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Electro-Therapeutics  
of Neurasthenia, by

W. F. ROBINSON, M. D.



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ELECTRO-THERAPEUTICS  
OF  
NEURASTHENIA.

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BY

W. F. ROBINSON, M. D.

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1893.

GEORGE S. DAVIS,  
DETROIT, MICH.

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## INTRODUCTION.

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The author of this little work feels safe in saying that it certainly has the merit of treating two of the most important questions of the day: First, that wonderful and mysterious power, electricity, which is fast becoming such an all-important factor in our modern civilization. Secondly, the question of functional nervous disease, which is playing to-day, and in the future is destined to play, a part even more important than the former. One reason for this importance is, that it claims for its victims some of the best and brightest minds among us.

Although in the author's opinion neurasthenia is a pretty clear-cut morbid entity, it is not by any means an easy matter to define it.

The fundamental characteristic of this disease, which may be said to lie at the basis of the whole matter, is a lack of reserve force, or nervous bankruptcy. The chief symptom or manifestation of this lack of nerve force is vaso-motor instability; that is to say, the vaso-motor system, instead of keeping up a steady tonic pressure upon the blood-vessels, is constantly loosening and tightening its grip upon them, now in one part of the body, now in another. The result is that we are having anæmia of a certain organ, then a little later hyperæmia of another, or the two conditions may follow each other in the same organ.

As to the true nature of neurasthenia, it is a most difficult and involved subject, and one upon which the various authorities are not by any means agreed.

The principal question seems to be as to how far the disease is independent, and how far it is secondary to some

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lesion of a special organ. It must be acknowledged that this is a question of great difficulty. There are certainly many cases to be met with where local disease of the pelvic or abdominal organs exercises a most profound influence on the system at large. When it is reasonably sure that a connection like this exists between local disease and a general nervous condition, the only course to pursue is to attack vigorously the local disease; and in all probability, when the cause of irritation is removed, the secondary manifestations will disappear also. If the original lesion has lasted a long time, however, the train of nervous symptoms which it caused may have become independent of it and persist even after the cause has been cured.

It must be remembered, however, that no local cause could ever produce true neurasthenia in a system in which the nerves were in their normal condition. We often hear it said that disease in one part of the body or in one organ affects every other. This is perfectly true, but the effect so produced does not by any means have to be neurasthenia. It is quite possible for some slight local trouble to exist along with true neurasthenia and yet have no causal relation with it. Furthermore local derangement may be simply a symptom or result of neurasthenia. Finally, we may have cases of true neurasthenia with all their characteristics, in which the existence of some local affection aggravates and prolongs the main trouble. This class of cases will be referred to more particularly in the chapter on Galvanism.

One fact must be borne in mind in this connection, and that is that a fully developed case of neurasthenia, no matter how developed, must be looked upon as a morbid entity in itself. Whether purely functional in its nature or due originally to the irritation produced by some local lesion, it must be treated to a great extent as an independent disease, and not as a mere secondary affection.

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In spite of the difficulty in the diagnosis of this affection, it is not desirable to spend much time upon it here, for this little work, as the title implies, is to be devoted to treatment.

The chief symptoms of the affection are as follows: Irritability and restlessness. Inability to concentrate the mind upon anything; when he reads the newspaper he cannot recall what he has read. Great weakness of the will; little things seem a mountain to him; he cannot make up his mind to a fixed course of action. Melancholy is always present, which may even go on to despair. The mind is plagued by all kinds of morbid and unreasoning fears, such as fear of being alone or of being in a crowd, fear of everything, and finally fear of being afraid. Another very characteristic symptom is a terrible but utterly indescribable feeling in the head. Pains of all kinds may be felt in any part of the body, from the head to the feet. Sleeplessness is almost always present in a more or less aggravated form.

For a full and complete account of this disease with all its symptoms, the reader is referred to the admirable work of Dr. G. M. Beard.

As to its frequency, it is alarmingly prevalent, and among the best and most intelligent class of our people. \* I say alarmingly, because a certain proportion of the cases lead to and end in that terrible mental death, insanity. It is almost impossible to obtain the statistics of this disease, but all indications point inevitably to the fact that it is on the increase in our land. The terrible competition in all kinds of business, the overmastering desire for wealth and station, stimulated as they are by the tremendous advantages which a comparatively recent civilization offers to everyone of an energetic disposition, tend to bring about a condition of things which is terribly wearing on a sensitive nervous organization. Many are keyed up to the highest pitch by the excitement of the struggle, and as long as all goes well they

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may be able to bear the strain; but when a sudden shock comes (as a temporary depression in business or the loss of a dear one) then the overstrained nerves give way; and the individual wakes up some morning to find himself in a condition of mental and physical prostration from which it may take months to recover.



# CHAPTER I.

## CLASSIFICATION.

The classification of neurasthenia, like its nature, is a subject of considerable difficulty, and one upon which there is much divergence of opinion. Some would classify it according to the part it attacks, making divisions such as: myelasthenia, affecting the spine; cerebraasthenia, affecting the brain, etc. Dr. Dana of New York, in his new work on nervous diseases, makes such divisions as neurasthenia in adolescence, climacteric neurasthenia, etc. I consider this a most excellent and practical method of dividing the subject, and shall have occasion to refer to some of Dr. Dana's divisions later on in the work.

Treating this subject as we are, simply from the standpoint of electro-therapeutics, I have divided it merely into two parts: Mild cases, and severe cases.

By mild cases I mean those which are curable in a single season. I think this term is preferable to that of year, for the simple reason that it is seldom if ever desirable to keep these cases for twelve months consecutively under treatment. One of the most important principles in the treatment of chronic disease is that of change and variety. If a patient has been under treatment for three, four, or five months, and the first of June arrives, even if he is still far from

well, it is an excellent idea to send him away for a trip, and then resume the treatment when he returns. As a rule, the longer you can make the trip the better.

Under this heading of mild forms may be classed: (1) cases of neurasthenia following acute diseases such as typhoid fever or the *grip*; (2) cases resulting from physical exhaustion alone, as seen in young men from over-indulgence in athletic sports; (3) cases occurring at the climacteric in women; (4) cases occurring in healthy young men as a result of masturbation or nocturnal emissions, and where a marked neuropathic temperament is not present (such cases are very mild, and yield almost always in from four to five months—indeed, it is a question if these cases have a right to be called neurasthenia, on account of their mildness; they have several of the important symptoms, however, such as the lack of power to concentrate the mind, feebleness of the will, etc.—If, on the other hand, these cases are dependent upon a neuropathic constitution with a strong tendency to melancholia, they are apt to be very chronic.) Finally (5), those cases which occur in people previously healthy, and where the nervous system has yielded to some sudden emotional shock, as the loss of a parent or relative, or reverses in business.

The second and more important class comprises those cases that are the result of some cause which has been acting for a long time. Take for example a

woman of delicate physique, who has the care of a house and a large family on her hands. With her strength sapped by frequent confinements, and worn out by overwork, she is compelled to watch for many nights at the bedside of a sick child, until finally death puts an end to its suffering. Then the crisis comes, and the overburdened nerves give way. The tremendous strain under which she has been living for years has done its work, and from this time on she is a poor, miserable being, full of pain and almost incapable of any kind of exertion. In other women it is the strain of society, with its late hours and excitement, which wears out the nerves and uses up the vital force. In men it is generally the care, worry, and overwork of modern business methods which is answerable for the trouble. Whatever the cause, either work or pleasure, it is always of long duration and has been steadily acting year after year. In such cases there is no question of cure in a single season. Year after year the patient returns from her summer vacation or her trip abroad; better perhaps, but still far from well, and requiring renewed care and treatment.

Another obstinate class of cases are those in which a double morbid condition exists. The patient suffers from true neurasthenia, and in addition there is some local trouble like an inflamed ovary or a mass of pelvic exudation which, by its constant irritation, aggravates and prolongs the general nervous condition. In cases of this kind the electric treat-

ment should be given in such a way as to reach this local trouble. These are the cases that are frequently operated upon, and in which I may say the operation often fails—that is, the nervous trouble is made worse instead of better.

The reasons for this are two-fold: *First*, because the neurasthenia, on account of its long duration, has become an independent disease and exists entirely apart from the local trouble. *Secondly*, because a patient in this condition is excessively sensitive and apprehensive, and nothing could be worse for her than the period of painful anxiety and indecision during which she is trying to make up her mind to the operation, after which come the fearful days of suspense intervening between this and the date of the operation itself; then the terrible shock, and finally the long and weary days of painful convalescence, when every nerve is strained to its highest tension and the poor tortured body seems to hang on the verge of dissolution. There is probably nothing in the world more trying to a patient suffering from neurasthenia, than the terrible ordeal of deciding upon, undergoing, and recovering from an abdominal section.

Among those coming to me with functional nervous disease I frequently see female patients upon whom an abdominal section, performed perhaps several years before, has left an impression upon the nervous system never to be effaced. These cases, be it remarked, are what are put down by the surgeon as

successful operations. In view of the great advance which has been made of late years in the application of electricity to affections of the female pelvic organs, it is greatly to be desired that a faithful trial be given to this agent before operation is resorted to.

The writer does not pretend to say that a case of rapidly growing ovarian cyst should not be operated on, for electricity is powerless to help here. In the case of very small tumors of any kind in the ovary or uterus, the stimulus to the parts certainly has an action to prevent their growth, as I have seen in a number of instances. This matter of the results of operation in neurasthenic women is a very important one, which has not always secured the attention it deserves.

In considering the reasons for and against an operation, the surgeon is very apt to be guided almost entirely by the chances of life. If the wound heals and the patient lives, then he looks upon it as a successful operation; whereas it is a question that every nervous specialist often asks himself, whether a life of suffering from shattered nerves is not worse than death?

Cases of obstinate neurasthenia often result where a person of neuropathic constitution receives an injury to the brain or spine, or a sunstroke. A year ago I treated a patient who had been a sufferer for years from this disease, which was originally

brought on by a fall from his horse while serving in the army during the war.

Neurasthenia in general lasts from one to ten years; and since the cases of one year's duration are all included in the first division of our classification, the severer forms of the second class are naturally of long duration. In cases where it lasts over three years it practically ceases to be a disease, but is rather a condition.

## CHAPTER II.

### THREE FORMS OF ELECTRICITY.

We have at our disposal three forms of electricity: static, galvanic, and faradic, naming them in the order of their importance.

I consider static the most important of all in the treatment of this affection, although it is not greatly superior to galvanism. It is somewhat difficult to fix the relative value of these two forms, for the reason that it differs according to the patient. Two patients may have typical neurasthenia, and one of them be very much benefited by static electricity, while the other will perhaps remain absolutely stationary under it, but when galvanism is used he will make rapid progress. It is perhaps fairer to say that both forms are of great value in the treatment of this disease, without giving the preference to either as yet. As one of our best electro-therapeutists lately remarked, our great need to-day is for exact indications. It is to be hoped that the future will bring us these, but for the present we must carefully feel our way as best we can.

Faradic electricity may almost be left out of account here, since its value in comparison with the others is so small. I only recommend its use in one condition of neurasthenia, which will be explained at length in the chapter under Faradism.

It is often said that electricity has only a mechanical action and is therefore of no more value than the Swedish-movement cure or massage. This theory is, emphatically, unsound and false, as can be proved in many ways, but I think it is perhaps nearer the truth in relation to faradism than to any other form—or, in other words, that faradism has less action as a vital tonic than any of the three forms. We can readily understand that the galvanic current should have a wonderful power in affecting the tissues, from its decomposing action upon water and various other fluids. Furthermore, the lack of rapid vibration in the current gives it time to produce profounder changes and modifications.

If we consider the static form of this agent, we find an explanation of its action in the shock to the whole system which the tremendous intensity of the current produces. There is no direct way of measuring the voltage of the static current, but in the machine in use at present by physicians the voltage is found, by calculation, to be about fifty thousand. It can readily be seen that a current of such a voltage flowing through the system must affect the nervous tissue to a profound degree. It should be remembered that static or frictional electricity is the same kind as that which exists in the atmosphere, and of which we see such magnificent exhibitions in a thunder-storm.

To those who have directed their attention to



this subject, it is well known that many people are affected by the presence of the large quantity of electricity in the air during a thunder-storm. They have an unaccountable feeling of depression; or on the other hand it may take the form of excessive nervousness, combined with giddiness, general malaise, and perhaps a slight degree of nausea, or faintness. These symptoms are produced by an overcharge of this fluid, acting on a highly sensitive nervous organization. The same results may be produced by giving an overdose of static electricity to your patient in the office, and in point of fact this is what will frequently happen if great caution is not used. This matter of caution is of great importance in giving electricity, and will be referred to later in the chapter on Treatment.

Coming back now to the faradic form, it holds a position midway between the galvanic and static. It does not have the profound action on the tissues that the slow-moving galvanism has, nor, on the other hand, can it hope to accomplish what franklinism does with its very high intensity and great power of diffusion through the system at large. In the writer's opinion its power is extremely limited, so much so that, as already remarked, it may be almost discarded in the treatment of neurasthenia—or, to put it more exactly, in the office treatment of this affection.

In the remarkable system of treatment originating with Dr. Weir Mitchell, and known as the rest cure,

faradism as employed by him is of undoubted value. It is here used in the form of general faradization, and the electrodes are applied to every part of the body in turn. The treatment takes a long time, from half an hour to an hour, and the patient must be entirely undressed. The good effect of the current in this form of treatment is due in a large degree to the mechanical stimulant which it gives to the various muscles as it is applied to them in turn. Its action as a vital stimulant may almost be left out of account.

It must be understood that this estimate of the value of faradism applies to neurasthenia only, and is not intended to throw discredit on its use in uterine troubles, where it has rendered important service in the hands of some of our eminent specialists in gynæcology.

A word as to the apparatus to be used. In the author's opinion, the best (and he is almost ready to say the only) static machine to use, is the large six-plate instrument made by Waite & Bartlett of New York.

Static electricity, on account of its high intensity, cannot be held or kept in any one place, but escapes into the air and surrounding objects almost as soon as generated. For this reason it is absolutely necessary that a large quantity should be generated and poured into the body of the patient, in order to obtain the best effects. I consider the old form of

machine, supplied with two or three small plates, to be of very much less value.

I do not by any means wish to imply that other makers are not able to make a perfect static machine which would fulfill all the requirements of modern electro-therapeutics. I have had no experience with the machine made by McIntosh, of Chicago, but am told by those who use it that it is very satisfactory in all respects.

The electrodes which I use in giving static electricity are: First, the metallic point, which gives a slight spark when held close to the body; on being withdrawn a little the so-called static breeze is produced. This is the mildest of all the electrodes. Next in order comes the wooden ball, two and a half inches in diameter, in which the spark is very much mitigated by its passage through the wood. After this comes the blunt carbon point, an electrode which ends in a small rounded piece of carbon, not unlike the rods used in the arc light. The spark springs from this carbon end and is considerably stronger than that from the wooden ball. Finally, we have the small metallic ball, one inch in diameter, which gives quite a powerful and often painful spark. This is the strongest electrode used by the author in the treatment of neurasthenia, except in very rare instances. Very obstinate cases occurring in men, that seem to resist all milder forms of treatment, are occasionally stimulated by means of sparks from

the large metallic ball, two and a half inches in diameter.

As to the galvanic treatment, it is a great pity to attempt it without a first-class cabinet battery with all the parts, as pole-changer, automatic interrupter, rheostat, etc. Whatever else it may or may not have, there is one absolute necessity, and that is a well calibrated milliamperemeter, made by one of the reliable, well known houses. To attempt to practice electro-therapeutics to-day without such an instrument, is little short of criminal.

The various electrodes used in the galvanic treatment of neurasthenia will be described later on.

Since faradism is only used in general faradization, there is no need to enter into the niceties of this subject, regarding the length and size of wire, etc., as brought out and developed by writers on the electro-therapeutics of gynæcology. For the purposes of general faradization as recommended in this work, any good faradic battery which the physician happens to own, will do.

## CHAPTER III.

### ACTION OF ELECTRICITY.

First a word in general as to the action of this agent.

There are certainly many things we do not know, and in all probability never shall know, about it, since the ultimate action of all kinds of force seems wrapped in almost impenetrable mystery. Certain relative knowledge we do possess, however; that is, knowledge by means of effects which we perceive. Clinical experience has enabled us in this way to find out the effect of electricity upon the human system.

It is that of a nervous or vital tonic, and its action in this direction is extremely powerful. Indeed it may almost be called the only true nervous tonic.

The medicine which approaches nearest to this agent in its action upon the nerves, is strychnine; but even it falls very far short—so far, that comparison is almost out of the question. If any fair-minded observer will take two similar cases of any form of paralysis, such as facial or radial, and treat one with strychnine and the other by means of electricity, he will surely acknowledge the truth of this statement.

The various preparations of phosphorus are certainly of great value in the treatment of nervous affections, but it is probable that they act more as a food in supplying elements that the nerves need.

It is the wonderful tonic action of electricity which explains its curative power in neurasthenia. The disease is a depression of the vital force of the body, which is simply another name for nervous force. This depression is combated and the patient relieved by the tonic action of the electricity.

Simple as this principle is in statement, it is very far from being so in practice; and there is perhaps just as much skill required in the successful use of electricity as a surgeon needs in performing operations. Moreover, much of it is knowledge that cannot possibly be put into a book, no matter how detailed it is written, but can only come through experience in treating cases and observing the effects of the current upon organisms of varying sensitiveness.

We have now the problem plainly before us: To tone up the weakened nerves. It would be very much simpler of solution if it were not for the fact that electricity may act as a powerful irritant as well as a tonic.

The whole question may therefore be put in a nutshell as follows: To introduce electricity into the body in such a manner and dose as will best produce its full tonic action upon the nervous system, without overstimulating or irritating.

It is just here that the physician's practical skill comes in, which will determine the failure or success of the treatment. One is constantly hearing of cases

where electricity was tried and seemed to make the patient worse. This simply means that, owing to a large dose or an improper method of application, the irritating action had been produced to an undue degree.

A word as to the importance of caution in the use of electricity in this disease. The agent we are using is a very powerful one and capable of doing a great deal of harm. Moreover, people of high-strung nervous organization are specially sensitive to it, just as they are to medicines. It will generally be found that these two go together; that is, patients who are very sensitive to drugs are equally so to electricity.

In a paper read before the American Electro-Therapeutic Association, I dwelt on the importance of caution in certain cases of this disease, and put forth views which, as some of the members thought, went too far in this direction. This naturally recalled my attention to the subject, and I carefully went over what I had said, with the result of finding very little to retract. Moreover, every day that I use electricity impresses upon me more and more the importance of caution in its manipulation.

During the past year there has appeared a work by Dr. Sperling of Berlin, entitled "Studies in Electro-Therapeutics." In this little treatise he urges the therapeutic value of a current of one-half milliamperes acting through an electrode of fifty square cen-

timeters; that is to say, a current density of  $\frac{1}{100}$ . I have been much interested in this little work of Dr. Sperling's, confirming as it does my own theories. The objection to it lies in the fact that the confirmation goes too far in one direction. It is just as much an error to treat every case with this dose of one-half milliampere as it would be to follow the advice of a certain member of the above-mentioned society, who recommended putting into a patient all the electricity which you could get through the skin. Both these men are evidently in the wrong, since they both limit themselves to routine treatment, thus neglecting the most important element in the whole matter, that of individualizing the cases and suiting the treatment to the needs of each. A dose of one-half milliampere is certainly much too small, as a rule. Cases are occasionally met with, however, where it seems to be sufficient. I have now under treatment a lady of a high-strung nervous organization for whom the smallest doses seemed too large: they made her more nervous and prevented her from sleeping. I was finally compelled to reduce the current to one-half milliampere, and she has made satisfactory progress ever since. Her sleep is excellent and her nervous condition is constantly on the mend.



## CHAPTER IV.

### THE STATIC FORM, OR FRANKLINISM, AND ITS APPLICATION.

Having now cleared the ground by the consideration of the various auxiliary matters necessary to a proper understanding of the subject, we come to the main point of the whole matter: the actual treatment of the cases.

As already stated, true neurasthenia is a single disease, and, although it has a multiplicity of symptoms, its general characteristics are very similar. I will even go further and say that its principal symptoms are almost always the same: the bad, indescribable feelings in the head, the inability to concentrate the mind upon any subject, the terrible despondency, the fear of going insane, etc. Some of these terrible mental symptoms are sure to be present in this disease, and their complete absence would simply show that if the diagnosis of neurasthenia had been made, it was an error.

To put the matter in a clear light, let us assume a case of typical neurasthenia, presenting itself at your office, and the diagnosis made. How shall it be treated? I make it a rule in these cases, always to ask the patients if they have ever taken electricity before. This is a rule worth following, for various reasons. If the patient has had it before, ten chances to one it has

been given wrong, and either gave no relief or it may even have done harm. If the treatment has been given with one of the little faradic machines which used to form part of a physician's outfit, it is pretty safe to conclude that no benefit was derived, for the reasons already set forth in the preceding chapter. This should be briefly explained to the patient. If he or she has ever taken galvanism on the head for the relief of the distressing mental symptoms or for headache, the dose may very likely have been too strong, especially if the patient be a woman, with the result of making matters worse instead of better.

If patients have not had this experience themselves, they may have heard of such cases, and in either event they will have a prejudice against the agent, which it is very desirable to remove before beginning the treatment.

This can best be done by a few well chosen words as to the ignorance and the imperfect methods formerly in use, the absence of any instrument for measuring the current as employed by the general practitioner in the past; finally a word as to the great advance that has been made in the science of electrotherapeutics, and some of the remarkable results obtained by the use of this agent in skillful hands. If any apology is needed for this advice, it must lie in the fact that in this disease, with its preponderance of mental symptoms, the mind must be treated as well as the body.

One other practical point which is not without a certain value. A nervous woman, especially if she be young, is very apt to be frightened by the apparatus in an electrician's office, and more than all by the formidable appearance of the static machine. When she finds that she is to be treated by this machine, she is perhaps terrified, and her first impulse is to refuse. In this case a simple and easy way to reassure her is to start the machine, and then to get upon the platform yourself. There is nothing so strong as an ocular demonstration, and this can hardly fail to allay her fears and make her willing to try herself what has evidently been so harmless in your case.

*Static Charge.*—When a patient comes for treatment who has never taken electricity before, I begin the treatment with franklinism, using the form known as the static charge for five minutes. This is a very mild dose of electricity, but it must be borne in mind that these cases are specially sensitive, not only to this but to all other agents which may act as irritants, and if caution be not used the result will be far from satisfactory.

It is a good plan to treat these cases daily: first, because the oft-repeated tonic action of the electricity is of great benefit; and also because sufferers of this class are very dependent upon their physician, and the moral effect of his daily advice and counsel is of as much value to them as the treatment.

Patients suffering from neurasthenia are apt to

be tormented by some form of fear or apprehension. Sometimes it takes the form of suicide, at other times of homicide, or, most common of all, fear of going insane. Instead of taking any definite form, it may be simply a vague apprehension, which is all the more terrible on this account. Such patients are always in a condition of more or less profound despair, and they cling to their physician as their last hope. A daily visit to him is therefore of advantage, and it has the additional value of taking the patient out of the house and into the fresh air.

Certain cases seem to be just reached by this form of treatment. They bear the static charge perfectly, there being no ill effects therefrom, and it seems to supply just the stimulus that the weakened nerves require. I have seen mild cases of acute cerebral neurasthenia, occurring as a result of some emotional shock, cured in from four to six months by means of the static charge alone. Such cases of rapid cure are never accompanied by great physical exhaustion, for in that case a much longer time is required to conquer the disease.

This distinction between neurasthenia with and without complete physical exhaustion is an important one, and deserves to be emphasized by an illustration.

Let us take first the rarer form, where great physical exhaustion is absent: Suppose a woman about thirty years old suddenly loses her mother, in whom

she is very much wrapped up. We will assume her to be of an emotional nature, and to be without a father. She suddenly finds herself left alone in the world. Life seems empty to her, and even if she be possessed of fair physical health she will very likely find herself in a mild condition of neurasthenia, in which hysteria will play a certain part. The patient will have queer ideas, and her friends will not know what to make of her. Her character will seem to change, so that she becomes melancholy and irritable. She will probably say that life has lost all its charm for her. If the mental symptoms are very strongly marked, then it is well to search the patient's antecedents for some history of insanity; but if this is not found, it may be looked upon as a mild case of neurasthenia in which the condition of nervous bankruptcy has been produced, not by long-continued physical strain, but by sudden emotional shock. The patient has youth and health in her favor, and in all probability, if properly treated, she will recover in six months or thereabouts.

The case should be treated about as follows, it being understood that all general rules may have to be departed from under special circumstances:

For the first month, the static charge daily for five minutes. If the treatment is acting properly, she should make steady improvement, which becomes more marked as the case proceeds. Frequently the first change to be noticed is that the bad feelings in

the head are less severe; then the spirits will become a little better—she is not so down-hearted and despondent. She continues to get better, and at the end of a month our young woman will be quite a little improved.

This means about twenty treatments, since these patients do not come Sundays, and in the course of the month there is sure to be a number of times that circumstances of one kind or another will prevent their coming.

It is now well to interrupt the electric treatment for a week or two; the patient, however, should not be lost sight of. She should come to the office two or three times a week and report. During this week or two a sedative bromide treatment may be adopted if she be nervous and sleepless. If she be feeble and tire easily, then small doses of strychnine may be given. An excellent plan is to prescribe some of the standard preparations of the hypophosphites put upon the market by the large drug firms.

If the patient be thin and poorly nourished, then cod-liver oil, with or without maltine, may be given. This matter is one for careful study, in which the patient's idiosyncrasies must be taken into consideration. Thus, some patients can take plain cod-liver oil without difficulty, while the emulsion will turn the stomach; others cannot bear either of these, but will do very well on maltine. Each case is a study in itself, and must be looked upon as such.

It is no great matter if the patient does not get much treatment for a week or two after the continuous application of electricity for a month. In this connection it is interesting to compare the opinion of the late Dr. George M. Beard, of New York. He says: "The treatment should sometimes and by intervals be entirely withdrawn. Suspended treatment has a positive effect upon the system. Oftentimes it makes a direct impression which may be better than continuous treatment. I find that patients sometimes do better and make more decided progress in these intervals of treatment than while the most active measures are being used. When patients are long under my care, I frequently have them take a sedative prescription or mode of treatment one week, a tonic the second week, and the third week do nothing whatever." Dr. Beard thought very highly of electricity in the treatment of neurasthenia, but unfortunately he did not leave us any very specific directions for its use.

The period of two weeks having come to an end, the daily static treatments should be renewed, the same as before, for another month.

Another interval of a week or two should follow, the patient being kept more or less under observation.

We have now given two months electric treatment, and with the two intervals of two weeks each it makes altogether a period of three months. The patient should be carefully examined, and her condi-

tion compared with what it was at the beginning of the treatment.

The treatment should be resumed, and given every day as before for another month; the only difference between the two being that these treatments may be given for ten minutes instead of five.

It is understood that during all this time the patient is making a fair amount of progress. This does not mean rapid progress, for such a thing is hardly possible in this disease. If it were possible, it would not be necessary to keep patients so long under treatment before effecting a cure.

At the end of the fourth month, if all has gone well, her condition should be a good deal better. Her mental horizon should be clearer, and a good share of her lost will-power should have returned.

She has therefore arrived at that stage where change of thought and scene will be of benefit to her, and she should accordingly be sent on a trip, or if she does not care to travel she may go to some resort and stay at a hotel for a month. If her place of sojourn seems to agree with her, she may prolong her stay for another month. If it is in the summer season and it does not seem desirable to return to the city, then she may stay on as long as she is contented and seems to do well, even until late in the fall. If, on the other hand, she becomes restless and begins to long for her own home, then she had better return at once and report to her physician. If she has led a reasonable



life while away, getting the fresh air every day and not allowing herself to be absorbed in her own grief, she will in all probability be very much improved if not almost well.

Treatment should again be resumed, and may be given three times a week for a little while until the patient is entirely herself again.

These patients should not be let go until they are thoroughly cured, otherwise a relapse is very liable to occur from one cause or another.

This must not be looked upon in any sense as a typical case of neurasthenia, but on the contrary as a very mild and favorable one. Were the cure of neurasthenia as simple a matter as this, then our task as physicians would be very much lightened.

Having seen the course to pursue in a favorable and easy case, we must now look at some of the difficulties to be encountered.

First, static electricity may not agree with the patient. Cases are rare, but they do sometimes occur, where this form produces dizziness, nausea, and headache. When this occurs, the only thing to do is to drop the static form and resort to some other method.

Again, the treatment may have been commenced, as before mentioned, with the static charge, and after a week no change has been produced in the patient's condition. The symptoms are neither better nor

worse, but the state of the mind, the pains, the sleep, etc., are all just as before.

Electricity does not always cause marked improvement so soon, in these cases, but there is almost always a change which shows that the current is having an effect; if the pains are not better, at least they are driven to some other part of the body, or their character is different; the insomnia may not be less, but she finds that she sleeps better in the early part of the night, or that she is not so drowsy during the day; in short, there is a change in the mental or nervous aspect of the patient. All these signs show that the current is acting, and should encourage the physician to keep on.

If, however, none of these changes are apparent, and the condition at the end of a week or ten days is just about the same as at first, then it may be assumed that it is one of those rare cases in which franklinism has no effect upon the system, but simply flows through it, like water through a sieve, without leaving any trace behind. These cases are rare, but they do occasionally occur, and we can but note their occurrence without being able to explain their existence with any degree of certainty. We know, indeed, that different people show varying degrees of susceptibility to all forms of electricity, but we cannot say that it is due to a vital or a chemical cause. One interesting fact with regard to this question has been taught us by modern science, and that is that electric currents

may have such a high intensity—or, in other words, may vibrate so rapidly—as to leave the human system entirely unaffected even by a very powerful charge. Since different human organisms vary from each other in almost every known particular, it is easy to conceive that some systems may attain this immunity at a less number of vibrations than others. We know that the intensity of franklinism is very high, and if we assume that this immunity to the current is arrived at in the case of certain persons before the intensity of the static form is reached, we have a sort of explanation of this phenomenon. Whatever the explanation may be, the only thing to do when we meet such a case is to give up this form of treatment and use galvanism in its place.

These two classes of cases—those in which the static form does harm, and those where it has no action—are very rare, and therefore rather unimportant in the consideration of the subject.

In the method of treatment above recommended, where the static charge was kept up day after day for such a long period, it was assumed that satisfactory improvement was being made all the time. When this is the case, it is an excellent principle to let well enough alone. It must be remembered that the disease under consideration is essentially chronic, and that very rapid improvement is not to be looked for from electricity or any other treatment.

If a patient does fairly well under the static charge alone, it may be looked upon as an indication that the treatment is well adapted to the case, and that an increase of the stimulant by means of sparks might be more than the patient could well bear. As already mentioned, these patients are extremely sensitive, and it is an easy thing to give too much electricity.

After a couple of weeks' treatment, if improvement seems very slow, then the treatment should be increased by adding the static spark to the spine, beginning with the wooden ball electrode, which should be passed up and down the back on each side of the ridge formed by the projecting vertebral spines. In this way the spark reaches the spinal cord more directly than when given in the median line. In giving the sparks the ball should not go higher than the base of the neck. Never give sparks to the head in these cases, else you will do more harm than good. The main object of the treatment is to reach the spine. If that can be stimulated into a more healthy activity, the system at large will be toned up, and then the brain will be not slow to follow. This may seem somewhat paradoxical, since the most tormenting symptoms in this disease are those which are referred to the brain. It must be remembered, however, that this is not a local but a general trouble in the most complete sense of the word, and therefore the principles which serve as a guide in the treat-

ment of merely local affections cannot be relied upon here.

In the author's opinion, the rule, *Never to apply the static spark to the head*, is one of the most important principles of treatment.

The spark to the spine may be given for one minute, and followed by the charge for five minutes, making six minutes for the whole treatment.

This may be kept up for ten days. At the end of this time, if the patient seems to be "settling back"—that is, getting used to the treatment so that it is not having its full stimulant effect—then the carbon electrode may be used in the same way for ten days more.

This brings up the treatment to the end of the first month, when the intermission should occur.

In the treatment of this affection, chronic and long-lasting as it is, it will be found both a help and a convenience to keep track of the cases by periods of one month each. Thus, it is well to stop the treatment on the same day of the month as it was begun, and on this day the patient's condition should be carefully noted and compared with what it was when he or she first came under your care a month ago. A clear idea is thus obtained of the progress, if any, which has been made; and if similar cases have been treated in the past, the progress of the case in hand should be compared with them.

If any one case has made less progress than the

others, the reason should always be sought for, and will often be found in some unfavorable condition or circumstance which is working against the good effects of the treatment. If a man, he is probably devoting himself too closely to business; in the case of a woman, too much household care is very apt to be the cause, or it may be social dissipation. When this fact is brought home to the patient, backed by the logic of the comparison as already described, it carries with it great force, and in all probability will result in better behavior on his or her part.

I consider this method of watching the patient's improvement and noting it down month by month, to be one of the greatest aids to treatment, and to tend more than anything else to increase the physician's personal skill and judgment in this direction. If something of this kind is not done, then the physician will inevitably lose track of the case as the treatment goes on month after month. His interest will flag; which fact the patient is very apt to find out, and perhaps after a while give up the treatment in disgust, thinking that it is merely a routine affair with the doctor, and that he is receiving very little benefit.

Patients suffering from neurasthenia are very apt to be troubled with insomnia, and it often forms one of the most annoying symptoms. As already mentioned, one of the most annoying things in this disease is the tormenting thoughts and fancies which are so hard to get rid of. If after harboring these unpleas-

ant thoughts all day the patient cannot sleep at night, the condition is very much aggravated and may indeed become very serious; for these two factors, insomnia and morbid thoughts, have a strong tendency to throw the mind off its balance, and many cases of this disease terminate in insanity from this cause. It is therefore important that this symptom should receive special attention, and if possible be removed. First and foremost an effort should be made to find out if there are any special conditions that may tend to prevent sleep. In men, smoking or reading at night may be the cause, and if so it should be stopped. Overworked professional men are very apt to return to their tasks after supper. The busy lawyer or doctor goes to his books and seeks to accomplish what the more active occupations of the day left him no time to do. If he is a smoker and solaces himself with two or three strong cigars, then we have the most favorable conditions possible for driving away sleep. The brain is worn out with the long day's work, overcharged with blood, and irritated by the nicotine with which the blood is loaded. A patient in this condition is in imminent danger, and his course of life must be stopped at once. The smoking and working in the evening must be stopped, and the time must be spent in some form of amusement or relaxation, as card-playing or the theatre. An excellent thing for these patients is to take a short walk before retiring. The gentle exercise tends to

equalize the circulation and clear the cobwebs out of the brain. So much for the conditions favorable for sleep.

As a rule, electric treatment has a very good effect upon insomnia, and after a few treatments the sleep becomes better and better. Some remarkable results are obtained, in cases troubled for a long time with sleeplessness. I have had patients that had hardly slept an hour a-night, sleep six hours after a single static treatment, and after ten more applications be almost completely restored to a normal condition in this respect.

Suppose, however, that a case which has been treated for a week in the manner already laid down, still suffers with insomnia, and it is evident that the wearisome and unrefreshing nights are wearing on him and retarding the cure. Hypnotics should only be used as a last resort, for reasons well known to all who have any knowledge of chronic nervous trouble. Instead of resorting to them, the treatment by means of the charge should be changed for that of the static douche, given for five minutes the first day, and increasing at the rate of a minute each day as long as this form is used. Three or four treatments of this kind will often be sufficient to produce sleep, and then the regular treatment may be resumed. It must not be expected that a perfect result will be obtained in a few treatments, for this symptom of sleeplessness is an essential part of the disease and may be very



chronic, as the disease itself is chronic. If three hours of sleep are obtained every night, then the matter had better be left alone for the present and the regular treatment continued. In due time all will come right. The three hours will increase to three and a half, then four, and so on, this symptom yielding along with the others in the gradual progress of the cure.

It must be remembered also that the sleep of these patients is often very irregular, and they may have several wretched nights followed by two or three good ones.

If static electricity fails to give an average of even three hours' sleep per night, this form must be given up entirely, and galvanism substituted for it.

When the patient returns again for treatment after the ten days' or two weeks' intermission, it should be given in the same manner as when it was left off; that is, if he was receiving the spark from the carbon point, he should have it again from the same electrode. This is on the principle that intermission in the treatment is equivalent to change, and that it is better to make the change in the middle of the period. The length of the treatment may be gradually increased, however, a minute at a time, until ten minutes is reached. The treatment may be kept up for the rest of the month in this manner. The sparks need not be given always to the spine, but may be applied to different parts of the body, as the legs

and arms. If there are pains in any part or parts of the body, as is almost sure to occur in this affection, they may be chased away by the sparks. This should not be done in case of headache, however, for sparks should never be applied to this part. If the pains in this region become annoying at any time, then the static douche should be used for a few treatments, and it will probably relieve this symptom. The same plan should be pursued if the patient begins to be annoyed again with sleeplessness.

*Third Period of Treatment.*—Let us assume that the patient has had two weeks' rest, and comes back again for treatment according to orders. He is quite a little better in some ways; is not so nervous, has less headache, and does not feel so despondent. If he is a business man with a good deal of common sense, he will very likely realize that he is on the right track, and in view of this fact he will probably want to know if he cannot be relieved of the necessity of coming to the office every day. It will be good judgment to do this, and the treatment may be given four times a week: Monday, Wednesday, Friday, and Saturday.

The treatment by means of the carbon point may be continued the same as before.

If after ten days or so he seems to be getting too much accustomed to this method of application, then the small metallic ball may be substituted for the carbon point.

At the end of this month's treatment the patient will have been under your care just four months.

The patient's condition should be carefully noted as before at the termination of the month, and compared with what it was at the beginning of the treatment and at the end of the second and third months.

Let us assume that he is still further improved. His nerves are stronger, he is not so tired when he gets through work at night, and he has pretty much given up the idea that his business is going to the dogs and that he will end in the poor-house. If he is as much better as this, he will be very apt to kick about the amount of time he has to give up on account of the frequent calls at your office.

There is a remarkable difference between women and men in this connection. When a woman is told that her case will take a long time, and that she will have to come to your office for a good while, she believes what you say and comes as directed. A man, on the other hand, while just as nervous about himself as a woman, is extremely impatient of the long duration of the treatment, and cannot understand why it takes you so long to cure him, etc.

When a patient feels in this way at the end of the fourth month, it is often a matter of nice judgment to know just what to do. Very likely he will say that he is all right now, and wish to give up the whole matter and plunge into his business harder than ever. To this you may reply that, contrary to his own

opinion, he is very far from a cured man, and that if he pursues this course he is almost certain to get back again where he was at the start. I find the following plan to work very well: Say to him that it is necessary to continue the treatment in order to enable him to stand the strain of his business or profession, whatever it is; but that an excellent thing for him to do would be to take a short vacation and go away for a little trip.

When he comes back from this he will probably be a good deal better, and instead of coming for treatment he will laugh at the need of it, and in lieu of that will go to work again. He will be rested and refreshed after his trip, and be anxious to catch up what he has lost. In spite of your warnings he will overdo, and in all probability he will come back to you in a month or two, almost as bad as he was at first—indeed, in certain cases he may be in a worse condition than formerly.

Here is a most discouraging state of affairs for both doctor and patient. True, you may have the satisfaction of saying to the now penitent man, “I told you so;” but this will do very little good under the circumstances. Your patient is down, and it is for you to bring him up again. In order to do this, you will have to go over the same ground that was traversed at first.

Daily treatments should be resumed at once, using the method that was employed when he left you.

In this second course of treatment you have the decided advantage of being master of the situation, for your patient will have more respect for you and be much more willing to follow your directions. He will realize far better than at first that his disease is not to be trifled with, and that if he wants to get well he had better not disregard your advice.

It may be three or four months before the treatment will bring him up to the point where he was when you sent him off for the first trip. Experience has shown that in this case such trips are beneficial, and therefore when he is brought up to this point he should be sent off on another one. Do not lay down any hard-and-fast rule as to how long he should stay. As long as he is enjoying himself he is almost surely receiving benefit, and the longer he stays under those circumstances the better. If, on the other hand, the time hangs very heavy on his hands, and he longs to be at home again after a week or two, it is better that he should come back.

This time he will not object to the treatment, which should be immediately resumed, and given three times a week for a month.

He may then be let off for two weeks, under promise to come back and report at the end of that time.

He should now be very much better, and able to do a certain amount of work each day without going beyond his strength. The whole problem now is to

keep him from the mistake of overwork. Treatment should be given twice a week for a month, and a very close watch kept upon him in order to make sure that he is not transgressing in this regard. In this disease relapses are specially prone to occur, and in the case of men the main cause is overwork. At the end of the month, the frequency of the treatments may be reduced to one per week, then kept up for a month or more, so as to have him under observation as long as possible.

## CHAPTER V.

### GALVANISM AND ITS APPLICATION.

As already stated, the treatment of neurasthenia should begin with the use of franklinism, or static electricity, unless there is some contra-indication against its use. Suppose, on questioning a new patient, it is found that franklinism has already been tried and the patient could not stand it. It would not be worth while to repeat the experiment. Suppose that you try it yourself and discover this peculiarity on the part of the patient. Finally, suppose that after a trial of a week or ten days it is found that franklinism is doing no good. For any of these reasons we may be led to the use of galvanism.

As to the question of susceptibility, the same is true for galvanism as has been already stated for franklinism. Some patients are specially sensitive to it; and, indeed, there are cases, although they are rare, of patients whom it affects so unpleasantly that it is practically impossible to give it to them. In other words, the irritation which it produces is so great as to more than counterbalance the good effects of its stimulant action.

This irritative action is always produced at the polar points, or where the current enters the body. The nearer either of these points is to the nervous centres, the more apt is irritation to be produced. As

a precautionary measure, therefore, I always begin this form of treatment with what I have termed bi-manual galvanism: the current passing through the hands. In this way the polar points are removed as far as possible from the nerve centres, and therefore the irritation is reduced to a minimum. I was first led to the use of this method, for reasons of precaution, about two years ago, but have since learned to know that it has a value of its own, and now use it a good deal for its own sake.

The ordinary hand-sponges being miserably inefficient for this purpose, I tried the use of copper balls, covered with flannel, and which the patient grasped one in each hand. These served the purpose fairly well, but left room for improvement, and I was finally led to the construction of an apparatus which I find very satisfactory. It consists of two copper basins, nine inches in diameter and three inches deep, lined with tin. Each has an ordinary binding-post soldered to its outer rim, and they are both set in a light wooden frame, so that the whole thing may be readily held in the lap. The basins are filled with warm water, and the cords of the battery are attached to the binding-posts. The hands of the patient are placed in the water, and when the circuit is closed a gentle current is made to flow through the body from one side to the other.

Of the three principal methods of general galvanism, the bi-manual method is perhaps the least import-



ant, but, for the reason already given, it is the one with which I always begin. Owing to the large surface through which the electricity enters, and the perfect contact made by the water, a large quantity of electricity can flow into the body, and extra caution is required at first. My experience teaches me that men are a little less sensitive to the current than women. I therefore begin with a dose of one milliamperere for the latter, and two milliamperes for the former, giving the treatment in each case for five minutes. The treatments should be given daily, just as in the use of franklinism.

As to the dose of galvanism, the production or prevention of sleep is generally of great value in its determination. Suppose that a patient presents, and the diagnosis of neurasthenia is made. In addition to the other symptoms, insomnia is present with all its attendant evils. Galvanism is given as above directed—in the case of a woman one milliamperere for five minutes daily. Suppose that the sleep improves perceptibly. After a few days you increase the dose in order to hurry on the case. If she needs more, the sleep as well as the other symptoms will improve; but if this should happen to be one of the cases of special susceptibility to galvanism, the sleep will become poorer in proportion as the dose is increased. In such a case the only thing to do is to go back to the dose of one milliamperere and hold it there, for the time at least. A case like this is not by any means common,

but they may occur, and they are just the ones that it is not desirable to fail with.

The ordinary case will admit of an increase of one milliamperere every second day until, say, five milliamperes are given. Here, again, patients will be found who have reached their limit, and if the dose be increased the sleep is interfered with—a sure proof that the dose is too strong for them.

Let us now take just the opposite condition of affairs, where, instead of undue sensibility to the current, there is present an unusual tolerance of it. Such patients are very apt to sleep fairly well, so that this symptom cannot be used as well for a guide as in the other cases. Suppose a man is being treated who may have all the symptoms of neurasthenia in an aggravated form, but who sleeps soundly—let us not say well, for he is almost sure to be troubled with dreams, and moreover he awakes in the morning unrefreshed and with a feeling of lassitude. The treatment is begun with the minimum male dose of two milliamperes, and rapidly increased to ten milliamperes for five minutes, which I consider the average dose—if an average can be said to exist in this matter.

Suppose that under this steady increase he makes little or no improvement, and he is in this condition at the end of two weeks. Some authors would say, increase the dose still more. My advice is to change the method for that known as Spinal Galvanism. I place the positive pole, because it is the least irritat-

ing, upon the back of the neck, the negative at the small of the back. The electrodes are oval in shape, made of copper wire, and quite flexible. They are covered with flannel, three or four layers, one over the other, and have each about sixteen square inches of surface. It is much better to have the electrodes oval rather than square, for in the latter case the corners are apt to press into the skin in one place or another, and before one is aware of it an unsightly burn is made. Before being applied, the electrodes should be well soaked in hot water in which a small quantity of bicarbonate of soda has been dissolved. A dose of five milliamperes may be given at first for five minutes, and gradually increased one milliampere each day until ten milliamperes are given. This increased stimulation will hardly fail to reach him, and in all probability he will improve under the treatment. If it does, then it may be continued. With these electrodes of sixteen square inches I do not consider it desirable to go above the dose of ten milliamperes, since the irritation of the skin is too great. When larger currents are to be given, other and larger electrodes should be used.

This principle of large contact, and therefore large surface of entrance, I believe to be very important, and one that is destined to be more thought of in the future, as increased experience shows its value. If I feel, therefore, that my patient is not getting sufficient electricity in the dose of ten milliamperes, I

change again, this time for a method which I have called Transverse Galvanization. It may almost be looked upon as a modification of the bi-manual method already described, but the polar points, instead of being at the ends of the upper extremities, are upon the body itself. This method is made use of in the following manner: I use two electrodes, each having a surface of thirty-five square inches. They are oval in shape, and eight inches long. They are placed on either side of the spine, in the lumbar region.

By the use of these large electrodes the dose may be raised as high as twenty milliamperes without fear of burning the skin. There are cases that require these large doses before the full stimulant action of the current is obtained, and, when they are met with, the treatment by means of these large doses certainly gives great satisfaction. In certain cases it may be run up to twenty-five or even thirty milliamperes. When such high amperage is used, however, great care must be exercised not to make sores on the skin. When these high currents are used, the physician must be constantly on the watch for signs of an overdose. If the sleep should become poor, or symptoms of dizziness and increased headache come on without apparent cause, then the dose must be immediately reduced to a point where these symptoms cease; and in the writer's opinion it is best to hold it at that point, or very little above it, for the rest of the treatment.

The reader will now realize what was stated earlier in the book, that we really have very few indications to guide us in the use of electricity, and that therefore the only reasonable thing to do in these cases is to feel one's way slowly and cautiously.

There is a certain dose of electricity which will give us the best stimulant action without producing undue irritation. If this dose were only a fixed quantity, how easy would be the task of curing these cases! But unfortunately it differs with each case. Furthermore, we have no exact indication to tell us just what it is in each individual.

We are in possession of the negative information that if we do not give this dose we will not get satisfactory results. If we give more than this quantity, then irritation will be produced and will do more harm than good. The only feasible basis of treatment, therefore, seems to be that adopted in this work: To begin with a dose so small that it is certainly less than the one we seek, and to gradually increase the quantity according as the patient improves, until we reach what seems to be about the limit.

Knowing also the symptoms which follow when the proper dose is exceeded, we have a way to avoid giving too much.

To return to the regular manner of treatment: The method of transverse galvanism should be kept up daily for five minutes until the end of the month, and then an interval of two weeks should fol-

low, just as in the use of franklinism. As a general principle, I think it is desirable to change the method of application in galvanism somewhat oftener than in franklinism. If I were to offer an explanation of this—it may perhaps lie in the fact that the latter form is more absolutely general than the former. On account of its high tension, franklinism holds the whole body in its grasp from the head to the feet, and all parts are, therefore, affected. This is partly true also of galvanism, but not to the same extent as in franklinism. I believe we will some day be able to say accurately that in a given case of neurasthenia the nervous irritation starts from a certain point; and when we arrive at this knowledge it will be of immense advantage to us as an indication for applying the electricity. In the present state of our knowledge, however, I believe the best methods at our command are the general ones mentioned, and in order that they shall be made as effective as possible it is well to make use of them all more or less.

After giving the transverse galvanism for two weeks in the second period of treatment, if the patient seems to be rather “settling down” or getting into a routine, it is well, instead of trying to force more electricity into him, to change the form of application for the third time. This form of general galvanism known as Central Galvanization was originally made use of by Dr. G. M. Beard, of New York, who recommended the following method: He placed a large wire

cap, lined with some soft conducting material, upon the head, the hair first being thoroughly wet. This he made the positive pole. The negative was a flat electrode applied to the pit of the stomach. This is certainly an effective method, but there are a great many cases that will not bear the electrode applied in this way directly to the brain, as it produces too much irritation. In view of this, and of the further fact that just as good results are often obtained by placing the upper electrode at the back of the neck, as in spinal galvanism already referred to, I much prefer the latter method.

I use at the back of the neck the same electrode as that in spinal galvanism. For the pit of the stomach I employ a round flat disk six inches in diameter. I am convinced that this electrode should be large, but have always used this one on account of its greater adaptability and convenience.

I am now getting to use the regular abdominal circular electrode of spongo-piline, eight inches in diameter, and I like it better. I do not attempt to apply this over the pit of the stomach, on account of the difficulty of obtaining good contact in this bony and irregular region, but place it fairly in the centre of the abdomen where the large even surface allows it to fit perfectly. I believe that in this way the nerves and nerve-centres receive just as much electricity as when the smaller electrode is placed over the pit of the stomach, and that we have in addition the

decided advantages of the larger instrument. The more I use this agent the more I am convinced that the electrode of large surface marks a decided advance in our art, and that we will learn to employ them so as to obtain results unknown in the use of the small instruments now so much in vogue.

The treatment with central galvanism should be commenced with ten milliamperes, and no higher dose should be given—on account of the small electrode at the neck. This dose will probably be sufficient, and may be continued until the end of the month, which brings the second period to a close, and the electricity should therefore be intermitted for two weeks as before.

We have treated this case quite differently from the first, in which franklinism was employed, since we have changed the method of application three times, or, in other words, have given the electricity in four different ways. This is not always necessary, however, for cases will generally do well for a month under the same form of galvanic treatment.

I often see cases that are quite sensitive to the current, do well and improve steadily for two and even three months under the bi-manual method, first described. It is essentially a mild and safe method as distinguished from spinal and central galvanism, which may be termed active methods. As a rule, it is not worth while to continue the bi-manual method beyond a dose of ten milliamperes. If the patient.



bears this well and still does not seem to be receiving sufficient benefit from it, then it should be discontinued, and some other, generally spinal galvanism, substituted for it.

If a general rule must be laid down, it would be to change the method every month. Thus, for the first month the patient would receive the bi-manual method, the second month the spinal treatment, and during the third might be given transverse galvanism. This, allowing for two intermissions of two weeks each, would bring us up to the end of the fourth month.

In any case of disease where the patient has been under treatment steadily for four months, a break in the treatment is very desirable. This should always be arranged, if possible, by sending the patient off for a trip. If it comes after the first of June, then he or she had better by all means make arrangements to leave the city or town where they are living and get out into the open country for the summer.

Nothing is better for tired and irritable nerves than the open air and a warm climate. This can generally be arranged without difficulty for female patients, but men are very apt to demur and declare that it is impossible for them to leave their business, etc. If they will not go away for a whole summer, get them off at any rate and make them stay a month. The change of thought and scene, and the rest from the daily round of business, will surely be a help to them.

If the end of the four months comes some time before the end of June, then patients may be sent away for a short trip, and return for treatment before summer really begins. March and April, with their melting snows, rain, and wind, are often very trying months for patients with nervous prostration, and if they can be sent south for a whole or part of this time it is a good thing for them. When it begins to get too warm for them there, they can return for another course of treatment before starting off again for the summer.

There are certain precautions to be observed in sending people away for a trip, which should never be overlooked: First, there are certain stages of this disease in which a patient should not leave his physician. I lately had an opportunity of seeing a case of neurasthenia of the worst type—that is, where intense retrospection was present. She was absolutely absorbed with her own thoughts, which were of the most painful and despondent character—indeed, she was constantly haunted by the fear of going insane. Her family physician, being at his wits' end, sent her away to a large hotel full of people, thinking that it might distract her. The patient was in such a morbid condition, however, that distraction was out of the question, and after a few weeks of misery she returned in a worse condition than ever.

A patient who is in such an unnatural, morbid state that thought alone is a torment, should never

be sent away to a public resort; for the throng of people, the excitement, etc., have an irritating effect upon the overstrung nerves which is just the reverse of beneficial. Cases in this condition often cannot bear the strain of having their own family about them, and when they get to this pass it is almost useless to attempt treatment by electricity. This is not the fault of the treatment, but simply because the conditions are so unfavorable that they more than counterbalance the good which it does. The best course to adopt in such a case is to send the patient immediately to some good private sanitarium, where the doctor in charge is accustomed to manage such cases and understands his business. It should not be left to his discretion, however, but the physician who sends the patient should explain the nature of the case to the doctor in charge, and request that the patient be kept as quiet as possible. No attempt should be made to distract her (supposing the patient to be a woman) by making her attend the various evening entertainments which are gotten up in such places to amuse the patients. She should keep her room after supper, and retire very early. If she does not improve under this treatment, then she must keep her room all the time, and if necessary her bed. The celebrated rest cure of Dr. Weir Mitchell consists essentially in keeping the patient in bed all the time, and sustaining the strength by forced feeding, massage, electricity, etc.

If a patient is in the serious condition described above, where she cannot get along as she is, and if for any reason she cannot or will not be sent away, then a very good compromise is to put her to bed in her own house. If this is done, the office treatment of the case will of course have to be stopped, and the electricity given at the house. Cases of this kind are best treated by faradism, for the description of which the reader is referred to the chapter on that subject.

Certain cases of neurasthenia are undoubtedly aggravated and kept up by reflex irritation from local disease residing in some organ, as the womb, prostate gland, or the like. This being the case the natural deduction would be that this diseased organ should immediately be treated according to the most modern scientific methods. For such treatment the reader is referred to the authorities on the subject, according to what organ is affected. In this connection, however, there are certain organs whose treatment may be combined with the regular treatment for the general nervous trouble. I refer more particularly to diseases of the female pelvic organs.

I do not refer to cases of acute and severe inflammation, such as parametritis, salpingitis, ovaritis, and the like. On the contrary, take this list: chronic enlargement of the womb; masses of exudate in the true pelvis, on either side of the uterus; enlarged and tender ovaries. These are all, so to speak, minor ail-

ments which in an ordinarily healthy individual would tend to get well of themselves. Their continuance is due to defective nutrition and poor circulation depending upon lack of vaso-motor tone. In order to meet these, there is a form of galvanic treatment very appropriate, which I have called the pelvic bath, from the fact that it actually bathes the parts in a flood of electricity. One electrode of wire gauze, eight inches by ten, is placed under the small of the back, so that the patient lies upon it; the other is the ordinary round abdominal electrode of spongio-piline. With these electrodes carefully soaked in a hot, weak solution of bicarbonate of soda, and properly applied so that good contact is obtained, a large quantity of electricity may be sent through the pelvis and all the organs therein contained. This large galvanic current has a powerful effect in stimulating the nutrition of the parts, and thereby helping nature in her processes of repair.

This treatment may be commenced with a dose of twenty milliamperes, and increased to thirty or even forty. It may be given twice a week, say Mondays and Thursdays, the ordinary treatment for those days being omitted. Thus, if a case of neurasthenia presented itself where you felt convinced that pelvic irritation was aggravating the trouble, you would give the static charge daily as already directed, excepting these two days, when the pelvic bath should be given for five minutes. The effect of this treatment is not

by any means limited to its local action upon the parts contained in the small space between the two electrodes. Large currents, like those used in the pelvic bath, are bound to diffuse more or less, and as a consequence there is a decided tonic action on the system at large. This forms a most excellent treatment in cases from out of town that cannot come to the office every day.

## CHAPTER VI.

### FARADISM AND ITS APPLICATION.

In the preceding chapter we spoke of a patient in that distressing condition where she was unable to remain in the family on account of the aggravated form which her disease took on. This stage of the disease is really pitiable, and almost incredible to one who is not familiar with this most peculiar trouble. It is not that the victim of this form of neurasthenia loves her children or her sisters, as the case may be, any less than she has always done, but her nerves are so exquisitely sensitive to any irritation that ordinary conversation becomes almost impossible. Planning or arranging anything in connection with the household is entirely out of the question, and the only place for such an one is her own room, and in bed. She should be kept in her room for at least three weeks, with a good nurse to take care of her who should do nothing else, for the task will give her plenty of occupation.

The patient will probably rebel at first, and say that it is absurd for her to be confined to bed when she feels so well in body. Next she will declare that she cannot possibly stay quiet, and if you insist on keeping her so she will go crazy. Perseverance on the part of the physician will finally overcome all

difficulties, and after she has been kept in bed for a day or two the hardest part of the work will have been accomplished, and she will become more and more willing to rest quietly the longer she stays. It is of great importance that a good nurse be secured for this work, and, moreover, she should be one who is agreeable to the patient. Since she is to be her daily companion for several weeks, it would be very hard for the poor patient if she were uncongenial to her, especially as persons in this nervous condition are extremely sensitive and easily affected by their surroundings.

It is evident that the method of electrical treatment must now be entirely changed, since the patient can no longer come to your office, and your regular office batteries cannot be carried. It is in this dilemma that faradism, which we have called the least important of all three forms, comes into use. The apparatus is light and can be easily carried to the patient's house, and moreover it is the battery of all others that you can best spare from your office. If you have already given the patient a good deal of electricity, galvanic or static, the change to faradism will be a good thing on the principle already stated, that an occasional change is always desirable.

As a general rule, electricity should always be given by the physician himself in order to obtain the best results, but in these cases it does very well to intrust it to a good nurse. Another advantage in so



doing is to save time, since the treatment requires at least half an hour.

The method is known as General Faradization, and is performed in the following manner: The patient should be prepared as for massage, so that all parts of the body may be conveniently reached, and at the same time not be unnecessarily exposed. The negative pole should be a large sheet of wire gauze, about eight inches by six, covered with a thin layer of cotton wool, and thin flannel over it. This should be placed under the patient, in the middle of the body. It should be thoroughly soaked in warm water, and in order to avoid wetting the sheets a piece of rubber cloth should be placed under it. The positive pole should be the hand of the nurse, or whoever gives the treatment. This should be made an electrode by means of a copper bracelet which fastens around the wrist, and to which the cord from the battery is attached.

The nurse, having thoroughly soaked her hand in warm water, should begin at the upper part of the body and go all over the whole surface of the same, with the exception of the head and face, a good deal as is done in ordinary massage. The current should be strong enough to cause slight contractions of the muscles as the electric hand goes over them. It is important that this should occur, so that they should get a little exercise, which the continued rest in bed makes doubly necessary.

A full half-hour should be occupied in this operation.

The electric hand, by reason of its softness and adaptability, makes the best possible electrode, but some persons are unable to stand the necessary amount of electricity, in which case a flat sponge electrode may be used instead of the hand. Such electrodes are made by the instrument-makers with a surface three and a half by four inches, and provided with a strap at the back, through which the hand may be slipped. With a little practice a nurse will learn to slip this instrument over the surface of the body with gentle pressure so as to get a certain massage effect in addition to the electricity.

If the patient is troubled with sleeplessness, this treatment may be given between eight and nine o'clock in the evening, and by its action in equalizing the circulation and causing a certain healthy fatigue it will often procure a good night's rest. If the patient sleeps fairly well, and this time is not convenient, then it may be given in the morning about two hours after breakfast.

This treatment should be given every day for the three weeks that the patient is kept in bed. Although the nurse gives the treatment, the doctor should not by any means fail to visit his patient every day and carefully watch the case in all its phases, mental as well as physical. There is no disease in which success in the treatment depends more directly upon

careful attention and individualization—that is, suiting the treatment to the special needs of the case—than neurasthenia. Routine, either in dose or method of application, is almost sure to bring failure. It is for this reason that so much stress was laid upon beginning with a small dose, and then increasing if the indications pointed that way.

There will be plenty for the physician to do in his daily visit, even if he does not give the electricity. Let him give his best efforts to calming and soothing his patient. Nothing will be gained by storming and scolding; but quiet, gentle admonition is infinitely better, assuring her that her fears are groundless and that she is not going insane, that her case is like many others who have all gotten well, that this present condition will not last long, etc.

If the physician will hold this attitude, firm, gentle, and reassuring; keep the patient in bed, and feed her well; see that she has the faradic treatment regularly every day for half an hour, and after the first week they may be increased to three-quarters of an hour: if all this is done, at the end of three weeks she will certainly be a good deal better.

She may now be allowed to sit up in a chair for a little while each day, but not on any account to leave her room.

The next week, that is the fifth, she may sit up still longer, but she should not leave her room until the end of this week, and if it is a possible thing it

is better to keep them in their rooms for six full weeks. During all this time the daily faradic treatments should be continued.

It frequently happens that patients will not submit to remaining so long in their rooms, but insist on getting up and coming out. As soon as this occurs they should be directed to come to the office, where the ordinary treatment may be resumed.

## CHAPTER VII.

### TREATMENT OF LATER STAGES OF THE DISEASE.

Thus far we have only considered the treatment of what might be called the first stage of the disease, or, to put it differently, of the first season.

As already stated, neurasthenia lasts from a period of less than a year to five or even ten years, and the great majority of the cases extend beyond this first period.

Having finished a more or less extended course of treatment, and sent the patient away for the summer, or at least for a trip, let us consider for a moment what the result will probably be. In certain cases, the effect of breaking away from the worry and care of their every-day routine acts like magic. Sleep, appetite, and general feeling improve, and the patients return from their outing practically cured. This is not by any means the rule, however, for, as already mentioned, certain cases are much injured by having to undergo the fatigue and excitement of travel and the loss of medical care and treatment from their own physician.

This matter of when to send a nervous patient away, and where to send him, is often a question of very nice judgment and skill on the part of the physician. Moreover, it is a question which can only be

decided by taking into consideration the tastes and temperament of the patient, as well as his physical and mental condition at the time. A trip which would be just the thing for a patient at one time, might be very injurious six months later.

It may be put down as a rule that if a trip over-excites or over-fatigues, it will do more harm than good.

Aggravated cases should never be sent away, but kept under treatment until they are better; a vacation will then be of much more benefit. In general it may be said that these patients should not be sent on long and fatiguing journeys. If it is desirable for them to have a long rest, it is better to go to some quiet place and settle down for a month or so. If it be in the warm summer weather when it is possible to be out in the open air most of the day, the relaxation and change of scene will have every chance of doing good.

Let us assume that a patient who was sent away has returned improved somewhat, but still far from well. Take for example a woman completely worn out with the combined duties of home and society, in whom neurasthenia has been brought on by an attack of peritonitis, which has left a small lump of exudation in the pelvis, which can be felt as a tender spot externally, and as a small mass from the vagina. We may have attacked this by means of the pelvic-bath treatment, but on re-examination we find the mass

has not entirely vanished and that she still complains of general weakness, special difficulty in walking, pains in the back and groins and bad feelings in the head, mental weakness, and inability to read, write, or converse for any length of time. If the pelvic bath as already described has not given the satisfaction that was hoped for it, its action may be made more energetic in the following manner: In place of the large gauze electrode for the small of the back, a round cylindrical electrode may be introduced into the vagina and made the negative pole, as it is better both for the instrument and for the vaginal walls. The positive pole remains the circular abdominal pad as before. With this arrangement fifty milliamperes may be passed for five minutes, twice a week. For the remaining four days the same treatment may be used as was employed when the treatment was stopped. The reason for this is that an interruption of the treatment has the same force as changing it; and it is better, therefore, to use again, for the time being, the treatment that experience has shown to be good.

A few weeks of the intra-vaginal treatment will in all probability do away with the pelvic trouble; and if the supposition that this was an important factor in aggravating the disease was true, then it will be found that all the symptoms, especially the painful ones and the bad feelings in the head, will be very much better.

As to these vaginal treatments that are only given twice a week, there is no indication for stopping them

at the end of a month, as was recommended for the daily treatments. If examination shows that the mass of exudation is steadily growing less under the influence of this treatment, then it should be persevered in until the mass is almost completely absorbed. I say almost, for it sometimes occurs that a small hard lump will remain after the rest of the mass has been dissipated, and repeated treatments seem to have no effect upon it. It is certainly better that a deposit of this kind should entirely disappear, and we should always strive for this result, but if after a faithful trial a little nodule still remains, we may leave it, for in all probability it will do no harm.

Let us suppose that six weeks have elapsed since treatment was recommenced, and the patient has been steadily improving. It will be a good plan to give her a complete vacation for a month. Tell her not to worry about doctors and their drugs, but to take good care of herself, keep her spirits up, and fear nothing. If she is a reasonable person, this vacation, if we may so call it, will have a good effect upon her, and very likely she will make substantial progress which you will be pleased to note when she comes to report at the month's end.

A course of twenty treatments may now be given, one every other day, or three times a week, the same method and dose as before, only the time may now be doubled and it may be given for ten minutes where five was the limit before.



Another vacation of a month may now be permitted, and then the treatments resumed, but only given twice a week.

The case is now convalescent and has probably received all the benefit that medical science can give her. She may be looked upon as cured, in any reasonable acceptance of the term. Her mind has become fairly strong, also her will-power. The distressing pains in her back and down her legs do not bother her any more, except when she does too much. Her head is free from the bad feelings which used to torment her so; and best of all, she is out of the terrible condition of despondency in which she was plunged, and things appear to her in their normal light.

I have used the expression "reasonable" in relation to the cure, for it must not be supposed that the disease is completely eradicated in the sense that an attack of pneumonia is, after recovery. Persons possessed of the neuropathic temperament are always very prone to suffer with nervous prostration, and the fact of having had one attack strongly predisposes to the occurrence of others.

Before discharging our patient we should explain these things to her, and warn her against the dangers of overwork and overstrain. If she find at any time that her old symptoms are coming back, she should immediately return and take a short course of treatment, which will very likely have the result of averting another attack.

It may be thought strange that in the treatment of this case the same form of application was kept up for so long a time. In answer I can only repeat what I have before mentioned in this work, that if a treatment has been found which the patient bears well and makes satisfactory progress under, it is a good rule to hold on to it. It will be remembered that in earlier parts of this work, in speaking of a case where progress seemed to cease under the treatment, an immediate change was recommended. Suppose, for example, a male patient who has been treated for some time comes back from a trip or vacation, feeling rather worse than when he went away. This may be due to one or both of two causes: either he is suffering from having the stimulus of the treatment taken away, or his trip did not agree with him. In either case he needs help, and the best thing to do is to go at him energetically. This is specially indicated in view of the fact that he is probably a little out of humor and impatient. Man-like, he will very possibly intimate that he has been under treatment for some time already and would like to have something done to hurry things up a little. In such a case a change of treatment is decidedly to be recommended. If franklinism has been used, then it should be changed for galvanism. Patients who have taken electricity for some time have a much greater tolerance for it than those who are just beginning, and for this reason we may attack our patient immediately

with central galvanism. If his head is not specially sensitive we may employ the wire cap already described, so as to get the full effect of the current upon the brain, this being made the positive pole, and the negative being placed upon the abdomen. The treatment should be given every other day, and, as both electrodes are of large surface, large doses will be indicated. Commencing with fifteen milliamperes for ten minutes, it may be increased two milliamperes at each treatment until twenty, twenty-five, or even thirty milliamperes are given. When these large doses are given, the full strength of the current should never be turned on at once, but, beginning at zero, it should be gradually increased until the required dose is reached, and then towards the end of the treatment just as gradually brought down again, so that the period of time from the turning on of the current to its cessation is ten minutes in all. If he is able to stand this treatment, it can hardly fail to do him good, and he will express himself as feeling better and realizing that something is being done. Urge him to take a walk after business hours, and, in order to do it, persuade him to leave his work an hour earlier every afternoon. If he will do this, he will sleep better; and the shorter hours of business, and the fresh air, will be a great help to the treatment.

Neurasthenic men may be divided into two classes: First, those of a hypochondriacal temperament, who are constantly tormented by the fear of

their disease, and that it will run into something worse. These patients are more willing to submit to treatment, but their unreasonable fears and absurd ideas become intensely tiresome to the physician who is compelled to listen to them. The second class are much more reasonable in this latter respect. They cannot realize how sick they are, but are full of impatience and irritation at the fact that they cannot accomplish the work they used to. They are therefore continually fretting at the slow progress of their case, and wanting to know if the treatment cannot be increased in strength or changed so as to bring more rapid improvement. It would be poor judgment to recommence the same form of treatment with this kind of patient when he comes back to you, for he would exclaim right away: "That is the same treatment you gave me for a month last spring, and it did not do me any good at all."

Let us assume that our patient belongs to this latter class, and that he is in a great hurry to get well, and rather disappointed that he is not already restored to his old-time vigor, after being under treatment nearly a year in all. As long as he bears the dose well, it may be steadily increased until at length the maximum dose of thirty milliamperes is being given. When this is reached, it is often a good plan to inform the patient of the fact that he is now taking the highest current given by this method. This will probably please him and give him the feeling that you are do-

ing all you can. After holding the current here for three or four treatments more, and finding no signs of overstimulation, a slight increase of one milliamperes each time may be attempted, and kept up until thirty-five milliamperes are reached. The increase should be stopped here, for beyond this I do not consider it safe to go in brain-galvanization. It must be remembered that the treatment is being applied to the most delicate and sensitive organ in the body, and that an overdose of electricity might result not simply in loss of sleep, as already spoken of, but in serious injury to the brain.

In the treatment of the brain there is one very important precaution which should always be borne in mind. It is to avoid a sudden break in the current. With defective apparatus this may easily occur, and do no end of harm.

A powerful current, if it is gradually brought up from a mild one, thus giving the nerves and brain a chance to become used to it, may be productive of great benefit; but the same current suddenly turned on, or broken after it has commenced flow, may do a great deal of harm.

This treatment may be kept up so as to cover altogether a period of about six weeks, when, if all has gone well, our patient will very likely acknowledge himself a good deal better, and may even deign to say that electricity is a pretty effective treatment after all.

A couple of weeks' vacation may now be allowed him, and when he comes back the following modification of the method may be employed: Instead of the cap electrode for the head being used, the current is sent through the back of the neck, as directed in the first description of central galvanism. A current of five milliamperes may be turned on, and the automatic interrupter brought into the circuit, so that instead of getting the constant current as formerly he now gets the interrupted flow through the great nerve centres. This dose may be gradually increased, one milliampere at a time, until ten milliamperes are given for ten minutes. This is a powerful dose for the interrupted current, and should not be increased. This treatment may be given every other day for a month, at the end of which time the patient will have been four months under treatment.

If it does not seem desirable for him to go away for a trip, he should at least have a vacation for a full month. When he returns to report at the end of that time, he will in all probability be very much improved, and the case may be gradually tapered off by increasing the intervals between the treatments until he only receives them once a week. This may be kept up until, in the physician's opinion, it is safe to let him go altogether.

In the case of the more hypochondriacal patients—those who are constantly tormented by the fear that their affection will become worse and run into insan-

ity or paralysis of some form—I would not advise the use of these powerful doses, nor the application of the current to the brain. This class, as a rule, do not require such heroic treatment, and if it is given to them they rarely do well under it. They are much more apt to furnish examples of unusual sensitiveness to the current. If they have never felt any bad effects from the electricity, owing to its careful administration, they frequently come to have an unbounded faith and confidence in it, and they therefore dislike above all things to miss the treatment. In such cases it is often good judgment to give it continuously for two months, and then to reduce the intermission to one week. It may be well also, instead of stopping at four months, to keep on for one or even two months more.

Care must be taken not to send these patients away until they are in a sufficiently advanced condition to profit by the trip. This class of patients are very timorous and apprehensive, and prone to imagine all sorts of things when away from their own physician. If, therefore, you send them away in the early stages of the disease, before the judgment and will-power are sufficiently strong, they are very apt to lose ground, and come back worse than before. When these patients have any confidence in a physician it is generally unbounded, and they do better under his care than anywhere else.

Finally we have to speak of that unfortunate class whose ailment is not to be cured in one season

or two, but who drag on year after year, sometimes better and sometimes worse. I have little to add with regard to the treatment of these very chronic cases. In the first place, it rarely happens that a physician has charge of such a case from beginning to end, for they go from this one to that one, and even from one town to another. As far as the treatment goes, the principles already developed in this work are equally applicable in this latter class of cases. As they present themselves in your office they do not seem to differ essentially from the more acute forms, and it is only after treatment has been continued for some time that you become aware of their obstinate character.

In closing this little *résumé* of the treatment of neurasthenia, let me emphasize one point: Do not rely on any system or set of rules as a guide in the treatment of this obscure and complicated affection. First study your case and find out all you can about it. Commence your treatment with moderation, and carefully watch the effects of the electricity upon the patient's system, for this must be your main guide. Do not let symptoms of an overdose escape you, and be quick to take advantage of them by reducing the quantity. Finally, do not be impatient if the progress is slow, and bear in mind that nothing has yet been discovered that will produce a rapid cure in this disease.



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