

Beard (Geo. M.)

A YEAR OF EXPERIMENT

IN

ELECTRO-THERAPEUTICS:

INCLUDING

*THE FIRST ANNUAL REPORT OF THE ELECTRO-
THERAPEUTICAL DEPARTMENT OF
DEMILT DISPENSARY.*

READ BEFORE THE NEW YORK ACADEMY OF MEDICINE, MAY 16th, 1872.

BY

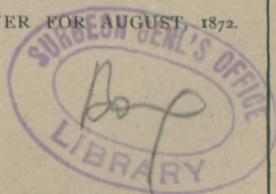
GEO. M. BEARD, M. D.

AND

ALPHONSO D. ROCKWELL, M. D.

Electro-Therapentists to Demilt Dispensary, N. Y.

REPRINTED FROM THE AMERICAN PRACTITIONER FOR AUGUST, 1872.



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A YEAR OF EXPERIMENT
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ELECTRO-THERAPEUTICS:

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DEMILT DISPENSARY.

About the close of the year 1870 we suggested to the trustees of the Demilt Dispensary the propriety of establishing an electro-therapeutical department in connection with that institution. Shortly after, by the unanimously-expressed wish of the medical staff of the Dispensary, the trustees decided to establish such a department; and with a liberality that can not be too highly commended, and with an enthusiasm for science that is exceedingly rare among businessmen, they set aside a room and supplied it with all needful apparatus for electro-therapeutics.

One object in establishing the department was to afford opportunity for experiment. It was our desire not only to treat cases for which electricity had been proved to be beneficial by past experience, but all diseases from any of the departments that were sent in, paying no regard whatever to any merely theoretical reasoning on the subject. False theories have all along retarded the science of Electro-therapeutics, just as they have retarded all other branches of science and the general progress of the human race. At the

present day the best results of electrical treatment are seen in just those diseases where, by *a priori* reasoning, it was supposed to be contra-indicated.

We started out with the idea that the results, whether favorable or the reverse, would be of service to science. If it be important to know where electricity is needed, it is also important to know where it will do harm. Now the true and only way to exhaust the indications for the use of electricity is to treat all cases just as they come by all the different methods, and note the results, whether good or bad. The opposite method of selecting those cases that promise well to our very imperfect vision may be the wise course for the practitioner, but science will never be advanced by any such method, and ultimately both patients and physicians are losers by it.

HYSTERIA AND ALLIED AFFECTIONS.

Among the affections allied to hysteria is neurasthenia, a term which we have devised and applied to what is called nervous exhaustion—a condition where exhaustion is the leading feature—uncomplicated with any special organic lesion. One case of neurasthenia, with a full pulse of 115, was greatly improved by general faradization. A case of hysterical mania in a woman aged fifty-five, with symptoms of anæmia—constipation and delusions of various kinds, such as fear of the police, etc., all of six months' standing—was so much benefited by general faradization alone that after the tenth application she seemed to be entirely restored; but she soon relapsed, and treatment by general faradization was again employed. Under this she made progress, but slowly. Galvanization of the brain and sympathetic, however, brought her up to pretty nearly the standard of health.

Another case, a woman aged forty-five, who had been debilitated by a two years' siege of intermittent fever, and who presented the symptoms of globus hystericus, hysterical

paralysis of the right arm, and melancholia, was so much benefited by twenty-five applications of general faradization that she was able to return to her duties as servant-girl. The melancholy was cured, and also the hysterical paralysis of the arm. Her pains were relieved, the bowels regulated, and the appetite increased by the tonic effects of the treatment.

A case of chlorosis in a girl of eighteen, with the symptoms of yellowness of the skin, irregularity of menses, and general debility, was greatly benefited by general faradization. Two other cases of hysteria, with the symptoms of globus hystericus—nervous trembling, fits of crying, flashes of light before the eyes, and nervous twitchings of the muscles—were rapidly improved by general faradization.

It is a noteworthy fact that while neurasthenia, neuralgia, chlorosis, and many other affections allied to hysteria, are more frequent among the higher orders, hysteria itself is quite as common among the ignorant or servant-girl class, in whom the emotional nature reigns pretty nearly supreme, unchecked by reason or education or common-sense.

In private practice we have treated for a long time cases of hypochondriasis, melancholia, and insanity of various kinds by central galvanization, or by simple galvanization of the brain and cervical sympathetic, and sometimes by general faradization, with results that warrant us to persevere.

Dr. Bryce, Superintendent of the Alabama Asylum, consulted us about electrical apparatus a year and a half ago, and he has since written that he meets with good results in certain forms of insanity from both currents. In England and in Germany the electro-therapeutics of insanity is now undergoing investigation.

NEURALGIA.

Of neuralgia, uncomplicated, but two cases were treated. A case of sciatica was apparently cured by three local galvanizations. A case of neuralgia of syphilitic origin was but

slightly benefited by local galvanization, was made worse by central galvanization, and somewhat improved under general faradization.

We remark here that the statement made by some European writers of ability, that the faradic current is useless in neuralgia, is contradicted by the experience of scores of physicians in this country, who are every day relieving or curing cases of true neuralgia of a central origin by faradization alone.

RHEUMATISM.

Of rheumatism six cases were treated. Of these five were greatly relieved by the treatment; and one case of very long standing, in which the joints of the lower limbs were involved, was treated for several months by general faradization and central galvanization with only slight benefit. In some cases relief of pain followed a single application.

Of the various methods of application employed for rheumatism, general faradization seemed to accomplish more than localized galvanization of the joints, and very much more than central galvanization. This would show so far forth that rheumatism is not so directly under the influence of the central nervous system as some other diseases. Rheumatism is, however, a constitutional disease, whatever its pathology may be, and merely local electrization of the affected joints is not satisfactory. It may relieve that particular part, but it does very little toward eradicating the disease.

General faradization favorably affects rheumatism in several ways: 1. By its stimulating tonic influence over the whole system; 2. By the relief of the local manifestations; 3. By modification of the urinary secretion.

Rheumatism is benefited by tonics of various kinds, as quinine, iron, etc., and general faradization acts as a tonic. By the special influence that it exerts on the liver and all the organs of digestion it greatly assists the cure of the forms of rheumatism that are at all curable. We have seen cases

where the secretion of urine was greatly increased after a single application of general faradization; but the cases where such increase is demonstrable are not very frequent.

Muscular rheumatism is the type that gives way most readily to electrical treatment. Next to that the subacute articular variety offers the best chance of benefit; and last of all come the very chronic forms, where the unfortunate patient is, as it were, tied up in knots from long-standing affection of the joints of the upper and lower limbs. It is not pleasant to treat these latter cases. They appreciate, it is true, the tonic effects of the treatment in a general way, and that is about all. It is possible that localized galvanization, prolonged for hours or days by means of apparatus placed at the bedside, might compel these maladies to give way; but we have never yet brought this idea to the full test of experiment. The most hopeless forms of rheumatism are those which simulate arthritis nodosa, or rheumatic gout, if indeed they are not actually that disease. It is possible to do but very little for such cases.

PARALYSIS.

Of paralysis of different kinds we treated five cases, four peripheral and one infantile. These cases behaved as cases of paralysis usually do under electrical treatment, and upon this subject we have little that is new or suggestive to communicate. We simply remark that it is a mistake, and one that is often made, to use too strong currents and too long applications. A current just sufficient to produce muscular contractions is preferable. The earlier this form of paralysis is taken under treatment the better. It is delay frequently that makes it require protracted treatment.

DYSPEPSIA.

Six cases of dyspepsia were treated, five of which recovered and one was improved. The leading symptoms in the above

cases were pain after eating, nausea, vomiting, pyrosis, constipation, anorexia, flatulence, and mental depression. The methods of treatment employed were general faradization, galvanization of the sympathetic, and pneumogastric and central galvanization. Very few diseases yield so surely to any remedy as nervous dyspepsia yields to electrization, the exceptions being those cases where from some peculiarity of constitution electricity is not well borne.

BRONCHITIS.

Five cases of bronchitis were treated. Of these one was much improved by five weeks' treatment with central galvanization; another case, complicated with phthisis, was considerably benefited in a general way by persevering treatment; another case was benefited for a time; and the fifth case, complicated with phthisis, was improved. None of the cases were perfectly cured, and those complicated with tubercular disease will doubtless die; and yet the electrical treatment of phthisis is not wholly a failure.

The method we adopted in cases of tubercular deposit in the lungs was to apply a mild galvanic current directly through the diseased region, with a view to cause absorption. In the experience we have had with this method up to date we have had no satisfactory evidence that absorption of any great amount is caused by such treatment; but through the influence on the sympathetic and spinal cord, directly and indirectly, very much benefit is derived that deceives the patient and perhaps the physician.

ASTHMA.

Of asthma two cases were treated. One of these, a woman of middle life, had for three months suffered from the disease, brought on, as she said, by the smell of cooking. Galvanization of the sympathetic and pneumogastric at once benefited her, and in two weeks she was apparently cured,

and we have not since heard from her. This is the best result that we have ever seen in asthma. It may be accounted for by the recentness of the attack; and the query occurs at once whether the majority of cases might not be cured if they were taken early, before the asthmatic habit had become engrafted into the system. The other case, a man aged fifty, had suffered for five years. His distress was very great, and the attempt to walk half a block caused a feeling of suffocation. One seance of five minutes gave him such positive relief that he was able to walk home, a distance of one mile. He did not return for treatment.

Asthma, so far as electrical treatment is concerned, would appear to come in the same category as facial spasm, blepharospasm, and other similar local spasmodic affections, which when recent and mild are very easily cured, but when long-existing and severe are susceptible only of temporary relief.

INTERMITTENT FEVER.

Three cases of intermittent fever were treated. Electricity is prescribed for those subacute or chronic stages of intermittent fever where the patient is able to go about, but is debilitated, and is liable to frequent or even daily attacks; not as a specific at all, for electricity is not a specific for anything, but as a general stimulating tonic.

In one case the patient, who had suffered from chills and fever every day for eleven months, and had become anæmic, was much improved by general faradization, and stopped treatment. Three weeks after the chills returned, when three seances of galvanization of the spine and sympathetic apparently effected a cure. Another case was so much influenced by general faradization that the attacks, which had been daily, came on only every fourth day. The third case abandoned treatment after the first application. These results confirm our previous experience in private practice.

DISEASES OF WOMEN.

In the department of gynecology we have little of interest to record. Of amenorrhœa four cases were treated. Of these one was cured by faradization of the uterus. Another case, where at the usual time for the menses there was headache and much pain, was relieved of these symptoms, but not cured of the amenorrhœa. Another case, a sterile woman who desired children, was not benefited. The fourth case was an Irish girl, whose menses had been stopped by a sea-voyage. After eight sittings of general faradization the courses came on, and lasted five days.

INCREASE IN SIZE OF AN ATROPHIED UTERUS.

In private practice we have demonstrated that an atrophied uterus may be so improved in its nutrition under localized faradization as to increase in size, as shown by careful measurement. The current makes the muscular tissue of the uterus grow just as it makes atrophied muscles grow in paralysis. On the other hand, nutrition of an engorged uterus may be so modified by electrization with either current that it diminishes in size.

SPINAL CONGESTION.

Of spinal congestion seven cases were treated. Before speaking of these cases we may remark, first, that the diagnosis of spinal congestion in the mild, passive, and chronic stages is oftentimes very difficult. The symptoms of spinal congestion in the chronic stage are numbness of the extremities, of an arm or a leg, or only the part supplied by a single nerve, as the ulnar; neuralgic pains of a sharp, shooting, or boring character; a feeling of pricking or tingling or burning in the bottoms and along the sides of the feet; soreness on pressure, a feeling of constriction in the trunk or ankle, flatulence, constipation, bladder difficulty, fibrillary contractions

and twitchings of muscles, a feeling of pressure on the chest, coldness of the extremities, stiffness of neck, a feeling of weakness on walking, and a disposition to tire out easily in the lower limbs; sensations of localized heat and cold in various parts of the body, insomnia, anorexia, cramps of the muscles, spinal tenderness, and actual paralysis.

Now these suggest a variety of diseases. Many of the symptoms of locomotor ataxy and progressive muscular atrophy in their early stages are found in spinal irritation and cerebral congestion, which, by the way, is oftentimes complicated with spinal congestion; but when all or the great majority of these symptoms appear in any case, and are persistent, and are worse when the patient is in a recumbent position, we make the diagnosis of spinal congestion. When the patient lies down at night the numbness increases and the pains come on, and the morning is the worst part of the day. These symptoms must all be read together, and in their relation to each other, in order to interpret their meaning. Patients suffering from spinal congestion often pass for cases of rheumatism, dyspepsia, general debility, spinal irritation, spinal sclerosis, neuralgia, or hysteria.

Secondly, we remark that congestion of the cord is frequently, if not usually, a result of atony of the cord; and that the simple statement of the fact that the cord is congested does not go far enough in the elucidation of the pathological condition. The congestion is not the disease, but rather the expression of the disease. The spinal cord is so exhausted that it has not strength to keep off congestion; and in our treatment, whether we use electricity or internal medication, we should aim not so much to directly reduce the amount of blood in the cord as to increase its *tone*, that it may be able itself to throw off its superfluous blood. Electricity then helps spinal congestion not so much by directly reducing the amount of blood in the cord as by improving the nutrition, and enabling it to do its own depletion.

Of the cases that were treated in the dispensary one came twice, and was not benefited; one came three times, and was so much relieved that he came no more; one case, where paralysis of motion existed, was cured after two months' treatment; one case, after four applications, was very much helped; and still another case of an aggravated character was by two months' treatment (seventeen applications) so much benefited that the patient believed herself cured, until one day she walked a long distance, became exhausted, and the old symptoms appeared in full force. A second course of treatment again relieved her.

SPINAL IRRITATION.

Of spinal irritation, pure and simple, only one case was treated, although an irritable condition of the spine was noted as a complication in a number of cases. Among the class of patients who frequent our public institutions spinal irritation is not so common as among the higher orders of society. The pathology of spinal irritation we take to be a general anæmia or neurasthenia, or both combined, in which the spinal cord shares to such an extent that it can not maintain the proper balance of circulation, and may therefore alternate between anæmia and hyperæmia. Here, as in spinal congestion, the great point to be considered is not so much the vascular condition of the cord as the disease of the cord or of the system on which this vascularity depends, and of which it is a symptom. Alternations of anæmia or hyperæmia (fluctuations in the circulation) are observed continually in persons who are in a susceptible nervous condition. Under excitement the face may redden or turn pale, or it may first manifest a blush and then paleness. The eye in nervous people, the anæmic or neurasthenic, illustrates this feature of unbalanced circulation perhaps better than any other organ. The conjunctiva may suddenly become congested, or as suddenly become pale. A slight emotion, a flash of bright light,

a stoop or bend of the body, the least over-use or strain, may bring an excess of blood to the eye that very quickly departs as the cause disappears. Under the ophthalmoscope the retina is seen to flush or pale while the cervical sympathetic is being galvanized or from other irritation.

The hyperæmia which follows the use of a powerful current soon subsides into comparative anæmia. Indeed, the circulation of the retina is so easily affected one way or the other that ophthalmologists have been slow to accept the view that the effects we have referred to were due to the action of the current on the sympathetic.

Some of the symptoms of spinal congestion are also found in spinal irritation, for the reason that in the latter condition the cord may be a part of the time, or by intervals, congested. They differ, however, from the symptoms of fixed congestion in two respects: first, they are not so pronounced or permanent; and second, they are relieved by a recumbent position, and are better in the morning.

Another consideration of importance is that spinal irritation is most frequent in anæmia, and is especially common in women, while spinal congestion is found in both sexes, and attacks all organizations. Spinal congestion is caused by excessive exertion, or by taking cold, as well as by all nerve-exhausting habits. Spinal irritation is not excited by taking cold. Excessive physical exertion may increase it, but it is mainly the result and symptom of inherited or acquired nervous debility, and disappears in proportion as the debility disappears. Both spinal irritation and congestion are apt to be attended by head symptoms, which differentially follow the same law as the other symptoms of these disorders. The case of spinal irritation at the dispensary had suffered for four months from headache, mainly across the forehead. There was at times a marked fullness of the temporal arteries, which would diminish under mild galvanization. There was difficulty of respiration, a feeling of suffocation, great pain in the

back, especially in the lower dorsal and lumbar vertebræ. There was pain in the region of the heart, and examination by auscultation and percussion gave evidence of dilatation. The pulse was intermittent, the appetite poor; but the tenderness of the spine on pressure, so common in such cases, was not in this instance a marked feature. All her symptoms were relieved by lying down, and in the morning she always felt better. Treatment by general faradization at first increased the headache and pain in the back. Central galvanization relieved the pain in the head and back, and with various relapses this improvement continued. We have no reason to believe that the improvement was entirely permanent, for of all symptoms of the nervous diathesis this is perhaps the easiest to relapse. Under electrical treatment, or under counter-irritation to the spine, they yield sometimes very rapidly; but a little over-exertion, the reception of bad news, a few sleepless nights, and away they go back to their old condition.

In two cases of spinal congestion we tried to solve the question whether the ascending or descending current was most successful. Both cases appeared to be injured by the ascending, while both were benefited by the descending, current. Whether the difference of effect was due to the differential action of the poles or the direction of the current we are unable to state. As a rule, we prefer descending currents in central galvanization and in general faradization; but in ordinary localized applications to the periphery or special organs, as the uterus or bladder, we do not find so much difference as has been claimed in the effects of the ascending or descending current.

LOCOMOTOR ATAXIA.

Of locomotor ataxia (posterior spinal sclerosis) one case was treated, and mainly by galvanization of the spine and central galvanization. The benefit derived from a few applications was slight, and the patient did not return.

In regard to this disease there are two considerations of great importance: 1. That cases of simple spinal congestion or irritation are frequently called locomotor ataxia; 2. That when the process of degeneration of the posterior columns of the cord has actually set in, with the necessary body of symptoms that accompany such degeneration, perfect recovery is very rare under electrical or other treatment. In Europe, and especially in Germany, the so-called functional or milder disorders of the nervous system are much less frequent than with us, and hence physicians there are not prepared for them when they occur, and are apt either to ignore or mistake them. Even in the most recent German works, and in some of the medical journals of that country, we see cases of spinal congestion of a not very severe form mistaken for spinal sclerosis, and gravely reported as cured by hydro-therapeutics or electro-therapeutics, or by nitrate of silver.

Now, in regard to the electrical treatment of locomotor ataxia, our experience is that grateful relief or cure of some of the symptoms and decided general benefit is derived from it. Remissions and improvement that are greatly encouraging to the patient, and perhaps deceive the physician himself, occur; but never a perfect or an approximate cure, except in the early stages. The relief of the pain is very desirable, and this we may accomplish by central galvanization or general faradization; and it may be here remarked that some of the best results of the treatment of locomotor ataxia that we have seen have been accomplished by general faradization, either alone or alternating with galvanization of the spine.

DISEASES OF THE EYE.

A case of deplopia, resulting from paralysis of the trochlearis muscle according to Dr. Derby, who sent him to the electro-therapeutical department, began at once to improve under localized galvanization, and after twelve seances was cured. How permanent the cure was is not known. A case

of congenital paralysis of the motor oculi, where only the power to distinguish light from darkness remained, was so far benefited that he could distinguish such objects as a knife or a watch at a distance of four feet.

ADDISON'S DISEASE.

A woman that presented the bronzed-skin appearance of Addison's disease was treated for one month by general faradization with benefit as regards her general symptoms. In private practice, in a case of undoubted disease of the supra-renal capsules, where the diagnosis was made by Prof. Austin Flint, we have demonstrated that general faradization and galvanization of the sympathetic, although powerless to effect a cure, are followed by results the most gratifying, so far as improvement in the general condition of the patient is concerned.

DISEASES OF THE SKIN.

What has been learned in the electro-therapeutical department of the dispensary in the treatment of diseases of the skin is itself a sufficient reward for all the expense of inaugurating such a department, and for all our professional labors there from the beginning until now. Dr. Woodruff, one of the physicians in charge of the skin class, has shown great interest in our investigations by sending in cases, and thus given us opportunity of testing the various methods of application in a department which now promises to be one of the most satisfactory of all the special branches of electro-therapeutics. We had previously experimented in the electrical treatment of some of these diseases, in connection with Dr. Piffard, at the dispensary for diseases of the skin, and also in private practice by intervals during the past three or four years.

Eleven cases in all of diseases of the skin were treated in the electro-therapeutical department; six cases of chronic eczema, and one case of each of the following diseases:

psoriasis, erysipelas, syphilitic tubercle, favus, and superficial ulcer. All the cases of eczema that persevered (three in number) recovered. The case of psoriasis did not persevere, the case of favus was not benefited, and the ulcer was cured. It was here that we first demonstrated the immediate and sometimes permanent relief of the pain, itching, and burning with which eczema and other diseases of the skin are so often associated.

TUMORS.

Of tumors ten cases were treated, as follows: two cases of scirrhus of the breast, one of epithelioma of the lip, two of uterine fibroid, four of goitre, and one cystic tumor. The goitres were all reduced in size more or less by the use of the needles; but none have yet been entirely cured, although some of them have been treated with great perseverance and by all varieties of applications, by catalyzation—that is, by external applications with sponges, by one needle or by many needles—with and without ether, and by ether spray. Goitres do not rapidly disappear under electrization. In many cases, like fibroids and other tumors, they grow smaller under the treatment up to a certain point, when they hang fire, and will not budge an inch further.

It is, of course, possible to destroy any tumor that is accessible by electrolysis, provided a sufficiently strong current be used, and sufficient time be given to it; but then the question must always arise whether the disease or the remedy is most to be dreaded. For malignant growths the choice is easy. For benign, painless growths, like small goitres, it is a question whether they are worth the pain and annoyance of an operation of any kind.

THE METHOD OF WORKING UP THE BASE.

The epithelioma of the lower lip was destroyed, root and branch, by a method of electrolyzation that we have recently employed, and which we call *working up the base*. This

method consists in inserting the needles around the tumor and partly into the healthy tissue, so as to undermine the former, and cut off all communication between it and the healthy tissue. This method is followed by complete sloughing of the growth, granulations, and healing. The usual and accepted method of electrolyzation is to insert the needles directly into the tumor.

The method of working up the base or undermining the tumor has the advantage that it is more thorough, since it makes sure of the complete destruction of the growth; that it is shorter, since it wastes no time on the body of the tumor, which really is of no consequence if it be separated from the healthy tissues; and that it insures a more satisfactory healing.

We use this method not only in epithelioma, but in malignant growths of all kinds and in all accessible locations, as the vagina, rectum, and breast. One of the cases of cancer of the breast that had been sent to us by Dr. Stephen Rogers was for the time relieved of her pain by external faradization and galvanization, and a portion of the growth was favorably influenced by electrolyzation, but only to a limited extent. The patient was saturated with cancer; and when she died, a few months after abandoning treatment at the dispensary, deposits were found, as Dr. Rogers informs us, in the internal organs. Another case of cancerous nodules following an operation did not pursue the treatment long enough to enable us to test its merits.

In conclusion, we desire to express our obligations to the staff of Demilt Dispensary, and to our assistants, Dr. H. N. Griswold, Dr. R. S. Tracy, Dr. Marsh, and especially to Dr. J. H. Sterling, whose carefulness and fidelity in carrying out the details of many of the experiments here recorded can not be overestimated.

THE AMERICAN PRACTITIONER.

EDITED BY

DAVID W. YANDELL, M. D.

Professor of Clinical Surgery in the University of Louisville

AND

THEOPHILUS PARVIN, M. D.

Professor of the Medical and Surgical Diseases of Women in the University of Louisville.

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