

- 114 I have met two cases.
 115 See Chomel, Pneumonia, Leipzig, 1841.
 116 See Forest, quoted by Chomel, Op. cit., S. 167.
 117 See Chomel, Op. cit., S. 167;—Cullen, Prac. Phys., Phila., 1792, Vol. i, p. 185.
 118 Lépine, Op. cit., S. 153;—Mathy, Jour. Comp. des Sci., Méd. T. xxxvi, p. 394;—Dequesnel, Thèse de Paris, 1821, p. 14; et al.
 119 See cases reported by Curtis, Boston Med. and Surg. Jour., May 11, 1876, p. 551.
 120 See also Doubleday, N. Y. Med. Rec., Mar. 28, 1885, p. 343;—Peebles, Am. Jour. Med. Sci., May, 1848;—Strong, N. Y. Med. Rec., Mar. 16, 1889, p. 291.
 121 Especially in the aged.
 122 It was particularly noticed by Aretæus. It was noticed in 12 per cent. of Speck's (Inaug. Dissert. Marb., 1870, S. 30) cases; very frequently in Wunderlich's (Inaug. Dissert., Tüb., 1858) experience, but rarely in that of Schapira (Inaug. Dissert., S. 42).
 123 See Aetius, Medicinæ;—Chomel, Op. cit., S. 165; Cullen, Op. cit., p. 185;—Frank, Prax. Med.;—Rievers, Prax. Med.;—Sennert, Prax. Med.;—Wittenb., 1655;—Wunderlich, Spec. Path.; Zacutus, Hist. Med. Amst., 1642; et al.
 124 For further information see Doubleday, Op. cit., p. 343;—Fischer, N. Y. Med. Rec., Dec. 17, 1887, p. 162;—Fox, Op. cit., p. 172;—Juergensen, Op. cit.;—Lépine, Op. cit., S. 768; Louis, quoted by Chomel, Op. cit. S. 145; Petit, N. Y. Med. Rec., Nov. 5, 1887, p. 610; et al.
 125 See also Dietz, N. Y. Med. Rec., Mar. 17, 1883, p. 290.
 126 Traité de Méd. Prat., T. iv, Paris, 1843.
 127 See Ashby, Lancet, 1884, Vol. i, p. 610;—Banti, Deutsche med. Wochenschr., Nr. 44, 1888;—Cullen, Op. cit., p. 183;—Doubleday, N. Y. Med. Rec., Mar. 28, 1885, p. 343;—Drake, On Fevers, p. 860;—Flint, Prac. Med., 1868, p. 305;—Huss, Lungentzündung, Leipzig, 1861, S. 132;—Kühn, Deutsche Arch. f. k. Med., Bd. xxi;—Loomis, Pepper's Syst. Med., Vol. iii, p. 313;—Money, Lancet, 1890, Vol. ii, p. 818;—O'Connor, London Lancet, N. Y., 1858, Vol. i, p. 517;—Parkes, Med. Times and Gaz., 1860, Vol. i, p. 187;—Rokitansky, Path. Anat., Vol. iv, p. 111;—Scheef, Inaug. Dissert. Tüb., 1882, S. 16;—Sturges, pneumonia, 1876, p. 80, and London Lancet, N. Y., 1883, Vol. i, p. 411;—Todd, Med. Times and Gaz., Dec. 18, 1852, p. 611;—Trousseau, London Lancet, N. Y., 1855, Vol. ii, p. 135;—Van Santvoord, N. Y. Med. Jour., Jan. 24, 1885;—Waller, Inaug. Diss., Erlanger, 1877, S. 28.
 128 London Lancet, Mar. 20, 1852.
 129 Am. Jour. Med. Sci., 1861, and Op. cit. p. 180.
 130 Caton, Lancet, 1884.
 131 Op. cit., S. 132.
 132 Op. cit.
 133 Op. cit. p. 343.
 134 Op. cit.
 135 Phila. Med. News, Jan. 5, 1889, p. 7.
 136 See also Chvostek, Wiener Jahrb., 1867;—Schapira, Op. cit.;—Stortz, Inaug. Dissert., Würzb., 1884, S. 64;—Samter, Inaug. Dissert., Breslau, 1881, S. 52;—Stecher, Inaug. Dissert., Leipzig, 1866, S. 28;—Speck, Inaug. Dissert., Marb., 1870, S. 47.
 137 Alpinus, De Præragiendi Vita, etc., Lugd., 1733;—Chomel, Op. cit., S. 244;—Colle, Cosmitor Med.;—Kühn Op. cit.;—Manlius, London Lancet, 1881, Vol. ii, p. 479;—Ozanam, Epidem. Mal., Paris, 1818-27;—Et al.
 138 See also Ashby, Lancet, 1884, Vol. i, p. 560;—Roger, Mal. Enf.
 139 Bolles, Boston Med. and Surg. Jour., April 13, 1876, p. 426;—Brington, Lancet, N. Y., 1860, Vol. i, p. 485;—Chomel, Op. cit. S. 222;—Clark, Lancet, N. Y., 1856, Vol. ii, p. 293;—Green, Quain's Dic. Med., 1883, p. 880;—Huss, Op. cit., S. 132;—Jacobi, N. Y. Med. Rec., Mar. 17, 1883, p. 301;—Sturges, Op. cit., p. 93;—Trousseau, Clin. Med., Vol. i, p. 688;—Ziemssen, Pleuritis, etc., 1862, S. 198.
 140 See Fuller, Lancet, N. Y., 1853, Vol. i, p. 64; Huss, Op. cit.; Ormerod, Op. cit.
 141 This has been my individual experience and is affirmed by most writers on this subject. See Chomel, Op. cit., S. 222; Skoda, Zeitsch. d. Gesellsch. d. Aerzte zu Wien., 1852; Et al.
 142 See Copland, Med. Dic., N. Y., 1855, Vol. xi, p. 215.
 143 Skoda, Op. cit.
 144 See Aran, Bull. de l'Acad. de Méd., T. xxi, p. 142; Trousseau, Clin. Med., Phila., 1873, Vol. i.
 145 Radcliffe, London Lancet, N. Y., 1863, Vol. ii, p. 716. For a similar case see U. S. Marine-Hosp't Rpts., 1887, p. 240.
 146 The exudate has a slightly acid reaction. Speck, Inaug. Dissert., Marb., 1870, S. 47.
 147 Money, Lancet, 1890, Vol. ii, p. 818, reports one case in which the sac contained twenty-four ounces of pus.
 148 Todd, Med. Times and Gaz., December 18, 1852, p. 611.
 149 Radcliffe, Op. cit., p. 716.
 150 Alderson, London Lancet, N. Y., 1859, Vol. ii, p. 13.
 151 Wilks, London Lancet, N. Y., 1863, Vol. xi, p. 716.
 152 See Roosevelt, N. Y. Med. Rec., March 24, 1888, p. 323.
 153 See Chomel, Op. cit., S. 222; Huss, Op. cit.
 154 See also Chuckerbutty, London Lancet, N. Y., 1853, Vol. ii, p. 136.
 155 Farré, London Lancet, N. Y., 1860, Vol. i, p. 143.
 156 Alderson, London Lancet, N. Y., 1859, Vol. ii, p. 11.
 157 Kirby, London Lancet, N. Y., 1860, Vol. i, p. 313.
 158 Sibson, Prov. Med. Trans., 1844.
 159 For further information consult Lejard, Rev. Méd., June 6, 1885;—Northrup, N. Y. Med. Rec., June 7, 1884, p. 651;—Roosevelt Hosp't Rpts., 1875, p. 25-1876, p. 25-1881, p. 20;—U. S. Marine Hosp't Rpts., 1884, p. 187-191;—and treatise devoted to diseases of the heart. Muffled heart sounds do not necessarily indicate pericardial effusion. See case, U. S. Marine Hosp't Rpts., 1889, p. 324.
 160 Lungentzündung, Leipzig, 1861, S. 132.
 161 Inaug. Diss., Würzb., 1880, S. 36.
 162 Inaug. Dissert., Würzb., 1884, S. 65.
 163 Inaug. Diss., Erlangen, 1877, S. 28.
 164 Bramwell, Am. Jour. Med. Sci., July, 1886;—Clarke, London Lancet, 1884; Vol. ii, p. 263;—Fournier, Gaz. des Hôp., January 30, 1886;—Gulliver, St. Thomas' Hosp't Rpts., Vol. xii;—Hopkins, N. Y. Med. Rec., February 6, 1886, p. 159;—Osler, Phila. Med. News, January 21, 1882, p. 80;—Peacock, St. Thomas' Hosp't Rpts., 1875;—Satterthwaite, N. Y. Med. Rec., February 27, 1886, p. 238;—Upshur, Phila. Med. Exam., 1841;—Wysskowsky, Virchow's Arch., Bd. ciii, Heft 2; Et al.
 165 See Gerhard, Dis. Chest, Phila., 1860, p. 379.
 166 See cases by Férro, L'Union Méd., 1879, Nos. 27 et 28;—Loomis, N. Y. Med. Jour., January 19, 1889, p. 78;—Duclos, Rev. Gén. de Clin. et de Thérap., Jan. 17, 1889.
 167 U. S. Marine-Hosp't Rpts., 1886, p. 225.
 168 See Homburg, Op. cit., S. 113.
 169 Prudden, N. Y. Med. Rec., October 23, 1886, p. 469.
 170 Butler, N. Y. Med. Jour. October 10, 1885.

ELECTRICITY IN GYNECOLOGY.

BASED ON AN EXPERIENCE OF OVER ONE THOUSAND APPLICATIONS.

Read before the Mahoning County Medical Society, February 13, 1893.

BY H. H. HAHN, A.B., M.D.,
OF YOUNGSTOWN, O.

The practice of gynecology, during the last two decades, has undergone more violent revolutions, perhaps, than any other branch of medicine.

But a short time ago it was believed and taught that displacements of the uterus were the foundation cause of nearly all pelvic troubles, and laboring under this delusion, but few cases of uterine disease could be properly treated without a carefully adjusted pessary. With nearly all gynecologists it was the *sine qua non*. To-day, the pessary is practically a thing of the past, and but seldom serves a useful purpose.

At one time the most powerful caustics were applied, without reserve, to the endometrium; but soon they were dropped for the milder ones, and still later, the hot water douche and glycerine or boro-glyceride tampon have nearly displaced them all.

At another time the lacerated cervix and perineum were the causes of all the ailments to which the unfortunate woman was subject, and operative procedure was the only remedy. The fallacy of such a claim very soon became apparent, and something else must take its place.

This and all other previous methods of procedure are to-day largely displaced by a sudden infatuation for removing the appendages of the uterus, a procedure which is already proving itself to be a futile effort to relieve the sufferer.

So many and radical changes in so few years can only be interpreted to mean one thing; and that is, results of none of the methods or lines of treatment have been satisfactory. I believe that the experience of those present will corroborate the following experience of the writer.

I have replaced a prolapsed uterus, carefully adjusted a pessary and followed out all the details in the general management of the case, and for a time felt secure in the belief that I had done much for my patient. So I had; but it was only to have her return to me in due time suffering from the results of the foreign body in the vagina, which served to fix the uterus more firmly, and thereby render it still more susceptible to injury by every misstep or jolt to which the body might be subject; perhaps she returns with increased tenderness of the uterus, a more profuse vaginal discharge than ever, erosions caused by the pessary, etc.

Or, may be, I have faithfully applied the glycerine or boro-glyceride tampon, in connection with a free use of the hot water douche, for from three to six months, once or twice a week, making my patient feel much better; but mortified in the extreme to have her return to me in less time than it took to relieve her, and find her in the same condition as when I first began to treat her.

It is in this state of gynecological science that we welcome to our aid a power which bids fair to remove from that branch of medicine an opprobrium which all must have painfully realized.

It is an energy as powerful for good as it is mysterious, and like all things in nature, equally powerful to harm when misapplied. As a therapeutic agent

in gynecology, we have come to regard it as the most powerful weapon against disease at our command.

In order to explain its therapeutic action in a large proportion of the cases which apply to the gynecologist for aid, it will be necessary to say something as to the pathology of these cases. The everyday patient that comes to your office seeking relief from miseries which she has suffered until she can endure them no longer, details to you a history something like the following: Backache, leucorrhœa more or less profuse, sharp pains in the region of one or both ovaries, perhaps, displacement of which she herself is conscious, headache, severe pain or a feeling of oppression on top of the head, nervous, irritable, sleepless and perhaps emaciated. She may also tell you that she has a strange feeling in her head as if she would go insane.

Many of the younger and ambitious gynecologists would diagnose the case as one of badly diseased ovaries, pus tubes, ovarian abscess, etc., and recommend castration as the *only means of saving the patient from an early grave*. Especially is this conclusion reached without hesitation, if an examination reveals more or less tumefaction in one or the other side of the pelvis.

We do not wish to be identified with that class of pathologists. We do not believe that the ovaries or annexes are the primary seat of the trouble in more than an extremely small proportion of these cases. The trouble is, without doubt in my mind, primarily in the uterus. The endometrium we believe to be the point of departure.

A catarrhal inflammation is no doubt the first step in the departure from the normal condition, and with others, I believe microbic life to be an active agent here, whether as a cause of the catarrh or a result. In either case the trouble, once set up, is the least likely of all known disorders to be self-limited. The catarrh continues, congestion of all the pelvic viscera sooner or later follows, the uterus becomes enlarged to two, three or four times its normal size, and gradually the trouble steals along to the appendages, and there adds still more fuel to the flames.

If this is the correct pathology and course of many of these cases, what benefit could be expected from amputating the last to be attacked and smallest portion of the disease—the ovaries—and leaving the corner stone of the trouble—the uterus—remain? These facts explain to me the frequent failures to relieve the patient of symptoms, on account of which she submitted to undergo so great an ordeal.

I shall here introduce a brief history of a case illustrative of this point:

Mary —, æt. 26 years, unmarried, has always been very corpulent, menstruation always very scanty. Has suffered pains more or less severe for a number of years; usually has had profuse leucorrhœa.

Electrical treatment was attempted, but being unable to introduce the intra-uterine electrode on several occasions, efficient treatment on that account not being given, the patient became discouraged, and asked permission to consult another physician, which was granted.

Only once while the patient was under my care, did I succeed in getting a sound into the cavity of the uterus, when it passed in about 3½ inches.

In less than two weeks from the time she was last at my office, the physician whom she consulted had removed a pair of atrophied ovaries. Before the operation, you will remember, her menstruation was always scanty. Since the operation, covering a period of more than a year, she has been unwell almost continually.

The patient's own words will best tell the story: "I had

shed tears before the operation, but I have shed a great many more since." She now claims to have more pain than she ever had in her life.

What could you expect from detaching a pair of atrophied ovaries from a uterus large enough to allow a sound to enter three and one-half inches? Such a procedure, in my opinion, is putting the cart before the horse; it is like amputating a dropsical limb to get rid of the dropsy when the cause still continues to exist in some one of the vital organs.

The plea which I wish to make for this class of patients is that in electricity we possess an energy which is capable of curing the metritis, causing at the same time absorption of the hypertrophied tissues and tumefactions of the uterus itself, as well as the other pelvic viscera, causing also the uterus to contract and assume its normal weight and mobility, and sometimes position; and while this is going on the sharp pains in the pelvis, the soreness, feeling of weight, leucorrhœa, etc., and the much dreaded diseased ovaries, gradually vanish, thus relieving the patient, and that too without putting her life in jeopardy, or mutilating her body, but leaving her as nature made her, a woman and not a *thing*.

The action of electrical energy in these cases can be fully appreciated only by one who has seen and examined one of these patients before and after a systematic course of its application. The great change which takes place in some patients in a comparatively short time is almost incredible. In many others its effects are not as striking, but sooner or later, through care and perseverance, the results for which we are laboring will come.

A mathematically accurate and scientific explanation as to how this work is done cannot be expected from me at this time, inasmuch as no physicist has yet told us what this mysterious agent is. We know it only by its effects. We know that under certain conditions of matter, certain phenomena result, which we attribute to a something which we call electricity.

But, little as we may know of this energy in itself, and great as may be the changes in views regarding it in the future, the laws which govern its behavior are well understood and immutable.

In accordance with these laws we are able to handle it, measure it, guide, direct and control it. Having then a thorough knowledge of the behavior of a current, and the necessary skill to manipulate, we apply it in the treatment of disease, and the results we obtain are substantially the only evidence we have that *anything* has been done. If then we fail to show just how this or that thing is done, our consolation is that we are no worse off than the physicist himself. Or, until you can explain just how quinine cures malaria, drug medication is no farther along than the treatment by electricity.

We shall content ourselves, therefore, by stating briefly what, according to our present state of knowledge, is believed to be the mode of action of the electrical current in the cure of pelvic disease, and stand ready to have these views criticised, upset or verified as investigation in this direction may advance.

The action of an intra-uterine application is not a single one. We have first, an action on the part which is in immediate contact with the active electrode, which is acid caustic with the anode and alkaline caustic with the cathode, the extent of cauterization being accurately controlled, and suspended

instantly at any point, a thing which is impossible when caustics are introduced from without. Not only is the action of the two poles different in that the one is acid and the other alkaline, but we have in the anode an unquestionable hæmostatic action, tending to arrest hæmorrhage, a sedative action calculated to relieve active congestion, inflammation and pain. The action of the cathode is directly the opposite; it increases the tendency to hæmorrhage, incites congestion, inflammation and pain. It is this stimulating and exciting action of the cathode that so often renders us invaluable service in the chronic forms of pelvic disease.

Besides this action of immediate contact, it is universally accepted that there is a decided interpolary action; *i.e.*, an action upon all the tissues included between the poles. In the case under consideration, this action affects the walls of the uterus, the cervix, all the appendages, and in fact no portion of the nerve and muscle supply of the pelvis escapes it.

To this action is attributed the absorption of the hypertrophied tissue, shrinkage and contraction of the uterus, dispersion of inflammatory products and tumefactions in the pelvis, thereby rendering a previously heavy and fixed uterus and appendages lighter and more movable, and thus affording entire relief from a trouble which seemed so formidable.

There is still another action of the electric current which has recently attracted some attention. A passing notice of it is all that space will allow. Some recent writers are of the opinion that some of the good results obtained from intra-uterine galvanism depend upon the power of the current, especially the anode, of destroying microbes. This power can easily be tested, and no doubt the question will soon be put beyond cavil.

Some of the more important special applications of the electric current in the cure of pelvic disease shall next engage our attention.

Uterine hæmorrhage is more certainly controlled by electrical energy than any other known remedy. In subinvolution with hæmorrhage, the swelling faradic current of low tension and slow interruptions, intra-utero-abdominal method, seems to me to be one of the most brilliant in its results of any remedy we possess. The patient can usually be cured in from two to five weeks.

I use the ordinary platinum intra-uterine electrode as anode in the uterus, and clay electrode as cathode on the abdomen. The application is made "swelling" and continued about ten minutes, of a strength up to the point of tolerance. In this use of the current I have never been disappointed. Moreover, the results are so quick in showing themselves that there is no room for doubt as to what has done the work.

I shall speak later on of its effects in hæmorrhage in uterine fibroids.

Menorrhagia and metrorrhagia as found in that everyday class of patients to which I have already referred, are usually best treated with the galvanic current. Unless the hæmorrhage is very severe, however, I usually disregard it, and strive to give the treatment best suited to the associated conditions, or the conditions upon which the hæmorrhage depends.

The history of the following case will illustrate a common phase of uterine disease, and I shall give, in detail, the history of the case with results.

May 29, 1890.—Mrs. B., æt. 39 years, married and has three children, youngest ten years old. Has been in ill health ever since last child was born. Menstruation has always been very free, but during the last five years, has often been alarmingly profuse. The periods are quite regular as to time. Suffers severe backache the most of the time, sharp, shooting pains in the region of both ovaries. Head symptoms have been very prominent. Pain and distress, especially in the back part of the head, sometimes on top. Ideas are confused and often has a feeling as if her mind would become disturbed; walking is difficult and sometimes impossible. During the last five years hæmorrhages have been so profuse as to require her to remain in bed from seven to twelve days every month. There have been periods of six months during which she has been unable to do any shopping up town, a distance of one-eighth mile from her residence. An examination revealed nothing strikingly abnormal except a uterus about three times its normal size. Treatment was instituted with a view of relieving pelvic congestion, and reducing the size and weight of the uterus thereby expecting to overcome the hæmorrhage and pain, as well as the constitutional symptoms resulting therefrom.

Intra-uterine galvanism was employed from June 29, 1890, up to Dec. 11, 1890, a period of five months and a half. During the first four months, there was slight improvement from time to time, but from this time on for the next six weeks I was able to use currents of much greater intensity and improvement was rapid. At this time, Dec. 11, the patient was feeling quite well, free from the ovarian pain and distressing head symptoms, as well as the excessive hæmorrhages, and the uterus about half its original size, and it was mutually agreed upon, that she should take a rest and see what would follow. Each succeeding period seemed to be an improvement on the preceding one, which improvement was progressive up to July 4, 1891, at which time she left the city to make her home in Pennsylvania.

The occasional reports I have had from her since then have been favorable. I had a letter from her husband September, 1892, in which he stated that his wife was well and doing all her own work with ease. He also stated that she had gone up in weight from 116 to 146 lbs; and that he could attribute the great change in her condition to nothing else than the treatment she had received at my hands. This has probably been the most tedious and trying patient I have ever handled, yet the final outcome was satisfactory, and no one will regret the time and labor spent.

One more case to illustrate a different phase of disease, and more rapid results:

Mrs. S., æt. 38 years. Married nine years, sterile, menstruation scanty, accompanied with distressing headaches, especially on the top of the head, severe paroxysmal pain in the left ovarian region and dyspeptic symptoms prominent. An examination revealed chronic metritis, leucorrhœa, abrasions surrounding external os, and an indurated mass in the left side of the pelvis about the size of a small lemon, shading off into the surrounding tissues.

The treatment covered a period of about eight weeks, viz: from June 25, 1890, to Aug. 18, 1890, during which time eleven applications were made. After six applications the abrasions about the os, and the mass of indurated tissue in the left side of the pelvis had entirely disappeared. Her menstruation following the eighth application lasted eight days and never had as free a flow in her life. After eleven treatments she was dismissed as well.

It will not be out of place to repeat here that this lady had been married nine years and had never been pregnant, although she was very desirous of becoming so.

On December 9, 1892, she gave birth to a fine nine-pound boy.

Dr. Apostoli declares that when pus exists in the annexes, intra-uterine cauterization of from 80 to 150 m's. will positively not be borne. His experience

is sufficient to give weight to the declaration. I accept it as true.

In an experience of some magnitude I have personally met but few cases in which this current was not well borne, by carefully educating the uterus up to it. This demonstrates to my mind one of two things, viz: either I have had a very unique experience, or else *pus tubes* and *ovarian abscesses* are far from as common as many gynecologists would have you believe. Of course, they do exist, but certainly not in every woman who may have sharp pains in the pelvis or even tumefactions on one side or the other.

Paul F. Munde, in an article in the September number of the *International Journal of Surgery*, says: "I am convinced that in the past, many uterine appendages have been removed which, with a little patience and perseverance on the part of the physician and the patient, could have been saved. I see every year several hundred cases at least of this disease, and if I look back during the last fifteen years, I may well say that I have seen at least from two to three thousand women suffering from acute, subacute and chronic inflammation of the uterine appendages. It would not have strained my conscience very much if I had operated on, we will say, one-half of these cases; because in many of them the appendages were undoubtedly inflamed, adherent, and more or less enlarged; but I can say, and I believe with all due modesty, that I am proud of having operated only on sixty-three such patients, two of whom died, the rest making an uneventful recovery; I wish I could say as much of the ultimate results of the operation. In eight, menstruation persisted with increased intensity for from two to three years after the operation, and in a larger number of cases the pains for which the operation was performed continued with almost no improvement." Further on he says: "I have seen a tube which was the size of a small banana gradually diminish, shrivel and entirely disappear after several months of treatment."

"A lady from Buffalo consulted me eight years ago for as violent a salpingitis as I ever saw. Her ovaries and tubes were bound down, uterus absolutely immovable, the right appendages enlarged to size of an orange, and I felt obliged to tell her that an operation was imperative. She refused the operation, but insisted upon being treated. Local treatment with persistent local use of galvanism for months so materially improved this case that now she has been in very fair health for five years and has seldom been compelled to consult me or any other physician for her pelvic organs."

With the words just quoted I close this part of the subject.

Another important application of electrical energy in gynecology is for the purpose of relieving pain.

Dr. Apostoli, as well as numerous American gynecologists, are almost extravagant in their praise of the use of the high tension faradic current, with rapid interruptions, as an analgesic. My experience in this use of the current is comparatively limited, but I have seen enough of it to convince me that, with the proper instrument for the purpose, much good can be accomplished in this direction. Of all electrical appliances, however, there is probably none more difficult to procure than the instrument adapted to this use.

This instrument must possess two definite qualities in order to make it a success. It must produce a current of extremely high tension, and it must be constructed so as to produce rapid interruptions. The former quality is obtained from a very long and very fine secondary coil, and the latter quality depends upon the construction of the vibrator.

Dr. Hutchinson, of Providence, R. I., claims to have determined about the rapidity of vibrations necessary to obtain the best results. This he puts at 35,000 per minute, which rapidity will cause the vibrator to emit a musical tone which will correspond to first C above middle C. When the frequency is much greater than this, the current is no longer appreciable, and no longer has any analgesic properties. It remains to be seen whether or not other investigators shall verify the observations of Dr. Hutchinson.

I shall here introduce into this paper another use of the electrical current in gynecology, not on account of personal experience had with it, but on account of what seems to me to be of such practical importance that I am exceedingly desirous of having the matter before you for discussion. I refer to its use in ectopic gestation. I have reasons for believing that in electricity we have a power of converting what may later on prove to be a terrible catastrophe into an insignificant and harmless condition. Gynecologists in whom surgical tendencies predominate will advise laparotomy at once, or as soon as there is little doubt of the real condition of things. The procedure seems to me to be too radical and unwarrantable. Unless rupture has occurred, and provided it has not gone beyond the fourth month, there can hardly be a comparison. This statement is made on the following grounds: 1st. There is no possible condition which will in any way interfere with efficient electrical applications at the moment that ectopic gestation is first suspected. Thus we have an opportunity of taking advantage of treatment at a time when any method is most effectual, and when there is the least possible danger. 2nd. A current of a strength sufficient to destroy the life of the foetus, when properly applied, can be administered without an anæsthetic, and if necessary, without an assistant, and without the slightest pain or discomfort to the patient, and does not require her to remain in bed more than several days or a week.

An attempt is often made to intimidate the advocates of this plan by holding out the possible danger of rupture during an electrical application. The facts are, however, that although many hundreds of cases have been operated upon in this way, I can find but a few reported deaths, in one of which puncture was used, at present considered highly improper, and the method in the other cases is not known. With modern methods the danger must certainly be exceedingly small, and not to be compared with the dangers of a laparotomy.

Although the length of this paper is becoming much greater than was expected, it cannot be closed without, at least, a brief reference to a subject that has been the source of many acrimonious discussions during the last few years. I refer to the treatment of fibroid tumors of the uterus by electricity.

When such men as Sir Spencer Wells, Thomas and Skene Keith, Playfair and Stevenson, of Great Britain, and Munde, Massey, Goelet, Martin and numerous others of this country, have substantially discarded the knife and adopted the Apostoli method,

claiming for it advantages over any other method, it will no longer do for men who have not tried the method to stand back, shrug their shoulders and wink at it, and try to console themselves by the antiquated idea that electricity in medicine is quackery. The question is no longer one of theory, but one of practical facts.

Not every tumor of the uterus is curable by electricity; but I believe that every *fibroid* tumor can be symptomatically cured.

Myomata, or the very soft variety of uterine tumors are not so much benefited by this treatment, and in this variety requires great care in its application.

But in the case of fibromata or myo-fibromata we may make the following claims without reserve: Intra-uterine cauterization, from 100 to 250 milliamperes, will arrest hæmorrhage, relieve the pain and reduce the size of the tumor, sometimes slightly, and sometimes greatly. In the case of small tumors I believe that they are often made to disappear entirely.

The almost absolute freedom from danger in this method of treatment may be inferred when it is known that Apostoli lost but two out of two hundred and seventy cases, and Thos. Keith in a large number lost but one.

I can do no better in this connection than quote a few paragraphs from a man who to-day stands, perhaps, unparalleled in his success in hysterectomy. I refer to Thomas Keith, of London. He says:

"What I now plead for is that for a time all bloody operations for the treatment of uterine fibroids should cease, and that Apostoli's treatment, as practiced by him should have a fair trial.

Hysterectomy, remember, which is performed every day for a complaint that rarely of itself shortens life, kills every fourth of fifth woman who is subjected to it. This mortality must cease; it is not a question of surgery, it is a question of humanity. Every time that a disease can be cured without resorting to a bloody operation progress is made in our art, and there is a gain to humanity; while surgery is the better for being purged of a deadly operation. It may seem strange to some that after the results I got in hysterectomy—results that almost made it justifiable—I should now begin to throw stones at the operation instead of trying still further to improve upon it; and but for Dr Apostoli I would now be doing so. I would give something to have back again those sixty-four women that I did hysterectomy for, that I might have a trial of Dr. Apostoli's treatment upon them. I have thrown over all surgical operations for this new treatment, and the longer I follow it the more am I satisfied."

In conclusion, I cannot refrain from anticipating some of the stumbling blocks that will naturally be hurled in the pathway of the sincere, earnest and efficient worker in this field of electro-therapy.

The application of electricity in gynecology does not differ in certain respects from any other art. Skilled work is not usually the result of *unskilled* hands, and nowhere is this more true than in the application of electricity.

Nor is this skill easily attained by every one. Certain requisites are indispensable to begin with. First and foremost there must be *earnestness of purpose*. Unless enthusiasm enters into the work failure must result. Other essentials are a thorough knowl-

edge of the behavior of a current, a thorough equipment with apparatus and instruments, mechanical ingenuity, a hand capable of delicate and gentle manipulations, and a *bountiful supply of time and patience*.

In addition to this, there is such a thing as *special aptness* for certain kinds of work, and when this is associated with the other requirements mentioned, the claims we have made will certainly be verified.

The venerable and grand Dr. Robert Newman, of New York, who has so successfully treated hundreds of cases of stricture of the urethra by electrolysis, has been striving for years to force upon the profession at large just how he accomplishes it, and yet we find men here and there decrying the method as inefficient and dangerous, claiming that they had tried it, and in some instances exposing their abominable ignorance by admitting that they had produced cauterization, and that the treatment was followed by a worse stricture than the one it was attempted to cure. We simply say that Dr. Newman does not cauterize with his own hand, and when some fool through his ignorance and clumsy manipulation does do so, neither Dr. Newman nor his method are responsible. It is the operator alone, and that too in spite of clear and explicit directions in every detail, laid down by Dr. Newman. Will a Lawson Tait or a Joseph Price submit to have the results of their laparotomies judged by the results of the operator who has killed half of his patients? By no means. We must distinguish between the *method* and the *operator*. They are entirely different factors. All we demand in this matter is fairness. We demand that each factor shall carry its own proper share of responsibility. We demand that you do not shoulder upon the method, responsibilities which belong to an individual operator.

SHOULD MEDICINE AND DENTISTRY BECOME A FUNCTION OF THE STATE?

BY C. S. BACON, M.D.,
OF CHICAGO, ILL.

In these days when the functions of the State are somewhat rapidly increasing, so that we hear without amazement proposals that the State shall undertake to manage railroads and telegraphs, and the municipality shall furnish gas and electric lights and manage street railways, we may ask if this extension of governmental activity can effect the medical profession. The right of the State to interfere in the preservation of public health is now recognized. Quarantine laws, laws regulating medical and dental education and practice, building of hospitals and asylums, etc., shows that the State assumes certain medical functions. How far they ought to extend may well be a legitimate subject of inquiry.

I will omit that logically important portion of the discussion concerning the sphere of the State and assume that when anything can be better done by the State than in any other way, and that the greatest good to all is thus secured, then the State should undertake this task.

We notice at the start that there is considerable difference between preventive medicine and curative medicine. This difference, especially in the case of dentistry, is more apparent than real. But let us