is immaterial. I usually allow the patient to please himself, though often it is better borne after food.

The use of fat pork is a fair substitute for cod-liver oil, and some patients who will not overcome their prejudice against the oil will learn to like the pork. The idea is not mine; it originated with a country practitioner whose name I have never been able to learn. I stumbled on the suggestion a good many years ago, and have been well pleased

* I also make an exception in the case of Savory and Moore's pancreatic emulsion (English), which has proved very acceptable to patients and beneficial. I usually give a heaped teaspoonful of it mixed in a large cupful of hot, rich milk between meals and at bed-time.

with it. The patient is directed to select a square piece of salted side of pork, extra thick, and solid, with almost no lean. This should be boiled not too long, and laid away in a cold box. To use it: Day after day very thin, even, neat slices are cut from the cold piece by means of a very sharp carving knife. This had better not be done before the patient, but the pieces (six to eight) brought to him attractively dished. A slice is to be laid on one very thin slice of dense (home-made) bread, seasoned sharply with salt and pepper, or, according to taste, with mustard or Worcestershire sauce. There should be very little bread. The dish may be used two or three times a day.

Butter is willingly eaten by most patients in extra quantities, say two ounces with each meal. Cream is another substitute for cod-liver oil, but this, as well as milk (*vide infra*), I prefer to give between meals.

It may be asked, if the purpose is to provide fatty substance for the better nutrition of the nervous system, or of the system generally, why not make use of those other well-known fat-making substances, sugar and alcohol? The reason is, I think, evident. Oil, butter, cream, and fat of meats are ready for the processes of emulsion and of intestinal digestion. Alcohol and sugar (starches still more indirectly) require to be transformed into fat by complicated chemical actions within the body. This process is defective in many nervous patients, or, if not defective, it constitutes a drain on the patient's resources. It is an intimate organic strain. The excess of carbon goes to make up oxalic and lithic acids, and thus the patient is injured.

3. In many nervous cases I greatly reduce the amount of starchy and sweet foods, partly to save chemical labor and render full oxygenation more easy, partly because in many cases there is actual oxaluria or lithæmia. In these cases it is not at all necessary to restrict the patient as closely as in

well-developed gout or diabetes. The so-called Salisbury plan, while it affords immediate relief to many symptoms, is unnecessary, absurd, and even injurious in most cases. If you consider the habitual dietary of Americans you will see what an excessive amount of starchy food is used daily. At breakfast there is of course bread (often of an indigestible kind), oatmeal or wheaten grits, in many families potatoes with the meat, and sometimes buckwheat or other cakes, or fried hominy to be eaten with syrup or sugar at the close of the meal. The nitrogenous food is usually eaten sparingly or not at all. In such a breakfast, watered with a sweet mixture of very weak coffee, milk, and sugar, what a capital "mess" for fermentation we have in the stomach! Eructations, sometimes tremendous in volume, are first results of such a breakfast, but the more serious evils are developed later and deeper, as results of very imperfect oxidation of the carbon of this "mess." Then for dinner and supper starchy food is used, even if not excessively. We again find potatoes (in many families three times a day), cakes, puddings, pies, etc., make their appearance. Supper is in many American families a meal well calculated to develop flatulent dyspepsia and oxaluria. Often no meat is on the table, but bread and butter, preserves, cakes, oysters, and tea or "coffee." Even in better-informed families, where some form of nitrogenous or animal food is used at each and every meal, there is usually, I believe, a relative excess of starchy and sweet elements. One of the worst things in the popular dietary is the eating of an orange or two before breakfast. Here is a quantity, from two to three ounces, of sweet-acid liquid introduced into the empty stomach. It hinders the free flow of gastric juice (this is an inference from the well-known opposite effects of alkalies and acids on the production of gastric juice). Then in cases of lithæmia, oxaluria, and nervous

dyspepsia this drink is of such a nature as to increase the formation of oxalic acid. I wish that physicians would everywhere exert their influence to banish this custom—which is a misunderstood transplantation of a Cuban custom (Cubans take only coffee after their morning fruit, and do not eat breakfast until eleven or twelve o'clock), practiced nowhere else in the civilized world—from among our people. The only physiological preliminary to breakfast, in my opinion, should be a glass of water, of ordinary temperature for healthy persons, and hot for dyspeptics.

I make the necessary reduction in starchy and saccharine elements in my patients' diet by directing as follows: The breakfast coffee to be taken without sugar or milk; potatoes (both kinds) to be wholly excluded for three or four weeks, then resumed moderately, three times a week or once a day. Oatmeal, "grits," and similar cereals should also be absolutely suspended for a while, and then resumed in small quantities—for example, one tablespoonful of good oatmeal with much cream *after* breakfast. This last is an important point. Usually people eat (at breakfast) the starchy food first; then, if any appetite is left (which is not always), the meat or eggs are proceeded with. The best food, the most necessary for the nutrition of the body, that needing a free outpouring of gastric juice, and that digested with least chemical waste—beef, mutton, poultry, game, eggs, and fish—should be eaten first and chiefly. Bread I almost always reduce, advising stale or well-toasted bread. I am not a partisan of fancy breads, except in some cases bread containing the bran; the best bread for me is the whitest, lightest, and best cooked.

Desserts of all kinds I reduce also, by cutting off the worst, *i. e.*, the most starchy, leaving raw or stewed fruit, plain ice cream, and nuts. Even these, as in the case of

bread, should be used in smaller quantities than is usual. In some cases acid fruits must be forbidden.

When I have thus sketched out a moderate diet-list, the patient usually exclaims: "Well, doctor, what shall I eat with my meat? You have cut off my vegetables." The potato habit has become so developed in this country that numbers of people rarely eat other vegetables, and know only a limited number of the numerous non-starchy or slightly starchy vegetables furnished us by Nature. I often reply: "How did your ancestors get along, as we have known the potato only about a century?" I attach a *positive* value to green foods, and consequently urge my patients to eat freely of spinach and other "greens," string beans, celery, asparagus, beats, turnips, cauliflower, lettuce of various sorts, cucumbers, and tomatoes (not in oxaluric patients). Cabbage and onions are non-starchy articles presenting the peculiarity of being more digestible raw than when cooked. Peas, rice, and corn I place in an intermediate grade (with bread), to be used sparingly. By a little study of the market and by using canned articles (the best grades of which are, I believe, perfectly healthful) the patient's anxious question can be answered, and he need not suffer from want of variety. Condiments and pickles I seldom prohibit; and it has been an old form of compact between young lady patients and me that they can have pickles occasionally if they will give up candy.

Soups are usually indigestible, but I allow plain bouillon. It may have some nutritive value in itself, but it also increases the output of gastric juice.* Meats, fish, and eggs should be cooked in a simple way, by boiling, roasting, or very quick dry frying. Gravies and sauces are among prohibited articles, but I have not found a light dressing of oil, vinegar, salt, and pepper on a salad to be

* Herzen, La digestion stomacale, p. 121.

injurious (lemon juice may be used in place of vinegar). The mixed salads served with a mayonnaise sauce are bad, though the chicken and even the plain lobster meat are digestible.

In many nervous cases, and in all where dyspepsia is evident, I furthermore advise that simple processes of cooking be used, chiefly roasting and broiling for meats. Some forms of frying are not objectionable, providing the fat is kept out of the flesh (fish) by a protective "batter" which is to be removed. Also, I try to induce patients to eat simple meals, partaking freely of two or three articles only. A "course dinner" is not over-good for healthy stomachs, and is certainly bad when dyspepsia exists.

Stimulants are usually injurious to neurasthenic, neuralgic, and lithæmic persons, who are very susceptible to their effect, a teaspoonful of whisky or brandy sometimes causing much distress. In a few selected cases I allow one glass of good claret or a tablespoonful (measured out as medicine) of whisky with one or two meals. The practice of taking "a teaspoonful or so," as the patients say, of brandy or whisky when they feel weak or badly, or just before eating, to give them an appetite, I am strongly opposed to, and oblige my patients to cease the practice, which is often set agoing by careless medical advice.

You understand that the foregoing is a scheme for a moderate or normal diet; it will agree with nearly every one. I live mainly so, except that I am able, when I wish, to digest some dessert and more stimulant.

Cases with prominent dyspeptic symptoms call for various modifications of this diet, and, of course, the oxaluric or diabetic state requires a specially restricted dietary.

In framing diet-lists for your patients (and I beg leave to assure you that it brings reward to give thought and

time to do this and to do it always in writing) pray bear in mind the facts, as I believe them to be, that most people eat too much carbonaceous food; that dyspepsia, lithæmia, oxaluria, gout, and diabetes are cousins if not brothers; and, lastly, that you are devising a diet for the patient before you, and must therefore also bear in mind his idiosyncrasies and, to a certain, extent what he tells you of his experience with respect to individual articles of food. Yet you should not follow his statements blindly, because they are open to many sources of error, or the patient may wish to mislead you because he dislikes some of the foods you want him to use.

As regards milk diet, I must refer you to the books and to recent articles on the more digestible preparations of milk. One thing I should wish to strongly impress upon you, and that is the undesirability of taking milk with solid food. It may do for a strong person who has unusually good digestion. The milk, in reality, is an addition to the nitrogenous part of the food, and its casein calls for an extra allowance of gastric juice. I often give a glass of milk between meals and at bed-time. In some cases of oxaluria and lithæmia, one or even two meals may be made to consist wholly of good milk—one quart drank *slowly* in the course of an hour. The addition of a small pinch of bicarbonate of sodium and of salt to each glassful is good; and one very thin, light cracker may also be allowed to each glassful in some cases.

A most extravagant practice sprang up a few years ago with respect to the diet of epileptics. Some one proposed (and readily found followers) to feed epileptics on farinaceous and vegetable food, animal food being thought to be an excitant and favorable to convulsions. This fad is passing away, I am glad to say, for there is nothing in it. Many a case has come to me aggravated after a trial of this

diet and careless bromide treatment, and great improvement followed the resumption of a moderate normal diet, with systematic medication. I have, however, one rule with respect to the diet of these patients—they should eat a light evening meal (a milk meal, or a little animal food), but never eat before retiring. It is generally admitted that going to bed with a full stomach is very provocative of nocturnal or matutinal seizures. I fail to see the philosophy of depriving epileptics of animal food, since it gives strength and increases (normal) nerve power. *A priori* I should expect a starchy diet to cause nervousness by the setting up of oxaluria and lithæmia.

I might as well here refer to the rest of the hygiene of epileptics. I aim to restrict them as little as possible in respect to food, amusements, and occupation. The reduction in these should be mainly quantitative, in my opinion. Thus I allow many of my epileptics to go to sociables, theatres, and even quiet parties, but I make sure that they are in bed by 11 P. M., or at latest, once in a while, by midnight. Before going to any such amusement they are to take a little extra bromide. School work is no doubt too much for most epileptic children, but, on the other hand, idleness is also bad; so I usually allow from two to four hours of study, or private teaching, in different cases. Play involving violent exertion (ball, tennis, running games, etc.) I forbid. In general it may be said that a monotonous, moderately busy life is the best for an epileptic. The good effects of monotony or regularity of living, combined with quiet, is well shown by the remarkable remissions which sometimes occur, without medication, after an epileptic has been received into a hospital or asylum.

A question which has puzzled the minds of the ablest physicians is how to supply the nervous system with the phosphorus and phosphates which form so striking a pro-

portion of its composition (93·57 per cent. of the brain-ash). The market is flooded with phosphates, hypophosphites, and cerebral derivatives with high-sounding names, yet we have no experimental or good clinical evidence that any of these preparations are assimilable. Phosphorus, I believe, should be given pure, in the shape of solution in alcohol and glycerin (Thompson's solution, or tinct. phosphori, $3\,j = \frac{1}{2}\frac{1}{0}$ grain (0·003)), or dissolved in oil (oleum phosphoratum), or as pil. phosphori. The pills in the market give altogether too small doses of phosphorus, which should be administered in doses varying from $\frac{1}{6}\frac{1}{0}$ of a grain (0·001) to $\frac{1}{2}\frac{1}{0}$ (0·003), three times a day—the oil and pills after food, the tincture (diluted, if necessary, with glycerin) on an empty stomach and without water. Food, however, conveys an appreciable amount of phosphorus into the system in a naturally assimilable state.

About the pleasant indulgences of life—the use of tobacco and sexual intercourse. I am not rigid or dogmatic on this point. Many of my nervous patients are not at all injured (retarded in recovery) by the use of one mild cigar a day; the cases are rare, I believe, where we must make the patient give up tobacco absolutely. The sacrifice is very great, you must admit, and we should not demand it except for the strongest reasons. As regards sexual intercourse, I never, under any circumstance, advise it to young men as a remedial or sanitary measure. The considerations which led me at the beginning of my practice to adopt this rule are complex, but to me of absolute force. It is said that continence causes nervous symptoms, but I must say, gentlemen, that I do not believe that this is so, unless the patient's imagination has been already perverted, or where bad practices have been established. In married patients I follow the same rule as for tobacco—viz., enjoin great moderation; indulgence two or three times a month. You can

soon determine in such patients whether the act is injurious. Very often, however, I advise the use of separate beds. This is partly to secure the patient against jostling or annoyance by the snoring of the companion, though also to prevent involuntary and ungratified sexual excitement, which I consider as particularly exhausting. Many patients with insomnia are at once benefited by having the exclusive use of a large bed. The two beds may be in one room in cases where the nervous person is afraid to be alone. I should add to what I have said of tobacco that, besides reducing your patient's allowance, it is desirable to prevent him from going to and staying in places where he must inhale much smoke (club-rooms, etc.).

LECTURE III.

II. Rest.—The extreme importance of rest in chorea has been already stated. In some cases of neurasthenia and of hysteria absolute rest and separation from the family are called for. This "rest treatment" of neurasthenic conditions you will find fully detailed in Mitchell's books.

With regard to the great majority of cases of neurasthenia, nervous dyspepsia, migraine, neuralgia, etc., a judicious partial rest is sufficient, and, indeed, all that most patients can afford to have, as comparatively few patients have the means of entering a sanitarium or of going away from home with a nurse for three or four months. In all such cases I direct one or two periods of physical and mental rest in each day. The patient is to retire to a quiet room, away from noises and calls by relatives (children especially), and lie quietly for an hour or two. Undressing is not necessary, but, in the case of women, the corset should be removed. No one should be in the room, and diversion is to be sought by reading or by pleasant lines of thought, directed toward the time when the cure shall have been accomplished. This is a variety of treatment by "mental suggestion" in the wide-awake state which should never be omitted. Urge your patient to look forward and never backward, to do her best to ignore her numerous paræsthesiæ or secondary symptoms, and to try to keep her mind occupied with ideas relative to the happy time

when she shall be well. This requires judicious, forcible, and cheerful conversation on your part, and, where it is possible, through your suggestion, on the part of persons near the patient. When the patient lives in a small house, in which it is impossible to have a room for the above purpose, I advise that she spend the hour or two hours at a friend's house, or that she (female patients constitute the majority of such cases) send the children clear away from the house for the time. In these ways, in spite of unfavorable social conditions, you may be able to secure rest for your patients. At first this lying quietly is very hard; the patient is more nervous, feels "as if she would fly," etc.; but by perseverance the difficulty is overcome by the establishment of the new habit.

III. Seclusion is especially successful in hysterical cases, more especially those in which there is mimicry of a serious disease, voluntary starvation, or apparent sleep (lethargy). In some cases forty-eight hours of rigid separation from the sympathy and attention of relatives will cure or greatly relieve a case of "fancy hysteria," as I call it. I have practiced this treatment regularly (whenever the relatives of the patient would permit) for at least fifteen years, and had had many successful cases before Charcot published his experience on the subject. The following case will serve as an illustration: In 1878 I was called to see a very bright girl of thirteen years, the daughter of a healthy physician, but of a nervous (hysterical and choreic) mother. The child had witnessed many of her mother's severe seizures. The child had been suffering for a week or more from an excruciating "neuralgia" of the left hand and forearm, which no treatment, general or local, had relieved. She seemed in good health, and complained only of her hand, which she held rather rigid in a conical attitude, in constant fear of its being touched, handled, or moved. The

pain, she declared, was all through the forearm and hand; it did not follow the distribution of any one or two of the three nerves which supply the hand. There was neither anæsthesia nor atrophy nor discoloration, but great hyperæsthesia was present. She was constantly attended by her mother, her father had almost given up practice in order to be with her frequently, and her young friends were calling on her, sending her notes and bouquets—in other words, she was a badly coddled invalid. I might add that she had not presented any of the common hysterical symptoms, a fact rather common in the history of similar cases of neuro-mimisis. After a few days of attendance, I became convinced that the case was one of delusional pain in a hysterical subject, and, after trying several remedies, persuaded the father to let me try moral treatment for a week. The room was stripped of some of its pretty things, notes and bouquets were intercepted, the parents resolutely kept away from the patient's room and floor, and the servant was directed to leave the (plain) food on the table by the bed without holding any conversation with the child—in short, she was rigidly secluded one afternoon. The next day about noon, while the door was opened to allow of her food being brought in, she called out loudly so that her father heard her on the floor below, "I am better, papa." The next day she went down stairs *well*, and remained so. Now this case was one which, judging by experience, would have grown worse and worse under treatment and misplaced sympathy; the "neuralgia" would have extended to other parts, spasmodic attacks supervened, and perhaps semi-starvation practiced, wrecking the child's life. I will ask you to remember that this was done in 1878.

When you propose a thorough rest-cure or seclusion in a case of neurasthenia or hysteria the family are always anxious to have this carried out at home. Usually I believe

that this leads to failure, more especially in the case of neurasthenic women worn out by child-caring and household duties and worries. They must get clear away, and, if possible, to another city. In the house a thousand sights and sounds suggest lines of thought relative to matters which have exhausted the patient, and, besides, there is often added a feeling of self-reproach for the apparent (obligatory) neglect of customary duties. By all means, remove the patient from her own house to a hotel, boarding-house, or to a friend's residence. In some cases of hysteria, if you have the earnest co-operation of relatives, the treatment may successfully be carried out at home, but even in such cases you should have a good nurse with the patient.

IV. Bathing.—I have great faith in cold water judiciously applied. With the use of the "pack" my experience has been limited, though I think that I have obtained good results from local cold packs to the epigastrium and abdomen in neurasthenia and nervous dyspepsia, and round about the genitals in impotence and irritable weakness of the male organs. The pack is to be left on from half an hour to an hour only.

The use of cold water in such a way as to bring about reaction and a permanent improvement in circulation has been prominent in my treatment of neuroses.

1. The cold douche, general or spinal. This should be short, from five to twenty seconds by the watch, the head protected by an oiled-silk cap. The short cold spinal douche certainly seems to have a beneficial effect in neuroses and in posterior spinal sclerosis. Force should be given to the jet, and this is best done in establishments furnished with suitable apparatus. Unfortunately, in this country the "water-cures" are not what they should be, and a physician's prescriptions are disregarded by the medical men in

charge; they follow their own plan, which, I understand from statements of patients, consists chiefly in immersion baths, long-continued packs, and the electric bath. At the patient's home a rubber tube and nozzle may be fastened to the delivery tube in the bath-room, and the part sprayed by a relative or servant. If there is no running water with power, it is necessary to *throw* the water with as much force as possible from a cup or pitcher upon the back or other parts.

2. Rubbing with a cold, wet towel or sheet (using salted water preferably). In the sheet application I usually have the patient stand naked in a warm room, the nurse or *masseur* throws the wet sheet over his shoulders, and then rubs every part of the body below the head very briskly and hard with the cloth. This step may last from two to three minutes. The patient is then dried and lies on a sofa or bed wrapped in a blanket while the operator applies ordinary friction or regular massage to the whole body. This second step of the operation is usually much too long, a manipulation of from thirty to forty minutes being long enough for strong patients, while many ought not to be rubbed for more than ten or fifteen. In this matter you should keep a strict control over the *masseurs* or nurses, as they almost all are convinced that they must give the patient an hour of hard work. Dr. Douglas Graham, of Boston, and Dr. Murrell, of London, have both insisted on this point—viz., that massage should be moderate and never exhausting.

3. The simple cold sponge-bath is practiced by many of my patients. I direct this to be very brief, not more than two minutes. In winter it is well for the patient to stand in hot water during the sponging. It is to be followed by hard rubbing, done by the patient when he is fairly strong, or by a relative or nurse when he is weak. In many cases,

where reaction is feeble, it is better to have this done at bed-time, as the patient can at once get into bed, and react more fully.

4. The cold foot-bath has been recommended very highly in cases of neurasthenia and of paræsthesiæ in the head (miscalled cerebral hyperæmia). The feet and legs are to be immersed in cold water for one, two, or three minutes, then rubbed hard. In some cases this brings about a strong reaction.

5. There are two opposite conditions of the hands and feet met with in practice which are very amenable to the proper use of water. I refer to cold or burning feet and hands. For the latter I direct a short douche with the hottest water which can be borne twice a day. For cold extremities (which are by far more common) I make use of the cold bath (one to two minutes) or of cold showering. I have warmed the feet of hundreds of people by having them give their feet a hard rub under a stream of cold water night and morning, the good results appearing in the course of ten days or a fortnight.

In connection with the symptom of habitual cold feet, I would refer to the proper foot covering. I have become convinced that too warm or woolen stockings are conducive to cold feet, by having in great numbers of cases witnessed very rapid improvement follow a change to light cotton or thread hose. The explanation is simple. Woolen socks or stockings favor perspiration; this occurs under a practically impervious covering (the shoe) and evaporation is prevented. The result is moist, cold feet. Thread or light cotton hose, on the contrary, keep the feet dry, and consequently warmer. On the rest of the body, in spite of outer clothing, evaporation goes on fairly well, and the use of wool is admissible.

Menstruation need interrupt these various uses of cold

water only for two days, as after that, in my opinion, the flow is seldom checked by the application.

6. This leads me to mention a most important matter—viz., the checking of menstruation in anæmic female patients. I am thoroughly convinced that the profuse flow of women at the present day is not only unnecessary but is a great loss, and I have attempted to check it in my cases, with marked benefit. Internal remedies—such as ergot, tannic acid, etc.—exert little or no influence on the flow. The bromides are much more potent, but they must be given freely and almost continuously, which of course would be injurious to weak and neurasthenic patients. Following the advice and successful practice of Löwenthal, of Lausanne,* I have made use of large hot vaginal injections twice a day from the beginning of the menses in several cases with decided effect in reducing the flow or shortening the "period" by one or two days. In some cases I believe that even tamponing, as advocated by Gehrung,† of St. Louis, would be justifiable to prevent the recurrent monthly anæmia which is the curse of so many women's lives.

Exercise.—Many neurasthenic patients will tell you that they have exercise enough in their household duties and business conditions; but in saying this they make an enormous mistake. These patients are tired and exhausted by their occupations, but they have not had physiological exercise. I can not here enter upon a consideration of the value of the various forms of exercise, by simple muscular action and by the aid of apparatus. Suffice it to say that by exercise I mean the systematic use of certain muscles with a clear object, local or general, in view. Walking is

* Revue de thérapeutique, 1888, cited by Gehrung, Am. Jour. of Obstet., 1888, p. 1138.

† Am. Jour. of Obstet., 1888, p. 1138, and 1889, p. 1072.

what I almost invariably require of my nervous patients (excepting those who have severe uterine or ovarian lesions). A walk after breakfast is my favorite order, but this is partly to oblige the patient to get a supply of fresh air after having been housed so long.

It is surprising how many intelligent women do not realize the fact that they are frequently indoors from six or seven o'clock in the evening until one or two the next afternoon. Nor do many patients who "can not eat" breakfast appreciate that they are thus made to go nearly eighteen hours without useful food.

Walking and other exercises should be carried to the point of slight fatigue, but exhaustion should be avoided, and in this we must trust the patient's judgment. Many patients should take broth or hot milk on coming in from the morning walk and lie down for half an hour. One exercise I would especially recommend—viz., the practice of forcible inspiration. In this the patient is to be almost undressed, at least free from restraint about the body, stand erect, place the closed fists over the breast, and extend the arms slowly and fully, with all possible force, at the same time that the thorax is expanded and raised to the utmost by a slow inspiration taken with the mouth open. This is very fatiguing when properly done, and from six to eight breaths twice a day will be sufficient. You will be surprised, I am sure, at the increase in chest breathing and the general improvement which this simple exercise brings about. It should be kept up, night and morning, for many months.

Systematic gymnasium work would be good if we everywhere had judicious instructors; unfortunately, most gymnastic teachers are ignorant of the principles of physiological gymnastics, and overwork the pupil, besides developing muscles which medically are of no importance. It would

be well, in sending a patient to a gymnasium, to specify in writing what exercises you deem necessary.

I referred a while ago to the desirability of giving neurasthenic patients fresh air, and this leads me to throw out the following additional hints.

Patients who are unable to leave their room from the severity of their symptoms or because you are carrying out a rest-cure should have fresh air daily. In such cases I direct that the patient shall be well covered up (if bed-ridden), with a cap on, and that all the windows be opened wide for a time (from ten minutes to an hour) once or twice a day. For patients who are able to sit up, I order that they shall put on a hat, outer garment, and even gloves (dressed as for going out), and that the windows be then opened as above described. I do this even in midwinter, when the patient must use furs and warm gloves to keep warm, with the happiest results.

You will often find neurasthenic patients in a very warm room. This, I believe, is very bad for them. It reduces their nervous vitality and hinders the normal reactions which are essential to a good circulation. I always have a thermometer placed in the patient's sitting and bed rooms, and direct that the temperature shall never be allowed to reach 70° F. From 66° to 68° is the best temperature. If the patients complain of feeling cold, have them put on more clothing, or be covered up more (if in bed). Another mischievous practice is the long-continued use of hot water in bags or bottles placed at the patient's feet. This practice prevents reactions and reduces the energy of the vaso-motor nerves. To use a hot application immediately after a cold one to favor reaction is reasonable and successful, but I believe that the continued application of heat is pernicious.

The warm or hot bath, with complete immersion of the body for from ten to thirty minutes, finds a place in my

practice. I use it in some cases of insomnia where excitability or a condition of "fidgets" is prominent. In some insane asylums of Europe these prolonged warm baths, sometimes kept up for several hours, under the supervision of a medical man, are used to allay the excitement of acute and chronic mania, in preference to the use of mechanical or chemical restraint. I have certainly been pleased with the effect of a long, hot bath at bed-time in excited cases of insomnia and in some states of "nervousness."

Passive exercise has been fully treated of in the works on rest-cure. It consists in gentle faradization of most of the muscles of the body, or in massage combined with so-called Swedish movements. My observation has been that *masseurs* usually do too much; they often exhaust themselves and the patient, too, in their attempt to give the worth of their fee. In most cases, I instruct the operator myself as to the length of the treatments and the proportion of massage and passive movement which is to be observed. As before stated, I often direct that the manipulation be preceded by a rapid, brisk cold sponging or toweling. Massage, like active exercise, should never be carried to the point of exhaustion.

The Abuse of Certain Drugs in the Treatment of Neuroses.

I. Alcohol.—While I believe that alcoholic stimulants may play a wholesome or profitable *rôle* in dietetics and therapeutics, I think that these liquids are habitually used to excess, and fear that the medical profession is not quite free from the reproach of having been the means of starting many persons down the hill of alcoholism. You will often hear it said that the most injurious form of stimulation—*i. e.*, that by "drams" or drinks of the stronger liquors—is more prevalent in English-speaking nations than on the continent of Europe. I am not so sure of this, for the ha-

bitual daily use of strong drink is a widely spread evil in the whole of northern Europe and in Switzerland. You will be told that the use of beer, ale, and native (pure, though rough) wines, which are drank mostly at meals in Germany, France, Italy, and Spain, is not harmful. This, from considerable observation, I think is a dangerous error. What these beverages lack in strongly intoxicating power is made up by the larger quantities which are ingested, and I think that much mild chronic alcoholism is thus set up, in a perfectly "temperate" way, besides the production of gastric disease (dilatation and catarrh), and of the lithæmic and gouty dyscrasias. In other words, I am convinced that most civilized people who use stimulants take too much; though, of course, dram-drinking of whisky, brandy, anisette, schnapps, etc., sets up gastric and nervous disease more quickly. In the interests of the race in general and of the families whose medical advisers we are, there can be no question but that it is our duty to set our faces against alcoholic excesses and to be careful that our prescriptions do not serve as a temptation or an excuse to patients.

Allow me to be more specific. I have known several cases of alcoholism in women which had their starting point many years before in a carelessly given order to take some stimulant before dinner, on the plea that it would give an appetite. Again, I have known a woman to contract a strong alcohol habit by "taking a teaspoonful or so of brandy" when she felt badly, by a physician's advice. It is especially in the case of female patients with chronic gastric or nervous affections that it is dangerous to prescribe stimulants, except temporarily under careful watching. In severe acute diseases, as fevers, pneumonia, etc., the free use of alcohol for a few weeks does not seem to create a habit or craving; as the patient progresses in convalescence more and more solid food is taken, and the stimulant may

be reduced to a normal minimum at meals, or left off altogether.

Another objection to the use of stimulants in neuroses is that they tend to weaken the patient's power of resistance to disease. In other cases, particularly where the vasomotor and cardiac nerves are weak, they produce, in small doses, the cerebral symptoms we call tipsiness or intoxication, and increase the palpitation and sense of pulsation which is often felt by these patients in a most troublesome way.

Two years ago I saw in consultation a young married woman who had these symptoms, particularly palpitation with sensation of turning over of the heart, with a pulse seldom below 110, and made to rise to 120, 140, and higher by very slight exertion. She would spend half the night sitting or half lying, in mortal fear of stoppage of the heart. She was kept in the house by this fear, and also by the fact that any exertion increased her pulse-rate very much. I found that along with an otherwise well-appointed treatment she was taking "a teaspoonful or so" of brandy every three or four hours, or when she felt "weak and badly." Stopping the alcohol absolutely and giving one two-hundredth of a grain of aconitia every four hours relieved these cardiac symptoms so much that in a few weeks the patient slept well and was out walking and driving.

The diagnosis of chronic alcoholism in private patients (women especially) is difficult, and often can not be determined positively until you have had the patient under your care for some time, when, by repeated questions addressed to the patient and her relatives, you gradually learn the whole truth about the number and size of the drinks he or she has been taking and how far back the practice dates. A nurse with tact and shrewdness is here of immense assistance. You will be surprised at the light which such patient

observation will throw on some obscure and unmanageable cases. There is not as much lying about stimulants as there is about opium or morphine or cocaine, but the patient constantly tries to impress you with the moderation he has observed.

Let me ask you, gentlemen, to prescribe alcoholic stimulants, especially to women, only on the clearest indications, to direct that the liquor be measured out exactly as by your order, and seek an early opportunity of stopping it. In cases of simple sub-nutrition and anæmia, ale and good claret or Burgundy wine, taken with food, doubtless assist in the flesh and blood-making processes. In cases where a gouty or lithæmic element is present, the least harmful stimulant is whisky or gin, largely diluted, with the solid meals. Before meals stimulants certainly do much harm; they seem to create an appetite, but this, I fear, is usually only a local sensation due to the intense irritation and hyperæmia induced by the dram. Pray never order a drink heedlessly.*

* Since delivering these lectures, I have seen a case strikingly illustrative of the responsibility attaching to the prescription of stimulants. A married woman, aged forty, came from a Western city to consult me for remains of a paralytic attack. Some five years previously, after some symptoms of phthisis, she was ordered to take whisky several times a day by a physician of high standing in his locality. Gradually she increased the quantity to one gallon per month and more. A year ago pregnancy caused vomiting, and she was "obliged" to live on stimulants, using two and even three gallons a month. Still no check was put on by the physician. A miscarriage relieved her in the seventh month, and for a few weeks she used very little stimulants. From early in October to a month ago she resumed the larger doses of whisky up to one gallon a week. Singularly, she was never intoxicated, her memory was not impaired, and her phthisis seemed in abeyance. But in November and December last she began to have numbness and anæsthesia of the fingers and forearms, toes, feet, and legs, followed by almost complete paralysis with muscular wasting. In other words, she developed an attack of multiple neuritis. Some improvement began in February

II. Morphine and Preparations of Opium.—Doubtless, you are more awake to the danger of carelessly prescribing these remedies; yet, in my experience, physicians are still largely responsible for cases of morphine habit. Only this winter I met with a case in which this fatal habit resulted from a dose of morphine casually given to a patient for a moderately severe pain by a physician hurriedly making the round of his extensive country practice, a fact to which he probably never gave a second thought in his busy life. Let me ask you to bear in mind that these medicines are almost always useless in neuroses, while they positively aggravate cases of migraine, hysteria, and neurasthenia. I have notes of several cases of migraine which were changed from the usual type of monthly or semi-monthly recurrence, to weekly, and finally to daily headaches; in other words, the patient became the victim of constant headache only kept within bounds (according to the patient's belief) by the daily use of the remedy in steadily increasing doses. I have made it a fixed rule of my practice never to give morphine for chronic habitual headache. I tell the patient this on taking charge, and fight the paroxysms more or less successfully by the use of all other remedies. The same is true of the fulgurating pains of tabes; a morphine habit is very easily set up, and in both these diseases (migraine and tabes) patients who have passed through morphinism strongly express it as their conviction that the sufferings caused by this are far worse than those due to the original disease.

before the stimulants were reduced, but since three weeks, when, by advice of another physician, she almost entirely gave up stimulants, recovery has been extremely rapid, so that there is barely a trace of tactile anæsthesia left in feet and hands, the muscles are fairly nourished, she can use her hands, and walk with a stick. The knee-jerk is still absent, and, what is more serious, her urine contains a trace of albumin and some hyaline casts. What a lesson such a terrible case teaches!

In tabes I make a few exceptions; there are some paroxysms so terribly severe, so much beyond the possibility of endurance that, after trying chloral, sulphonal, etc., I feel obliged to give relief by morphine, given only once or twice.

Some of you have doubtless been astonished at the doses of morphine which a woman in an acute paroxysm of hysteria will support; it seems to have very little effect on her, and I believe that it aggravates the symptoms. In such a case you will be even more surprised at the happy effect of a hypodermic injection of from one one-hundredth to one fiftieth of a grain of crystallized hyoscyamine; it almost invariably cuts the attack short and procures rest. Above all, it creates no habit, there is no craving for it afterward. A large experience with this alkaloid and with aconitine has convinced me that with neither of them is there danger of habit.

There are some nervous affections in which the use of morphine is necessary and justifiable, but this is in acute short forms of disease—as, for example, true neuralgia* (perineuritis of various nerves), the pains of intracranial tumor and of intracranial syphilis (though usually these terrible pains yield very readily to antipyrine or chloral), and some cases of melancholia. In giving morphine to such patients I would urge you to give it yourself or by the hands of a medical assistant; almost never by a nurse, and to *never* leave the control of the drug to the patient. It seems to me criminal to give a syringe to a patient. In this way you can reduce the doses when you see fit, and cease its use when recovery has set in. In some cases (melancholia, for example) the patient should not know

* I express myself in this way to exclude some forms of headache which are often viciously called "neuralgia" by both patient and doctor.

what you inject; a falsehood in this respect is justifiable, though you may save yourself that by telling the patient that he can not know what the remedy is. The greatest danger of morphine habit exists when the patient has a knowledge of the drug used and of its happy effects on his sensations.

In other departments of medicine, in cases of cancer and far-advanced phthisis with painful complications, the steady use of morphine may be justified, but even here the administration of the drug should not be left to the patient.

A last caution: if in a case of acute sciatica, tabes, or intracranial disease you are tempted to give morphine, do not allow yourself to be governed by the patient's mere verbal assurance that he suffers greatly; you should learn to control this by other indications of suffering, such as the physiognomy of the patient, loss of sleep and of weight, etc. Many a patient will tell you that she can't bear the pain any longer, while her face is placid and her attitude normal, and you learn from others that she sleeps fairly well.

A further trial should, I believe, be made of hypodermatic injections of harmless substances *loco dolente* for the relief of many local pains (not headache or trigeminal neuralgia). Large (twenty to thirty minims) injections of hot or cold water, smaller ones of from two to four per cent. of carbolic acid, of sulphate of quinine (two or three grains in thirty minims), of osmic acid (five minims of a one-per-cent. solution), of brandy and water (equal parts), have all given relief more or less permanent in various cases in my practice.* To this list may now be added antipyrine, of which from five to ten grains dissolved in three times the amount

* Many other substances, all acting more or less as counter-irritants near the affected nerve, have been used. The general principle of this medication was first advanced (and very fully) by Luton (Arch. gén. de méd., Oct., Dec., 1863, and 1873, ii, p. 533).

of water may be injected. For relief of local pain we also have, of course, the numerous counter-irritants, the latest of which, spray of chloride of methyl, is extremely efficacious even in pains of long standing. By all and every means at your command pray avoid or postpone to the uttermost limit the use of morphine in nervous diseases, especially in female patients. Our responsibility, gentlemen, in respect to alcohol and morphine is very great indeed.

III. Bromides.—Every few months I see a case in which the unwise administration of these salts has been injurious to the patient, and I am thus led to the belief that this must represent a vast amount of abuse throughout the country.

In the larger category of cases, constantly encountered, the bromides have been given for nervousness or insomnia, regardless of the indications presented by the patients, with the result of reducing the force of the heart and the arterial tension, causing gastric disorder, and generally increasing the neurasthenic state. In insomnia observation has taught me that these salts are very rarely useful, only in such cases as present great motor excitability with a plethoric or sthenic state, or in cases where an intense peripheral irritation (sexual more especially) is one of the causes of restlessness or sleeplessness. In the vast majority of cases the indications point to a feeble intracranial circulation with reduced arterial tension and general malnutrition. Stimulants and tonics, with improved diet, exercise, and mental rest, are the remedies for such cases. True narcotics I avoid giving, or give them only occasionally if the amount of sleep fall below four hours. Furthermore, the wide-spread idea that bromides exert a hypnotic action seems to me erroneous. Any one of us might take an ounce of bromide of sodium this evening without influencing our sleep; the sedative effect would be manifest in the next day or two. The basis

of the notion that bromides are hypnotic is in the fact that their continued use in full doses develops a dull, stupid, and even semi-comatose condition; but this I believe to be utterly different from true sleep and to be due to a profound alteration in the constitution of the cortical gray substance. A proof of this (apart from differences in the phenomena themselves) is afforded by the after-effects. If we cease giving a true narcotic, the next night the patient is wide awake again, but after ceasing full doses of bromides a week or two must elapse before the patient's cerebral condition becomes normal. Besides insomnia, there are two affections for which bromides are recklessly used and with injurious effects. I refer to mental diseases (melancholia, mania, deliria of toxic origin) and hysteria. Every symptom in melancholia speaks against bromides, and calls for tonics, stimulants, and occasionally true narcotics. Even in apparently sthenic mania the ultimate effect is not good. Under the influence of these salts the various symptoms of hysteria (neuralgia, spasmodic attacks, paralysis, and emotional disturbances) are aggravated.* So true is this that in some rare cases where a doubt exists as to whether convulsions are epileptic or hysterical, a trial of bromides will greatly help settling the diagnosis.

The conditions known through a feat of imagination as "hyperæmia of the brain," which has been quite a prominent figure in our array of diseases during the last twenty years, and which is now beginning to be studied and reclassified into more correct clinical types, was and is still the object of treatment by the free use of bromides. The creation of the "disease" was mere theorizing, and its

* An exception may be made of cases of insanity and hysteria in which sexual excitement is prominent, when relief may be obtained from bromides given in full doses, with the addition of digitalis to prevent some of their depressing effects.

treatment dictated by apparently logical deductions from a fanciful premise. We now know that many of those cases, which provisionally I have for several years designated as "paræsthesiæ about the head" (the most common symptoms being fullness, tightness, numbness, emptiness, and some pain in the head, imperfect sleep, nervousness and hysteroid conditions, flushing of the face, with cold extremities, asthenopia, tinnitus aurium, apparent loss of memory, etc.), are really dependent upon eye-strain (especially those in which occipito-vertical symptoms predominate), lithæmia, dyspepsia, and not rarely upon weak heart or mitral regurgitation. The time has not come for a successful or final analysis of this symptom group, but the belief in the original conception of its hyperæmic nature is fast disappearing. Practically, in this condition the bromides give only transient relief in some cases and aggravate many others. It is especially in such cases that I have seen severe bromism produced.

In 1884 a prominent bank officer from central New York was brought to me with many symptoms of dementia paralytica. He was stupid and forgetful, his speech slow and thick; he often used the wrong word and often was at a loss for a word; his tongue and hands trembled (but not his facial muscles); he was feeble, walked in a staggering way, and his knee jerks were greatly increased. He had not the exalted notions of paresis, his pupils were normal, and his speech did not present the vibratory or jerky imperfection of paresis. On inquiry, I learned that some weeks before he had complained of occipital headache and mental fatigue, for which bromides had been freely given, and continued, in spite of the supervention of the above-mentioned symptoms, until a day or two before he was sent to New York. This was not told me, but I had to extract the information by repeated questioning, having been led

to suspect bromism by the symptoms above stated and by the patient's foul breath. It was fully ten days before improvement began, as the result of tonic and stimulating treatment, but in three months the patient was cured, and has remained well.

As a result of giving too much bromides I have known the (self-limited) delirium of acute alcoholism transformed into or supplemented by a bromic delirium with some hallucinations, but characterized chiefly by the peculiar coated brownish tongue, with foul breath, very feeble cardiac action, and a typhous condition.

In 1879 I successfully treated a case of violent hallucinatory mania with typhous state, brought on by excessive quantities of bromides prescribed for "cerebral hyperæmia" by a physician who, after the patient had gone far away from him, ordered increased doses by telegraph.

In the last ten years I have seen two cases in which bromides given to allay the pain and restlessness of suppurative otitis produced symptoms strongly suggestive of intracranial inflammation or abscess. The second case, which occurred last year, narrowly escaped trephining. It is so instructive in many respects that I will relate it pretty fully. A man of about forty years of age, resident of a Western State, developed an acute attack of otitis media suppurativa. The disease seems to have run a very ordinary course, and in about ten days the discharge had almost ceased. But during this period the attending physician (the leading practitioner in that section) had begun giving bromide of sodium for the rather severe pain in the ear and behind it. As the local symptoms ceased, the patient began to get dull and irritable, and also weaker. Later he became semi-comatose, yet restless and somewhat delirious at night; his tongue became coated and foul, and his vital powers seemed fast failing. His speech was thick, and he

occasionally complained of pain near the ear. No convulsive or paralytic phenomena appeared and no fever was noted except when brought to New York, when a slight rise of a degree or a degree and a half was observed; at no time, except on a single occasion, immediately after the journey, was a slow pulse observed; it was usually near one hundred. An able aurist, consulted by letter, expressed the opinion that there was intracranial inflammation and urged that the patient be brought to New York. There he saw him, in consultation with a prominent surgeon, and repeated his opinion. In consequence of this consultation, an exploratory operation was done on the mastoid process, and its cells were found healthy. This was four days before I saw him. The surgeon, fortunately, was one of those who want all possible light on a case of this sort before proceeding to a serious operation, so he asked me to see the patient. Owing to engagements, I could not go at once, and the patient's own physician, becoming impatient, called in a neurologist for whose knowledge and skill I have the highest regard. This gentleman said quite positively that there was an intracranial abscess, and advised immediate operation. I saw the patient the next day, when the wound in the mastoid was doing well and he was a little brighter. After hearing the whole history of the case and making a thorough examination, I was struck with the absence of any symptom positively pointing to cerebral lesion. Once only had a low pulse been observed—viz., 66 beats—and this was immediately after the journey. It had ranged from 75 to 90, and the temperature had been about 100°. On the other hand, the form of stupor, the peculiar delirium, the very low arterial tension, the coated tongue, and peculiarly foul breath led me to suspect bromism.

By close questioning of the patient's wife and of his physician, I brought out, what had been concealed in the

history, the fact that large doses (at one time thirty grains every two hours) of bromide of sodium had been given almost up to the time of departure (some five or six days before my examination). He had probably taken between eight hundred and a thousand grains of bromide. I suggested the probability that the alarming symptoms had been thus produced; advised postponing the trephining, and giving digitalis, nux vomica, and caffeine freely, besides more food and some stimulants. In two days the patient was much better, and in two weeks went away nearly well. He has since regained his former good health. Here was a case in which a simple self-limited otitis had grafted upon it an entirely independent *disease* (I may say) simulating the most dangerous sequela of otitis.

Another condition in which the bromides are often injurious is that of traumatic neurosis, either of the simply neurasthenic or of the hysterical form. Page * was the first to suggest that many symptoms of this condition were aggravated, and even new symptoms added, through the depressing effects of bromides on the patients' nervous vitality and will. This warning I can heartily indorse, and I am surprised that one of the best recent writers † on so-called "railway spine" should have spoken slightingly of it. My experience has been that such cases do well on strychnine, while they grow worse while taking bromides (even if it makes them comfortable).

I might quote many other cases from my note-books in which the diagnosis of real disease was made difficult because a state of dangerous bromism had been produced by the reckless (or rather thoughtless) administration of bromides. I have seen one case in which death was directly due to excessive doses of bromide given to relieve paræs-

* Injuries of the Spine, 2d ed., Philadelphia, 1885, p. 202.

† P. C. Knapp, Boston Med. and Surg. Journal, Nov. 8, 1888.

thesiæ in the head, which were supposed to indicate "cerebral hyperæmia."

In conclusion, I would urge you not to fall into the too common careless practice of telling patients to take "a little bromide" for nervous symptoms of various sorts, and especially not to give the salts in full doses except upon the clearest indications, and with a sharp lookout for bromism. Indeed, the experience of the last few years has strengthened me in an opinion I expressed more than twelve years ago,* viz.: "I consider epilepsy to be the only disease for the treatment of which we are justified in deliberately producing a degree of bromism."

* The Abuse and Use of Bromides. Journal of Mental and Nervous Diseases, July, 1877; Opera Minora, p. 226 (see p. 235).