

may result in a considerable pecuniary sacrifice on the part of its teachers. All honor to them, and especially to those who are largely dependent for their support upon the fees derived from students, and who anticipate, not without reason, the possibility of a reduction in salary to meet the necessary expenses of maintaining and perfecting the improved plan of education.

The essential features of this plan consist, first, in giving up the teaching of general chemistry to the preparatory schools, and in demanding evidence of a knowledge of this subject as a requirement for admission. It is felt that medical chemistry alone should be taught in medical schools, and the time hitherto given to instructing the student in the former subject will, hereafter, be given to enlarging his knowledge of the latter. A wholly new course is to be established, one in clinical chemistry, which is designed to familiarize the student, more than ever before, with the chemical knowledge and manipulations so essential in the recognition of disease.

A second important use is to be made of the gain in time obtained by requiring a satisfactory knowledge of general chemistry when the student is admitted. He will be compelled to train himself in those bacteriological methods especially needed in diagnosis and treatment. He must personally undertake, in the laboratory, to render aseptic his hands and instruments, his dressings and the field of operation. He will be taught experimentally, by personal failures as well as successes, the essentials of modern, surgical, obstetrical and, one may say, general practice. Whatever methods are of value in the recognition of disease-producing bacteria, he must learn, and by appropriate trials, show his familiarity with them.

Finally, a much demanded improvement in clinical teaching is contemplated. Separate courses of instruction will be offered to the beginner and to the advanced student, each adapted to the degree of development which he has attained.

It will also be attempted to give to every student individual opportunities of watching the progress of a certain number of cases of disease in the hospitals, from the time of the admission of the patient to his discharge. He will be expected to keep full and accurate records of these cases and to be prepared at all times to present the evidence which he has accumulated. The end in view is to make every graduate a hospital pupil as well as a medical student.

From this necessarily brief statement of what is planned it is evident that the school will offer the student more than he has ever before received. It will demand from him a better preliminary training, and it will give him, in return, a more profitable employment of his time.

From you, its graduates and friends, it asks only approval and encouragement, and, in the light of past experience, it rests assured that it does not ask in vain.

A PREMATURE announcement that M. Pasteur had succeeded in stopping the attacks of confirmed epileptics by anti-rabic inoculations found its way a short time ago into the daily papers of Paris. The possibility of this has been entertained for some time, and that in a recent case sent to the institute, attacks probably epileptic have disappeared. As yet no positive results have been obtained.

THE ELECTRICAL TREATMENT OF PELVIC INFLAMMATION.¹

BY W. L. BURRAGE, M.D.

THERE being many practitioners who are sceptics as to the value of electricity in the treatment of the diseases of women, I will begin by quoting from our latest and probably best books on gynecology, namely, the sixth edition of "Thomas on the Diseases of Women."

In this work there is an entire chapter devoted to "Electricity as a Therapeutical Agent." In the chapter we find the following: "It is true there are still many gynecologists who do not believe in its particular efficacy (electricity) partly because they have either had no experience with it or because many of the most startling results have been reported by gentlemen who were not gynecologists, but electricians, or, better, electrologists, who possibly may have been mistaken in their diagnosis and in the results which they claim to have obtained. Still we feel confident from our own experience that we have in the two varieties of the electrical current most potent agents for relief from suffering, and perhaps even cure, in many cases of pelvic disease in the female."

So much for electrical treatment in general. A little further on in the same chapter we read: "Chronic pelvic cellulitis and peritonitis, pelvic neuralgia, local and reflex, pelvic lymphadenitis and lymphangitis—in all these three conditions the local and reflex pains are mostly due to inflammatory indurations and adhesions of the tissues involved. The vaginal roof is hard and rigid, the uterus immovable, perhaps displaced, and the uterine ligaments tense and inelastic. If not of too long duration and particularly if the exudation represents a distinct swelling, the galvanic current may effect decided results."

Gynecological electro-therapeutics conducted with anything like scientific methods dates its beginning from the initial work of Apostoli, only ten years ago. In this country the names of Engelmann, of St. Louis; Mundé, Rockwell, Gunning and Goelet, of New York; Baker, of Boston; Laphorn Smith, of Montreal; Massey, of Philadelphia; and Martin, of Chicago, are most familiar as workers in the field. My own experience with electricity in gynecology extends over two years, during which time I have made about a thousand applications, including those made in private practice and at the Electro-Therapeutical clinics at the Free Hospital for Women.

Thanks to the introduction of better instruments, to the exact measuring of doses, and to greater attention to detail we are now experimenting intelligently and arriving at definite results, impossible under the old régime.

As regards the treatment of pelvic inflammations with electricity, we have to consider two stages of inflammation, the acute, and the sub-acute or chronic. In the acute stage most authorities are against treatment with galvanism. Experimentally, I have tried galvanism in one case of acute pelvic inflammation with salpingitis. The patient had thirty-six milliamperes, negative, for five minutes. The pain was increased, the temperature went up from 100° to 102° and she was made much worse.

Apostoli advocates bipolar faradism, first vaginal,

¹ Read before the Section for Obstetrics and Gynecology of the Suffolk District Medical Society, March 9, 1892.

and after increased tolerance, intra-uterine, using the coil of fine and long wire and prolonging each sitting until the relief of the pain. I have found the bipolar vaginal current lessen pain markedly both in the acute and the chronic stage. I cannot see the advantage of intra-uterine application and have not used it.

In the sub-acute and chronic stage, where there are found no fever, no chills, no sweating, no evidences of pus forming, galvanism, the continuous current, has been, in my experience, of the greatest benefit both as to the relief of symptoms, and in the dissipation of the pathological exudate. As regards the many cases in which we are unable to diagnose with a certainty the presence of pus, it seems to me that the doubt is not a contraindication to the use of electricity. I have not seen it do harm and other observers bear testimony to the same effect. If pus is present we do not expect as much benefit from the use of electricity, that is all.

Massey in his book on "Electricity in the Diseases of Women," second edition, page 175, says: "The existence of pus in a tube or elsewhere in the pelvis may be a contraindication to this form of electrical application (vaginal galvanism), but if so I have never had evidence of the fact." He cites instances of pyosalpinx relieved by vaginal and intra-uterine galvanism.

Treatment with electricity should not be made use of to the exclusion of the time-honored methods of treatment of pelvic inflammation, for example, hot douches, painting the vaginal vault with Churchill's tincture of iodine, and glycerine tampons. I have seen the best results where electricity has been combined with those measures.

The action of the galvanic current on the tissues through which it passes may be divided into two parts, the polar, and the interpolar. At the negative pole, if the metal of the electrode is brought into direct contact with the tissues and a high intensity used, a soft, easily bleeding eschar is formed; hydrogen gas, set free by the electrolytic effect of the current on the water, and alkalies, probably the alkaline bases, liberated from combination with acid molecular, gather here. At the positive pole the eschar formed is dry and non-hæmorrhagic, and oxygen gas and acids collect.

The foregoing points can be demonstrated as facts. As to the interpolar action, namely, what takes place in the rest of the tissues traversed by the current we are dependent on theory. It is supposable that the laws that govern the phenomena of the electrolysis of inorganic compounds, hold with reference to the chemically more complex organic compounds of the body tissues. We lack the proof. That electricity should resolve exudates of low vitality and promote nutrition of tissues of high vitality at one and the same time does not appear to me to be an inconsistency. It is probable that the phenomena of electrical osmosis—the passage of fluid through porous material in the direction of the current, from the positive to the negative pole, plays a part in the action of the galvanic current in removing plastic and serous infiltrations.

The form of electrical treatment that commends itself most strongly consists in the application of moderate intensities, from 25 to 75 milliamperes, vaginal rather than intra-uterine, and for periods of time varying from five to ten minutes at a sitting; the sittings to be held twice a week or even every other day

according to the tolerance in the given case. After a preliminary application or two of perhaps 25°, it is my aim to use a progressively higher intensity that causes not more than an easily endurable amount of pain.

With vaginal galvano-puncture for pelvic inflammations in the stage of infiltration, as practised and recommended by Apostoli, I have had no experience. To my mind the puncture adds an unnecessary risk to the treatment, the risk that attends any surgical procedure of the same character in structures already in a state of inflammation, and this, for me, overbalances the advantage derived from bringing the electricity in more intimate contact with the exudate. As for draining pus-tubes and abscesses by vaginal galvano-puncture, I consider it bad surgery. If an opening is necessary it should be of sufficient size and made according to surgical principles.

Let us now run over the steps in the treatment of a case of non-acute pelvic inflammation. The operator should be provided with a good battery or source of a sufficiently strong current. Anything from a portable battery giving a voltage of 50 to the Edison 110 volt incandescent current will answer. He must have a current controller or rheostat, a milliamperemeter and three electrodes, an abdominal dispersing, a vaginal, and an intra-uterine. Suppose that for battery he has one composed of from 40 to 60 Law cells, for rheostat the Bailey, for milliamperemeter the MacIntosh, for dispersing electrode the Goelet clay, for vaginal electrode the carbon or brass ball covered with clay, absorbent cotton and gauze, and for intra-uterine electrode a two and one-half inch tip of block-tin at the end of a hard rubber handle.

The patient should be on a suitable table or raised couch, on her back with knees flexed. Exceptional cases can be better treated in the Sim's position. If the treatment is to be intra-uterine she should have a small vaginal douche of corrosive (1 to 5,000), or the vagina should be thoroughly swabbed with cotton soaked in the corrosive solution. The internal electrode should be surgically clean.

First test the apparatus. For this purpose connect the negative (zinc) pole of the battery with the meter by means of an insulated conducting cord, and the meter with the abdominal dispersing electrode with another cord. With a third cord connect the positive (carbon) pole of the battery with the rheostat and the rheostat with the vaginal or intra-uterine electrode by means of a fourth cord. See that the plates of the rheostat are raised so that they do not touch the water. Bring the abdominal and vaginal electrodes in contact, that is, short circuit the battery. Turn the handle of the rheostat until the plates touch the water, and note the behavior of the needle of the meter as you raise or lower the plates. If you are satisfied that the current is passing steadily and that you have perfect control over it, bring the rheostat back to the condition of greatest resistance by raising the plates and break the circuit by separating the electrodes.

Having thus tested the apparatus the operator is ready to begin the application. Apply the clay electrode, previously well soaked in water and warmed, to the abdomen, its lower edge being at the symphysis pubis. Disconnect the vaginal electrode from its conducting cord and introduce it by hooking back the perineum with the forefinger of the left hand, or, if the introitus is tight, pass a Goelet speculum, and,

pressing strongly backward slide the ball tip along it into the vagina. The tip, by the way, should be an inch in diameter to prevent injury to the vagina from the caustic effect of the electricity at the active pole. It should rest at the point nearest to the inflammatory effusion. The intra-uterine electrode is introduced by locating the os uteri with the left forefinger and passing the point along the finger until it enters the os. Now take a final glance at the rheostat to make sure it is in a position of greatest resistance, and connect the conducting cord with the internal electrode. Note the exact time on your watch. Hold the internal electrode with the left hand while the handle of the rheostat is turned with the other. It is well to have the patient place one of her hands on the clay to improve the contact with the skin of the abdomen.

Keep an eye on the milliampère-meter and on the patient's face. For the first dose, 25° to 35°, positive, for five minutes is generally sufficient. After two or three applications, you can change to negative in the vagina, and gradually increase the dose according to the toleration to 70° or 100°. The positive pole is used in the beginning because it is less painful than the negative. It is seldom necessary to prolong the treatment more than ten minutes. Five minutes is a good average. Increase and decrease the current slowly, using a minute of the five for this. Disconnect the internal electrode before removing it. The treatment may be given twice a week or oftener.

When an endometritis accompanies the pelvic inflammation, as it often does, it is well to make the treatment intra-uterine after toleration has been acquired by vaginal applications. The positive pole, intra-uterine, is especially indicated when there is a tendency to flowing. Should there be excessive pain as a feature in the case, the faradic current from a coil of fine and long wire applied with the bipolar vaginal electrode, using as strong a current as the patient can bear, and for a period of time until the cessation of the pain, will be found to be of great service.

I want to emphasize the importance of beginning electrical treatments with mild currents. Aside from the need of this caution from a strictly medical point of view, this is the age of the deadly trolley-wire and electrocutions, and the man on the Common, who dispenses painful shocks of faradism for ten cents, adds his mite to a widespread dread of electricity. Two patients out of three are prejudiced against it. It is necessary to show them that electricity is not the awful agent they supposed.

With your permission, I will read a few cases illustrative of this method of treatment.

CASE I. E. F. R., forty years old; married eighteen years, widow five years; two children, twenty-two and twenty years of age; one doubtful abortion. Was referred to the electro-therapeutical department at the Free Hospital for Women, by Dr. W. H. Baker in March, 1891. She had been examined under ether in that institution by Dr. Baker February 26, 1891, and the diagnosis made of old tube on the left side, size of a small lemon, sub-involution of uterus and retroversion with adhesions. Her chief complaint was pain in the left groin. She was easily tired; never very strong since the birth of her first child. Both labors were instrumental. Four years previously she had had an operation for lacerated cervix and for two years she felt better. For the last two years had felt as bad as

ever. Catamenia regular; painful of late, obliging her to keep her bed. Flow increased in amount to ten napkins, formerly three to four.

March 7th when I first saw her I found the uterus in the second degree of retroversion; not freely movable; a mass behind and to the left, size of a small orange. Endometritis and a long anterior lip to the cervix, the result of a trachelorrhaphy performed two years before. The uterine canal measured three and one-quarter inches. There was no especial sensitiveness. A beginning was made with negative vaginal galvanism on that day (March 7th). She had 30°, negative, six minutes. March 11th, 30°, negative, five minutes, and March 14th, 40°, negative, five minutes. March 18th, the intra-uterine electrode was passed to the fundus, and a current of 40°, negative, was given for five minutes. This treatment caused considerable pain, both at the time of the application and on the two days following, so on March 21st, I introduced the bipolar intra-uterine electrode and administered faradism to the point of toleration, from a small Gaiffe battery. Eight minutes was the length of the treatment. She had no more pain, and the catamenia came on two days ahead of time. There was the usual amount of pain with the flow, but the pain in the left groin had disappeared and did not return.

April 1st, she had 50°, positive, six minutes, intra-uterine; and April 8th, 55°, positive, four minutes, intra-uterine. Subsequently, she was given two negative treatments of 35°, for from five to seven minutes.

May 6th, two months after the first treatment, having had eight galvanic and one faradic application, the mass on the left side had entirely disappeared and there was left only a slight thickening in the broad ligament on that side. I was able to replace the uterus bimanually, and she was advised to have a pessary fitted. She then passed from under my observation.

CASE II. E. A. H., widow, forty-four years old, was referred to me for electrical treatment from the indoor department at the Free Hospital for Women, in April, 1891. She had been examined under ether in the hospital March 17th previously, by Dr. F. H. Davenport, who made the diagnosis of endometritis, old tube or enlarged ovary on the left side size of a small lime, a hard and adherent retroverted uterus. He curetted her for the endometritis at this time.

She was a thin, nervous woman, a hard worker at her profession, that of a masseuse. Her mother died of cancer of the breast; in other respects the family history was negative. She had had five children, whose ages ranged between twenty-three and fourteen years, and seven abortions, most of them induced. She had suffered for many years from leucorrhœa, which for the last two months had been thick and yellow and of a bad odor. She had been in poor health for three months since an attack of acute pain in the left lower abdomen coming on at the time of menstruation. Her chief complaint was pain in the left groin that had persisted since the above-mentioned attack. She had lost some twenty pounds in weight, was nervous and tired; appetite poor, and bowels constipated. The catamenia, usually painless, had been very painful during the preceding three months. There was no excessive flowing.

April 8th I saw her first, and confirmed Dr. Davenport's diagnosis. The abdominal walls being then very lax, I was able to palpate the enlarged ovary or

tube on the left side distinctly, the fundus uteri was in the second degree of retroversion and sensitive to gentle pressure in the cul-de-sac. It was firmly glued in place by adhesions. There was an abundant mucoid discharge issuing from the lacerated cervix. On account of her occupation she was unable to take treatment regularly.

During the six months from April to October, she had eighteen applications of intra-uterine galvanism, of from forty to fifty milliamperes at a sitting; eleven were negative, and seven positive. There was marked benefit from the first treatment. She was able to do more work and felt better in every way. In a month the leucorrhœa had ceased. In spite of the fact that she worked incessantly, was on her feet a large share of the time, and in addition had two severe colds, she improved in general strength, and got rid of her pain completely.

June 3d, I noted that the ovary or tube on the left was smaller, the uterus more movable and less sensitive to vaginal pressure.

August 22d, the ovary or tube was still smaller, and thickening in the broad ligaments was the only representative of past inflammatory action.

October 28th, the thickening had entirely disappeared; there was no enlargement of tube or ovary to be felt, and the conditions for examination were as favorable as at the first examination six months before. The uterus was apparently replaceable, but as there was a vestige of the tenderness in the cul-de-sac on deep pressure, it seemed best to advise packing before replacing and adjusting a support. She was referred to one of the out-patient surgeons of the hospital with this end in view.

January 27, 1892, she reported to me that she had felt so well that she had not thought it worth while to have the uterus replaced. She had gained twenty-two pounds in weight since September, her catamenia had been regular and painless, she had had no leucorrhœa and no pain in the groin, and had not felt so well for ten years.

During February I saw her again, and physical examination showed the same condition of the pelvic organs as in October.

The result here can fairly be attributed to electricity, as she had no other treatment beside occasional hot douches.

I will not try your patience by reading more cases. The two I have read will serve as fair samples of a large class of cases that every gynecologist meets. Subacute and chronic pelvic inflammation are among the most important factors in uterine disease. The detection of their presence and their proper treatment are of the greatest moment to the patient and may avert years of suffering. If electricity is a valuable therapeutic agent in these affections, and of that there is not the least doubt in my mind, it should not be neglected because for its application there are required special apparatus and a working-knowledge of electrophysics.

Effie. — That is the new doctor, and those are his children.

Maud. — How ugly his children are!

Effie. — Well, naturally! Of course, doctors have got to keep the ugly ones themselves, you know.

— *Punch.*

Clinical Department.

REPORT OF A CASE OF PURULENT SALPINGITIS.¹

BY GERTRUDE W. VAN FELT, M.D.

Mrs. B., twenty years of age, octofoon, came for treatment in June, 1891, because she had never menstruated. She had been married two years, and was anxious to become pregnant.

Family History. — She is the youngest of twelve children. Her sisters all menstruated regularly. One sister is said to have died of quick consumption, after a cold taken during her first menstrual period. With this exception there is no possible history of tuberculosis in the family. Father died of some heart trouble, mother of cancer of the uterus.

Patient had always been well until five years before, when she began to have attacks of pain in the back, dizziness and nose-bleed, which attacks came about every four weeks. For a time after marriage, she was better of all her symptoms, but for a year they had been present again, and were increasing. Moreover, she was losing flesh and strength.

On examination uterus was found in good position, with a depth of two and one-fourth inches; ovaries were not found. She had some leucorrhœa. Diagnosis made was, endocervicitis — probable endometritis — undeveloped uterus.

She was treated twice with the galvanic current, the negative pole being within the uterus, with a current strength of 25 milliamperes. These caused pain for a few days each time; and on the 20th of the month — the date she usually had her unpleasant symptoms — there was severe pain, which lasted several days. She was confined to her bed; and for her relief, hot douches, poultices, morphine, and applications of iodine were necessary. Also in the left cul-de-sac could be felt a rounded mass, about two and one-half centimetres long, which was very sensitive to pressure. All these symptoms, however, gradually subsided, and the mass became much smaller, and was only slightly sensitive. She then received one treatment of faradism, with a bipolar intra-uterine electrode, and a few days later, which was about the 20th of the following month, she had a slight discharge of blood for the first time in her life, and she had no nose-bleed, no unpleasant symptoms and was feeling very well. The faradic current was used six times during the next four months. She continued well, and the depth of the uterus increased to two and one-half inches. There was no flow again at the menstrual epochs, but less pain and general disturbance than formerly.

During all this time the mass in the left cul-de-sac did not entirely disappear, but it was very small, and gave no trouble. Suddenly, at one of the menstrual epochs, the pain became very severe, and the mass in the left cul-de-sac increased in size and became extremely tender. All symptoms steadily increased until she was operated upon, seven weeks later. At the menstrual epoch passed during this period, there was a sudden increase in the tumor, and an aggravation of symptoms. She grew very weak, had fever, tongue brown, and anorexia.

Dr. Cushing performed the operation at the Charity Club Hospital on January 17th, and although the

¹ Read before the Section for Obstetrics and Gynecology of the Suffolk District Medical Society, March 9, 1892.