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ORIGINAL ARTICLES.

ADDRESS OF THE CHAIRMAN OF THE SECTION OF
OBSTETRICS AND DISEASES OF WOMEN,
OF THE AMERICAN MEDICAL ASSO-
CIATION, READ JUNE, 1883.

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PART I.

Mr. President and Gentlemen of the American Medical Association :

The position with which you have honored me requires, by ordinance, that a *resumé* of the so-called advances in our special department should be made the subject of this address. This rule has not been observed for the past two years, and would now, perhaps, "be better honored in the breach than in the observance; but being a law-abiding subject, the writer has chosen mainly to comply with it, and will serve you an "olla podrida," containing some recent items of interest, seasoned with personal views upon other subjects, concerning which there is much difference of opinion among the profession. Seen by the light of present teachings, some of these opinions may be deemed heretical; they are certainly conservative, and perhaps it is well, amid the rush and excitement of our modern mode of life and thought, that there should be an occasional protest against the speed with which all earlier views are left far in the background, lest something of real value should be lost and forgotten.

Dr. John B. Hunter, at the close of an article published more than a year ago, said, "The triumphs of gynecology have been gained almost entirely in the field of surgery." Accepting this dictum, we shall first direct attention to some topics in Gynecological Surgery.

Two years ago my predecessor, Dr. J. R. Chadwick, when more ably discharging the duty which now devolves upon me, referring to Emmet's operation (a name which seems preferable to the long Greek derivative), stated that "it could hardly be said to have passed from the stage of novelty to that of criticism; that it was destined to be a fertile topic for several years to come, when it would be assigned to its proper sphere, and cease to excite discussion." This was truthful utterance. Our journals, native and foreign, have teemed with cases, papers and criticisms. Prolonged observation has shown that undue influence was attributed to the lesion, and experience has proved, that the relief claimed to follow the operation

has not been uniformly attained. A more definite understanding of the conditions really requiring it, and the limits to which it should be restricted, as well as a more just appreciation of its real merits, has thus been attained. As a consequence, medical opinion now indicates with tolerable clearness its permanent status and scope, even if all the conditions are yet fully determined. Dr. Emmet's early statement, "In every instance where laceration is evident, and where enlargement of the uterus still remains, or where the woman suffers from neuralgia, I consider the operation necessary, notwithstanding the parts may have completely healed;" led to its performance in many cases where it was unnecessary, and in which it failed to relieve. A reaction followed the first enthusiastic reception and adoption of the measure, in this country, and sharp, and sometimes unjust criticisms came from abroad.

As an illustration of the truth of the statement that reflex nervous disturbances do not depend upon this lesion, when accompanying it, and may¹ be cured while it still exists, a brief abstract of a case reported by a noted New York gynecologist, a few months since, will be presented. It occurred in a woman 39 years old, who had given birth to a child eighteen years before, and had suffered since that time from pain in the sacrum, right groin, and down the right thigh, with migraine, nausea, and vomiting at the time of menstruation, which function was unduly prolonged. She had been many years under the care of a gynecologist without benefit. A large bilateral laceration of the cervix existed, with surfaces and angles dense and cicatricial; the movement of the uterus was slightly impeded, and, in the vaginal vault, on the right, closely connected with the upper angle of the rent, was felt a flat, hard, immovable disk, pressure upon which caused pain in the groin, and down the right sciatic nerve. Preparatory to the operation, she was treated locally by hot water irrigations, applications of iodine, etc., and afterward, by the use of tampons, which produced so much disturbance that they were discontinued. Her physician then began the use of galvanism, experimentally, placing the negative pole against the induration in the vagina, and the positive over the right ovarian, and the trochanteric regions alternately. A light current was at first employed, gradually increased in strength for fifteen to twenty minutes, the poles being occasionally reversed. The pain was much relieved by the first application, and the patient expressed herself as feeling easier than for weeks before. The sittings were continued every second day, and the time of

¹ *American Journal of Obstetrics*, Oct. 1882, pg. 909.

use extended to one-half or three-quarters of an hour, the strength being gradually increased to sixteen cells; and during the week preceding menstruation a sound connected with the negative pole was introduced into the uterus for half the time. The succeeding menstruation was attended with scarcely any pain in groin or side, and with migraine only for the first day. The galvanization was continued every day during the next interval, and was followed by menstruation entirely free from pain, or migraine. The application was then made less often, and two more painless periods passed. The patient attended a ball and remained until 3 o'clock A. M., without any unpleasant results. "To all intents and purposes," says the narrator, "she was cured." The plastic exudation had disappeared, hastened, he thought, by the hot vaginal irrigations which had been continued. Of the influence of the galvanic current in producing this result he says nothing. For a month longer the doctor debated, "whether he should not leave well enough alone," but finally concluded to operate. He states that while he has often used the galvanic current to reduce a hyperplastic uterus, he had never before employed it as a uterine application in reflex hemichrania. To the writer such a result is not new or surprising, as for many years he has found it efficient in the same conditions associated with uterine trouble, and a year ago treated and relieved similar symptoms supposed to depend upon cervical laceration.

While there appears to be satisfactory evidence that the great majority of cervical lacerations are attended by no symptoms which can properly be attributed to them; that some even of a severe character have been found by competent observers, which had existed through several pregnancies without producing any disturbance of health; that the operation will not, with certainty, remove uterine hyperplasia, or hypertrophy, and experience has proved it unreliable for the relief of presumably dependent reflex nervous disturbances, and while it is still a mooted point whether it is warranted by the existence even of hereditary tendencies which make it possible that epithelioma may spring from the cicatricial tissue; there yet remain exceptional cases (not perhaps as frequent as Dr. Munde's estimate makes them, twenty-five per cent. of all) of stellate lacerations, where decided local symptoms are present; and deep bilateral rents with co-existing ectropion, hypertrophy of cervix, and consequent local symptoms, which are speedily and effectively cured by reunion of the lacerated cervix. In such, it is so marked an improvement upon cervix amputation, or the use of the actual, or potential cautery, that for the relief of these alone, the gratitude of the profession is due to the deviser of the operation, to which in honor his name is justly given.

Another operation which has been tested for some years is that of Dr. Battey. Most of the indications, which have been claimed to warrant it, are now generally admitted. Some doubt still exists respecting its ultimate results when performed to check uterine hæmorrhage produced by myomata. It has appeared to be successful in interstitial and subperitoneal fib-

roids, unless the latter are so large as to prevent the operation; but its results appear more doubtful in the submucous variety, as the hæmorrhage has sometimes returned, after a check of a few months. Even with this doubt, it is indicated in much reduced patients, where enucleation could not be borne. Caution must also be observed where the tumors have been treated by ergot, as there is, at times, a central disorganization and sloughing, which may lead to blood poisoning after the operation. There is also some diversity of opinion concerning its efficacy for the relief of epilepsy, or hystero-epilepsy, and mania, seemingly dependent upon, or associated with, ovarian troubles. Dr. Goodell advocates the operation in such cases of insanity, and quotes Esquirol, to the effect that derangements of menstruation are causal in one-sixth of all cases due to physical causes.

Mr. Lawson Tait, of Birmingham, England, was one of the trio, who each, independently of the others, originated and performed this operation in the months of July and August, 1872. It was published, at that time, only by Dr. Battey, whose name it justly bears. Mr. Tait has since had a much wider field for experience than our modest, but inventive and skillful American surgeon, and quite recently has astonished the profession, abroad and at home, as much by the boldness and originality of his views, as by the remarkable success which he has attained. His deductions controvert some long-established opinions, and whether these are accepted or not, his researches afford clues, which followed, promise to lead to a more accurate understanding of some hitherto obscure pelvic affections. His earlier operations were performed for the relief of hæmorrhage from myomata, and he then removed only the ovaries, but afterward included the fallopian tubes also, an addition which he deems of great importance. He published in July, of last year¹, remarks upon the diagnosis and treatment of chronic diseases of the ovaries, in which he advanced the opinion that abdominal operations in the hands of an expert, are so little dangerous as to be justifiable for relief from long-continued suffering; and that the earlier usage of deferring operative interference until life was immediately threatened, was an error. He also states, that all the evidence before him showed the phenomena of menstruation to depend upon the fallopian tubes, and not in the least upon the ovaries; that the tubes are involved in all cases of ovarian disease, and, in the large majority, are the principal seat of the difficulty; that many cases of abnormal menstruation can be relieved in no other manner than by the removal of the tubes and ovaries, and that the proceeding is justifiable; that, in his last series, of thirty-five cases of chronic ovaritis and tubular disease alone, he had lost but one, and, the operation being yet in its infancy, he believes this percentage of mortality can be materially lessened. He claims, also, that these recent operations for oöphoritis have done more to enlighten us upon the physiology and pathology of ovarian disease than all other previous sources of information; that they have also shown that many of the sufferings from pelvic symptoms,

¹ *American Journal of Obstetrics*, July, 1882.

which have been referred to the ovary, are really dropsy, inflammation, and suppuration of the tubes, producing sterility, and a host of painful ailments which make life a burden. The diagnosis, he allows, is not always clear. Examination will often reveal to the practiced finger, in the vaginal cul-de-sac, a fixed tender mass composed of the enlarged and probably adherent ovary, and of the occluded and distended tube; and the peculiar sickening pain felt when this is touched, will afford conclusive proof as to its nature. When this evidence cannot be attained, the presumptive diagnosis must rest upon the history of the case and the symptoms manifested.

Dr. T. A. Emmet, at a meeting of the New York Academy of Medicine, last December¹, stated that he had learned orally from Mr. Tait, that in cases of obscure pelvic inflammation, characterized by severe symptoms, and which did not yield to treatment within a reasonable length of time, he opens the abdomen and invariably finds this dropsical condition of the tubes, which are distended with either serum or pus. The removal affords immediate relief, and it is the only means which can. Dr. Emmet also added that the improvement which he had personally observed to follow Mr. Tait's operations, had been something almost beyond conception.

In a paper read before the New York Academy of Medicine, last December, Dr. T. G. Thomas said, in reference to the views of Mr. Tait, that while he did not feel warranted from his own observation and experience in accepting them fully, he thought there was sufficient of truth in the statements to make the essay the most valuable to the gynecologist which the present decade had produced. He also mentioned another proposition of Mr. Tait, which was not included in the paper, but orally communicated to Dr. Emmet: That tubal dropsy and ovarian disease are often the real cause of recurrent peritonitis or cellulitis, which is produced by an occasional discharge of the purulent contents of the tubes. Dr. Thomas reported four cases in which he had operated, where great menstrual derangement existed, together with recurrent peritonitis and cellulitis, conditions which the operation showed to have been produced by the state of the tubes described by Mr. Tait. In three of these, the result was very satisfactory; the fourth patient was in an exceedingly reduced physical condition from recent attacks of peritonitis, when the operation was performed, and died on the sixth day, from an insidious attack of the same disease which came on twenty-four hours after. More recently he has operated upon a fifth case, the patient completely bed-ridden, and required no less than ten grains of morphine, subcutaneously, per day, to relieve the intolerable suffering. The ovaries and tubes were again found in the typical condition described by Mr. Tait. He also remarked that no one of the five patients upon whom he had operated would not have considered death a welcome relief from their sufferings.

It appears singular that this condition has not been before noted or suspected; but it is stated that since the publication of these facts, a well known micro-

scopist of New York has said, in his examinations he had frequently noted distension of the fallopian tubes. Mr. Savage, of Birmingham,² also takes the ground that hydro and pyosalpinx are met with quite frequently, and states that the first effect of the inflammation is to close the uterine or fimbriated extremities of the tubes, allowing collection of the abnormal secretion; thinks that the relatively large amounts of areolar tissue in the walls of the tubes, as compared with the uterine wall, accounts for the frequent presence of pus in the former. He says the diagnosis must often be presumptive, and based upon the physical signs and clinical history. The operation of removal is often difficult and tedious, from the firmness of adhesions, and the risk of the escape of the fluid contents in the pyosalpinx. The results of such conditions when left to themselves, may be: First, resolution or absorption, which is very improbable when pus is present, and which would not affect the results of former adhesions. Second, bursting into the uterus, or vagina, which *may be* curative, or into the peritoneum, which would be almost certainly fatal. The same physician, later,² calls attention to the comparative frequency of recurrent attacks of pelvic inflammation caused by pyosalpinx, and thinks that many cases of supposed pelvic cellulitis hitherto regarded as incurable, can be relieved by the removal of the tubes.

Dr. T. G. Thomas recently introduced a patient at the clinic of the College of Physicians and Surgeons, who was suffering from recurring pelvic peritonitis, and in whom he deemed these attacks due to the cause pointed out by Mr. Tait, as both ovaries and tubes were enlarged. The first attack of peritonitis had been light, the second more severe. He remarked that "although the tubal enlargements could be apparently made out with unusual clearness, still the diagnosis was not a positive one, and he did not think operation advisable, because the woman was not suffering to an extent warranting so radical a procedure." He added, "I cannot impress upon you too strongly, that the dangers of this operation are very great, and the great fault I have to find with Mr. Tait is, that he makes too light of them altogether. I cannot believe that the high standard of success which he has so far maintained, will be kept up in the future." This opinion corresponds with that expressed in an able paper read by Dr. G. I. Engleman before this Association in 1878, in which he faithfully depicts the difficulties and dangers of Battery's operation; but Mr. Tait does not always "make light" of these difficulties, for in a paper published in February of this year, he says, speaking of the hydro and pyosalpinx cysts: "Generally they are much smaller, holding only a few ounces, and then their removal, by reason of dense adhesions, constitutes by far the most difficult class of cases I ever have to deal with. Why the simplest of all, the removal of a parovarian cyst, should be classed as an 'ovariotomy' and held up for admiration, and these most difficult cases dubbed 'Oöphorectomies,' and held up to scorn, I cannot imagine."

¹ London *Lancet*, January 6, 1883.

² Birmingham *Medical Review*, January, 1883.

¹ *New York Journal of Medicine*, January, 1883.

Dr. P. Harris' paper upon the revival of symphysiotomy in Italy,¹ is worthy of notice from the remarkable success which attended the operation. Between 1866, and December, 1880, fifty cases are reported, with eighty per cent. of maternal recovery and eighty-two per cent. of living children. Nine of the ten women who died were delivered of living children, and eight of the nine mothers who bore dead children, recovered. Of the children lost, five were shoulder and breech, and four vertex presentations. In only one instance did mother and child both die, and this was a case of back presentation, operated upon on the fourth day of labor. There have been three additional cases since, in which all the mothers recovered, but two children were lost. All the operations were performed upon rachitic subjects, the deformity being generally antero-posterior contraction. The separation at the pubis amounted to about two inches, which was obtained without any effort, and without lesion of the sacro-iliac synchondroses. An immovable dressing secured firm reunion of the parts in all who recovered? No after pelvic disease occurred, and the women were in good health. In one case only, vesico-vaginal fistula followed, which was easily cured. The operations were performed principally by Professors Morisani and Novi, of the University of Naples. The section is made subcutaneously, with a probe-pointed sickle-shaped bistoury; an incision being made above the pubis, the knife is slowly passed behind the symphysis until it reaches the pubic arch, when its cutting edge is brought to bear upon the ligaments, and they are divided from below upward; the pelvis is not forced open, the fœtus not dragged upon, but when the head presents, the conclusion is generally left to nature. The incised part is treated antiseptically, and by irrigation in warm weather, and as soon as convenient the bones are kept in opposition by the immovable dressing. The usual time for complete pelvic restoration was from forty to fifty days. Dr. Harris remarks that "this more extensive test upon the living has proved that greater pelvic mobility exists than John Hunter demonstrated upon the cadaver;" each inch of pubic separation, though increasing but little the sacro-iliac, adds to the transverse and oblique diameters, and makes it possible, if time is allowed, for the head to mould itself sufficiently to pass; this result is shown by the statement that forty-two out of the forty-six vertex presentations were thus delivered alive, with a recovery of eighty per cent. of the mothers. Dr. Harris states that the Porro operation in Italy saved 45.5 of the women and 77.5 of the children; and I find elsewhere that he has stated,² that out of the last twenty-eight cases, from May, 1879, fifty per cent. of the women were saved. But the two can hardly be compared, as the sphere of symphysiotomy is confined to those cases having a conjugate of $2\frac{5}{8}$ inches (sixty-seven millimeters), and upwards; cases not very uncommon, where the pelvis is somewhat too small to permit the birth of the child, and in which premature labor would save it, did opportunity offer. With a diameter less than $2\frac{5}{8}$ inches, other means must be adopted.

Dr. Montgomery, of Philadelphia, not long since published conclusions which he had drawn from an analytical study of this subject, which are here briefly stated. That craniotomy is never justifiable, since it is our duty to try and save both mother and child. That in pelvis of a conjugate of 3.25, or over, forceps can be employed, when 2.75 or upwards, version; $2\frac{5}{8}$ or over, symphysiotomy, and in less than $2\frac{1}{2}$, the Cæsarian section, performed reasonably, offers better results for the mother. This should not, however, be the old operation, but the modification recently introduced, I think by Sanger,¹ which has been found more successful than the old method; and a case is recently recorded which was operated upon by Dr. Leopold, in Germany,² in which both mother and child were saved.

In a limited number of cases, when the os is dilated, laparelytotomy may be preferable to uterine section. In all lesser degrees of distortion, when opportunity is afforded, or in subsequent pregnancies, premature delivery should be induced.

EXTRA-UTERINE PREGNANCY.

Some important advances have recently been made in the treatment of extra-uterine pregnancy up to a certain stage of its existence, which appear to offer a safer and surer path out of this difficulty than previously discovered. The first instance of this treatment which the writer has found recorded, was reported by Dr. J. C. Reeve, in 1879.³ In this case the diagnosis was positive, and the time about the end of the third month. Faradization was used as strong as it could be borne, for nine days successively, for about ten minutes each session; one electrode upon the tumor in the vagina, the other, sponge covered, carried over the external abdomen. Ten days after the last application the patient was decidedly better, and in a month the breasts had become flaccid and the tumor gradually decreased in size. This was successful, although accomplished with inferior apparatus, and more than necessary disturbance. Cases have been reported within two or three years, by Drs. Lusk, Bache, Emmet, and others, where the diagnosis was regarded as satisfactory, and similar treatment was successful. Dr. T. G. Thomas last year,⁴ in a paper upon this subject, fully discussed the means of diagnosis, and related the results of his own experience in twenty-one cases. Six of these were treated by galvanism, and all recovered. His conclusion is, that if such a tumor be discovered, and its nature tolerably settled before the fourth month, the destruction of the fœtus by galvanism should be preferred to any other method of treatment. If there should be error in diagnosis, it could do no harm, if diagnosis were correct, experience proved it effective. Dr. Garrigues remarked that it had been successful up to the middle of the fourth month in every case in which it had been employed, and he thought it could be used with advantage at any period of foetal life. The last communication upon this subject was from Dr. A. D. Rockwell, the operator in many of

¹ See paper by Dr. Garrigues, *Am. Journal Obstetrics*, May and June, 1882.

² Archives für Tynaskel, xix p. 400.

³ Trans. Am. Gynecological Society, 1879.

⁴ " " " 1882.

¹ *American Journal of Medical Sciences*, January, 1883.

² *British Medical Journal*, April 21, 1883.

Dr. Thomas' cases,¹ in which he reports seven cases, with the method of use of the agent. His first case was one of tubal interstitial pregnancy at almost three months, and was perfectly successful. More recently he had treated three which had been published, and three more which had not. The results in all, more thoroughly establish the value of the treatment. Two of these will be briefly epitomized to show the method. His fifth case was declared by Drs. Thomas and Emmet to be a combination of both intra and extra-uterine pregnancy, and was about two and a half months advanced. There was a tumor of the size of a pullet's egg distinctly perceptible two inches to the left of the median line, and nearly on a level with the pelvic basin. It could be moved from Douglas' cul-de-sac towards the margin of the ribs, and it gradually increased to the size of a billiard ball. The negative pole of a galvanic battery was brought into contact with this growth through the vagina, the positive, a large flat electrode placed upon the abdomen, the object being so to diffuse the current as to produce the least possible action upon the abdominal muscles. The maximum strength employed was eighteen cells, or power of twenty-four volts, used with rapid interruptions. This was repeated four times in six days.

The tumor not only diminished perceptibly in size, but changed its position an inch or two. Since that time it has gradually grown smaller, until now, three months after, it can hardly be detected; at the same time there is now developing, in the uterus, a six months' fetus.

The sixth case was about four months advanced, a current of twelve cells (about 16 volts) was used, interrupted for ten minutes, then quickly increased for one minute without interruption. Great care was exercised, in this case, on account of the increased distention of the fallopian tube from the more advanced stage, and the consequent danger of rupture. A second application, the following day, concluded the treatment. Two weeks after the tumor had decreased one-half, and, after several months, cannot be perceived by external examination.

In the last case, the pregnancy had advanced to the third month, and the tumor, about the size of a child's fist, was movable, and could be distinctly felt, both from without and within. An anæsthetic was given, at the advice of Dr. Emmet, for fear of cyst rupture from involuntary movements; a current of 16 volts only was used, and repeated three times afterward, at intervals, during six days. The contour and seat of the tumor were changed after the first application, and it rapidly decreased in size. The treatment was repeated afterwards to accelerate the process of absorption.

This method of treatment is safe and simple, only requiring caution, in advanced cases, to avoid rupture of the sac by too much strength of current. Galvanism is decidedly preferable to Faradism, as being more certain. Catalytic effects pertain only to the former, and the changes produced by this action, in organic bodies, continue long after the current has been used.

¹ New York Medical Record, February 17, 1882.

POST PARTUM HÆMORRHAGE.

A reference to some recent suggestions for the relief of severe cases of post partum hæmorrhage and of the collapse which follows:—The hypodermic injection of ether has been lauded in extreme acute anæmia. It appears, however, only to act as a temporary stimulant, of the same character as the introduction of a small quantity of ammonia into a vein. Professor Hayem's experiments on artificially exsanguinated animals, recently detailed at a session of the Paris Academy of Medicine¹, prove that no effect is produced except a temporary excitation of the heart beat, while the use of defibrinated blood, in many cases, prevented a fatal result.

Professor Chahbazian, of Paris², extols an alkaloid of ergot, called ergotinine, which is prepared by M. Tanret, of Paris. Only three grains of this can be obtained from a pound of the ergot. One-fiftieth of a grain is dissolved in twenty minims of alcohol or chloroform, and five to ten minims of the solution injected hypodermically, to be repeated, if necessary, but never to exceed twenty minims in all. He states that it acts very speedily and energetically, uterine contraction following its use in from two to five minutes.

Dr. Langay, of Paris, says that he has found faradization the speediest and most effective means of producing instant and energetic uterine contraction in cases of this difficulty.

Dr. J. F. LePage, in a recent article³, refers to an old but now neglected method, auto-transfusion, in acute anæmia from post partum hæmorrhage, and believes that where patients are not in articulo mortis, it will prove successful.

It is also again recently referred to by Mr. Percy Boulton⁴, who, after enumerating the ordinary means, including hot water 110° to 120° injected into the fundus uteri by a syphon syringe, says, should symptoms of collapse appear, raise the foot of the bed to an angle of 45°, apply a sinapism over the heart, and bandage firmly legs and arms, beginning at the extremities, etc.

Confidence in the practical efficacy of direct blood transfusion, in cases where death appears imminent, has very much lessened in France, Germany, and England, and Dr. Lusk, one of our late authorities, says, that although theoretically it is the most rational method of treatment—practically it is unsatisfactory. Dr. Matthews Duncan, at a meeting of the London Obstetrical Society, last January,⁵ spoke of transfusion as merely a hopeful proceeding, remarking that patients who survived it were often spoken of as being saved by it, which was a manifest mistake. In many cases it has caused death, and most of the difficulties and dangers were produced by the attempt to transfuse blood.

These estimates are due partly to the uncertainty of obtaining a blood supply, and to the unpleasant symptoms which often, and the fatal results which, at times, follow direct transfusion, and partly to the

¹ British Medical Journal, February 17, 1883.

² London Lancet, January, 1883.

³ British Medical Journal, April 22, 1883.

⁴ London Medical Times-Gazette, May 5, 1883.

⁵ British Med. Journal, January 27, 1883.

delicate instruments and manipulations required. To mediate transfusion may be objected the same want of blood supply, and the loss of time occupied in defibrinization and re-heating, the chance of embolism from imperfect separation of all fibrinous particles, and the possible danger of contamination from bacteria during the process of whipping. Other fluids have been suggested, such as fresh milk, by Dr. Thomas; but this is found open to grave objections, and has been but little used. Many years ago weak saline solutions were suggested where blood could not be obtained, but physiological objections were strongly urged against the measure. Dr. Barnes states that they were employed, some years since, by Drs. Little, Woodman, and Hickford, in England, and that one of the cases of Dr. Woodman recovered.

Mr. Schwartz published, about two years ago, the result of experiments made upon artificially exsanguinated animals, with the conclusion that a saline solution thrown into a vein would relieve the phenomena which accompany an extreme degree of anæmia. The first application of this to the human subject, in Germany, as far as records are accessible to the writer, was made by Dr. J. J. Bischoff, in 1881,¹ in a case where death seemed imminent from hæmorrhage; who injected into the left radial artery, on account of the difficulty of finding superficial veins, about forty ounces of a solution of common salt, six parts to one thousand, with the addition of a few drops of lye, as no soda was at hand. This was allowed to flow slowly in, from a receptacle elevated a little above the arm, and an hour was occupied in the process. During this time the pulse fell from 156 to 122, and rapid improvement of the patient was observed, followed by recovery. None of the unpleasant symptoms of oppression, which attend blood transfusion, were manifested. Schwartz has recently published his conclusions more fully,² in which he states that death from cessation of the circulation is due not so much to the great diminution of the blood globules, as to the disproportion between the size of the vessels and their fluid contents, and that the latter is safely and surely remedied by injections of weak alkaline solutions. The minimum quantity to be administered to an adult should be about five hundred cubic centimeters (about seventeen ounces). He also reports a violent hæmorrhage following the removal of uterine cancer, where the pupils were insensible, consciousness lost, etc., where he injected one thousand cubic centimeters into the median vein, with the most satisfactory result. He mentioned five other cases which were reported by Bischoff, Küstner, Kocher, and Kümmel.

Recently it has been again brought into notice in England.³ Mr. Jennins, resident accoucheur at the London Hospital, reports a case which occurred, last August, in a woman who, after a fall at full period, was attacked with profuse antepartum hæmorrhage, and was collapsed, to a marked extent, when seen. The os was fairly dilated, and right shoulder presenting. The flooding was temporarily checked by hypo-

dermic injections of sclerotic acid and brandy, and, thinking that any attempt at delivery would prove fatal, the median basilic vein was found with much difficulty, and sixteen ounces of a saline solution thrown into it, by means of a common metallic syringe. Signs of animation are stated to have speedily followed, vision, hearing, and speech returned, and the subsequent progress was favorable. The solution here used was composed of common salt fifty grains, chlorate of potash three grains, sulphate and carbonate of soda two grains each, to twenty ounces of water, to which two drachms of absolute alcohol were afterward added.

Mr. Coates related two cases before the Obstetrical Society of London, December 6, last year,¹ both of severe secondary hæmorrhage after labor. In the first it had recurred violently several times, and continued, on the last occasion, for eight hours after the patient was seen by the medical attendant. She was found almost moribund, unconscious, and pulse barely perceptible. The saline alcoholic solution was allowed to flow into the radial vein, the only one perceptible of any size. The result is described as marvellous—sight and consciousness returned, and she was soon able to retain stimulants.

In the second case, the hæmorrhage occurred the ninth day after labor, following labor at stool. Half an hour after, her appearance showed a great loss of blood, which was still flowing in gushes. The uterus was relaxed, filled with clots, and could be felt externally, extending almost to the ensiform cartilage. The os barely admitted a finger. Sclerotic acid hypodermic injections, ice, kneading, etc., failing to arrest the hæmorrhage, she was brought to the hospital. She was much worse after her arrival, and one of Barnes' dilators was introduced, with a view of further examination. Before this could be accomplished her condition became most critical—pulse hardly perceptible, respiration irregular, extremities cold, jactitations, etc. The median cephalic vein was found after some delay, and twenty-two ounces of simple water, at a temperature of 100° F. injected. The pulse ceased to intermit, respiration improved, sight returned, and the uterus slowly but distinctly contracted. The os being now fully dilated, the uterine interior was examined, but nothing found to explain the flooding. As there was still considerable bleeding, the uterus was swabbed out with a mixture of equal parts of a saturated solution of persulphate of iron and water, and an enema of beef tea and three ounces of brandy administered. In a short time she could swallow, and stimulants were freely given. The patient progressed uninterruptedly after this, having no bad symptom except a rise of temperature to 102° F. for the first few days. The narrator thinks that the omission of the salines in no way lessened the success of the injection, and though a fluid of a different specific gravity, and one previously supposed to produce swelling of the red globules, and loss of pigment, the result was wholly beneficial. He also states that he examined the globules microscopically, twenty-four hours after the injection, and there was no obvious alteration in their appearance.

¹ *New York Med. Journal*, February, 1882.

² *Berlin Klin. Woch.*, No. 40, 1882.

³ *London Lancet*, Sept. 16, 1882.

¹ *London Lancet*, Dec. 30, 1882.

Dr. Robert Barnes, referring to this case,¹ said: "That the dynamic condition of the circulation, under such conditions, can be restored, even to a partial extent, by the injection of twenty-two ounces of simple water, is one of the most interesting physiological and clinical demonstrations I have recently observed."

Dr. H. J. Garrigues, of New York, after advocating the injection of defibrinated blood, in place of direct transfusion, closes a short recent article, thus: "When blood cannot be obtained, I should prefer a saline solution as containing no foreign substances, no solid corpuscles—being always attainable, and not liable to decomposition. Table salt is found in every house, and all that is needed is to inject a half per cent. solution of this substance."

It is not improbable that all the cases which have been cited might have recovered without intravenous injection; but as a prelude and adjunct to other measures, where the prostration is so great that stimulants or nutriment cannot be taken or absorbed, this offers a safe and ready auxiliary. The knowledge that such a remedy is always at hand, and that it can be used with safety and decided advantage, appears a great accession to our therapeutic resources in these alarming cases.

FORCEPS.

A few words upon a subject not novel—the frequency of forceps' use now taught, and the existing tendency to the abuse of this valuable aid to the obstetrician. For many years past much thought and labor have been expended upon this instrument. A majority of teachers, and some who are not, have introduced new forms and variations, each claiming some superior quality. Much of this has been undoubtedly due to the increased knowledge of the *rationale* of labor, but the pendulum appears to the writer to have swung too far in this direction. One of the latest additions is the invention to which Dr. Alex. Duke called the attention of the Obstetrical Society of Dublin last year. It consists of tractors, which are applied with the forceps blades, and before they are locked; these can be attached to a belt about the waist of the operator, and with toe-caps upon his shoes, to prevent slipping, the inventor claims an immense gain of power for shortening labor. He considers that there is more chance for the child and less risk to the soft parts of the mother, by pulling the head forcibly through the pelvis than if allowed to remain and mould itself to the outlet. We shall probably next hear of a small electro-motor of one-horse power, so arranged as to do the pulling, and save the operator as well as the mother any exertion.

The contest between the advocates of a judicious use of forceps and those who employ them with unwarranted frequency, has been going on in Great Britain for some years. Arguments for the latter course have been based upon statistics, claimed to show a considerable gain to maternal and a large one to foetal life from this practice. Statistics possess valuable elastic qualities. Four years ago this evidence was examined and reported upon by the writer

with widely different conclusions. Others have drawn the same. Dr. Galabin, from statistics of over 40,000 cases, proved that the maternal mortality when the forceps was used once in ten or twelve cases, was nearly double that which occurred when they were seldom used, while the gain to infant life was only 0.4 per cent.

While this is being written, an address of Dr. Denham, presiding officer of the Obstetric Section of the Academy of Medicine in Ireland, has appeared. In this he cites statistics of the Rotunda Hospital at Dublin, taken from the reports of Drs. Collins, Shackleton, and the more recent ones of Dr. George Johnston, amounting in all to over 39,000 cases. Commenting upon the figures, he says: "It is patent that by the more frequent use of forceps in modern obstetrics much has been done for the relief without adding to the danger of labor." This is a most singular deduction, as the figures clearly show that Dr. Collins, who used forceps in 1.6 per 1,000 women, lost 9.99 per 1,000; Dr. Shackleton, who used them in 14.5 per 1,000, lost 11.8 per 1,000; while Dr. Johnston, using forceps in 82.4 per 1,000, lost 18.98 per 1,000, the maternal mortality being almost double that of Dr. Collins in about eighty times the number of forceps cases, nothing is said of the value of this instrument, when really needed and skillfully employed than the writer, but have we not gone far beyond this, and all rational limits, in instrumental obstetrics? The tendency of present teaching and practice is to send forth young men who are not, and cannot be, skilled in forceps use, with the conviction strongly fixed, that if there be some delay in the second stage of labor, forceps is the immediate remedy.

Dr. Hamilton, of Falkirk, formulated a general rule that the second stage of labor should not be allowed to last usually much more, and sometimes even much less, than two hours; and similar opinions obtain with us. Five years ago the writer heard expressions from members of a society which should be, and is, regarded as of the highest authority, which were so extremely radical as to excite great surprise. It was claimed by one, that if there was a cessation of advance by the head for fifteen minutes during the second stage, forceps should at once be used. Another stated that after waiting a time for nature, even if he knew that in two or three hours more the labor could be successfully completed by her efforts, rather than subject the woman to this additional pain it was the duty of the accoucheur to apply the instrument and deliver at once. There were, however, present those older and of wiser counsel who differed much from these opinions, and suggested that the tone of the discussion needed modification.

Rules specifying any time beyond which the application of forceps should not be delayed, appear to be made rather for the benefit of the doctor, than that of the patient. Time is a very unsafe guide when the interest of mother and child only are concerned. Natural labors are often eight, ten or more hours in the second stage, and terminate in all respects successfully for mother and child. Nature requires time,

¹ *London Lancet*, Jany. 27, 1883.

especially in primiparæ, to mould the head to the pelvic outlet, and at intervals, progress is hardly perceptible. The cause of retardation, and the maternal conditions are the considerations which should influence interference. If impaction is *positively* shown, forceps; if retardation is due to loss of nervous power in the mother, quinine; if to insufficient uterine effort, ergot, discreetly and properly used. But the fashionable usage of the day calls for forceps, whatever the cause of delay. The young physician thus taught will never dare to wait sufficiently long to know what nature can accomplish, because of the vivid picture of impaction, sloughing, death of child, etc., which will rise before his excited fancy. It will be long, if ever, before he learns that such dangers are very much overstated, as my own experience and that of thousands who commenced their work before this forceps craze became rife, can testify. A knowledge of healthy action is necessary to, and must precede an understanding of pathological conditions. He who has never ascertained what nature's forces can accomplish in labor, cannot compare the results of this physiological process with those produced by his own interference, and consequently never will realize that what has been done artificially by his so-called, and often misnamed aid, might have been better and more safely accomplished without it.

An able editorial appeared in the *London Lancet* a few months since, deploring the want of means of instruction in practical midwifery, and urging the necessity of providing increased facilities for this purpose. The writer remarks: "A knowledge of *how* to use instruments is no more, or even less important than the knowledge of *when* to use them, and the latter is more difficult of acquisition than the former;" and again: "Otherwise students go forth with instructions to use forceps when labor is delayed, or at least when it ceases to progress, and great injury, both to patients and doctor, is the result of their ignorance of both the above items."

These words are hopeful indications, since they evince a partial comprehension of the mischievous results which attend the use of forceps in unskilled hands.

What motive can even the *expert* in their use have, to apply the instrument when he thinks labor will be safely ended in two or three hours without interference. Anæsthesia offers relief from pain, without danger, and there certainly is more tendency to after hæmorrhage from hastening labor by the instrument.

What is the reason for thus interfering? Can it be economy of time for other engagements? This motive would not be generally avowed by those who thus act, but it is, at times, openly acknowledged.

Six years ago Dr. West, in his presidential address to the Obstetrical Society of London, used the following language: "There is one point on which I think it impossible to insist too strongly—instruments are to be used and operations resorted to for the sake of the patient and the child, never for the sake of the doctor; and yet I have in years gone by heard men say 'I could not wait any longer; I had this or that to do, so I put on the forceps and got the case over.'"

To-day, in a recent journal, the writer chanced up-

on the following statement, from one well-known in the profession. Speaking of a case of labor, he says: "As the head rapidly neared its exit, and a few more pains would have expelled it"—suffice it to say he applied the forceps in order to shorten labor by one-half hour, to be in time for another engagement. This gentleman knew that in his hands the instrument would do no harm, but he also knew that it was unnecessary, and the motive for its use an improper one.

It must be remembered that those who are experts in forceps use are very few when compared with the numbers who practice obstetrics. If this is the rule for the expert, it will certainly be the *practice* of the non-expert, and at a cost to female humanity such as elicited the strong language of Dr. Goodell, when he said: "To tell you the truth, such grave lesions to the mother, and for that matter to the child also, are so constantly brought to my attention that I am disposed to accept Baudelocque's dictum, that, take it for all, the forceps has been more injurious than useful to society."

Even if used, as probably it mostly is, really and only for the sake of relieving the mother from some hours more suffering, such relief is often dearly bought, and the attendant, if competent for his duty, has or should have, a power in anæsthesia not only to relieve the pain, quiet complaint, and sustain the patient, but one which will subdue any spasmodic or irregular action, assist in perineal dilatation, and contribute to make delivery safer if not more speedy.

Within a few years the writer has found it necessary at different times to leave two primiparæ just before labor, in charge of different brother practitioners. They had both been trained in the recent practice, and considered themselves fully competent to use forceps. The women were healthy and well proportioned, and the writer feels assured could have been safely delivered naturally, after a somewhat tedious first labor. Forceps were used in both cases. One had a severe double cervical laceration extending to the vaginal junction, the other a perineal rent extending into the rectum, neither of which accidents, of sufficient importance to attract attention, ever occurred in the writer's obstetric practice of over forty years.

In view of such facts, and with the knowledge that they are of daily occurrence, how can one who has delivered many hundreds of women with but sparing use of forceps, and results for mother and child which will compare well with those which any frequent forceps advocate can show, how can such an one avoid a protest against this fashion of the time, in the name and for the sake of the mothers, as well as for the ultimate repute of a useful, but now much misused instrument.

ERGOT AND ANÆSTHESIA IN LABOR.

The object in noticing this subject is to suggest a reason for the wide difference in opinion which exists with regard to its usefulness in obstetrics. The statement has been not infrequently made that ergot should never be used during actual labor, because it produces tetanus and permanent contractions, which are dangerous to both mother and child. The effects of any medicine vary exceedingly, in accordance

with the genuineness of the article, the dose given, and its mode and frequency of administration.

In this country, fluid and semi-solid extracts have been thought reliable. The object to be attained by its use in the second stage of labor is merely a sufficient additional impetus to render feeble and inefficient uterine contraction more regular and effective. The object when used, as it constantly is, to check post partum hæmorrhage, or as a preventive to its occurrence, is to secure full and permanent contraction. If the same doses are used for the former purpose as for the latter, is there any cause for wonder that effects result such as have led Dr. Barnes to say: "When you have given ergot, you are likely to be in the position of Frankenstein—you have evoked a power which you cannot control. Ergotism, like strychnism, will run its course." Would Dr. Barnes hesitate to use strychnine as a nerve tonic, from the fear that strychnism, as he terms it, would follow?

The dose of ergot necessary for securing contraction after delivery is not so important, provided enough is given. In providing it for the widely different purpose of strengthening insufficient uterine contraction during the second stage of labor, there is evidence of a general ignorance or carelessness as to dose and repetition. Very little has come under the notice of the writer in which reference was made to properly small and repeated doses. Leishman advises an infusion of sixty grains to six ounces of water, one-fourth to be given every ten or fifteen minutes until distinct increase of action is manifested. This is about twice the needed dose, and repeated much too often.

Playfair says fifteen to twenty grains of the powdered ergot mixed with water, or the fluid extract in doses of twenty to thirty minims will make uterine contraction more efficient in fifteen minutes, and says nothing of repetition. He does, however, remark: "Perhaps, as has been suggested, the administration of the fluid extract—five to ten minims every ten minutes until energetic action sets in—would remedy some of its risks."

Dr. Lusk advises entire abstinence from its use, unless as a prophylactic against post partum hæmorrhage. One paper only has come to the notice of the writer in which smaller doses are advised from practical experience. This is from Dr. W. H. DeCamp,¹ who declares his conviction that ergot can be safely and beneficially given for the purpose named, provided the dose is properly regulated. He states that ten to fifteen drops of the fluid extract will always excite uterine contraction, and that it must not be pushed too far, or tonic contractions may result.

The writer administered this drug for many years, in cases not very frequently seen, where the second stage of labor was retarded by insufficient contraction and no pelvic obstacle existed. He regards it as a valuable resource in such cases, and has never witnessed, in his own practice, the tetanic contractions attributed to it since he learned how to employ it. For this purpose an infusion of the freshly and coarsely powdered kernels, two grammes (about thirty grains,) to eighty-five grammes of water, or about

three ounces, has been the preparation used. Of this a tablespoonful given every thirty minutes until some effect was apparent. In some cases this was obvious after one dose, in some two or three were required. In cases of nervous exhaustion on the part of the patient, a full dose of quinine was also given.

It should be added that the writer, as a rule, makes use of anæsthetics in labor, save in some exceptional cases of feeble uterine action, and that where ergot was administered and the pains become efficient, the anæsthetic was also used. How much modification of the effects of the former were produced by the latter agent he cannot positively determine, but is sure that they act well together.

Dr. Fordyce Barker, at the last American Gynæcological Society session, after enumerating the conditions in which ergot was inapplicable, stated that there were cases where it could be used with great advantage. He usually gave an anæsthetic and then full doses of ergot, and the result had generally been that labor was speedily and successfully terminated.

In this connection it might be mentioned that Mr. Fancourt Barnes claims that nitrate of amyl possesses properties antagonistic to ergot, and states that three minims of this drug, added to one drachm of ether, and taken by inhalation, will act as a sedative and anæsthetic without producing loss of consciousness, and will also subdue the trismic contractions produced by full doses of ergot.

There is no doubt that this drug has been abused, and what valuable agent in the materia medica has not? That it has been given when entirely inappropriate, with only deleterious effects. There is no less doubt in the mind of the writer that the crusade against it has been due, not entirely to its improper use, but to the fact that the fashion of ergot use has given place to the fashion of forceps use, in hastening labor. Forceps, however useful, do not take the place of ergot. The child may be speedily removed by the former, but the ergot must be given after, to prevent the hæmorrhage which insufficient uterine action is apt to induce.

The contrariety of views in regard to the usefulness of anæsthesia for the relief of pain in labor, also appears to the writer only explainable upon the supposition that it has been improperly and injudiciously used by those who oppose it. This has been before the profession between thirty and forty years, and during this whole time, and to-day, many obstetricians of eminence constantly employ it as safe, serviceable and entirely beneficial, while others denounce it as inducing post partum hæmorrhage, and various other evil effects, both upon mother and child.

The writer has previously recorded the favorable results of his own experience in its use since 1847, and can here only attempt briefly to show how such diverse opinions may be, and probably are, the result of faulty administration.

Mr. Coates, in a recent article¹ upon the true method of inducing surgical anæsthesia safely, by the use of small quantities, repeated as often as needed to produce the desired effect, uses an illustration which is even more applicable to its obstetric use. He says,

¹ *Western Medical Reporter*, October, 1881.

¹ *London Lancet*, January 27, 1883.

"the educated practitioner, who has made up his mind to give one grain of opium every hour, or twenty grains of chloral every four hours, for twenty-four hours, would hardly think it the same thing to give the twelve or sixty grains at once. There are three stages of anæsthetic effects which may be produced: First—the lessening or annulling of sensibility to pain; second—by increased dose, the abolition of intelligence; third—the abolition of mobility. The method and object of anæsthesia in surgery and labor differs very widely. In the former it is generally carried to the second if not to the third stage of effect before the pain is inflicted. For the latter it is rarely necessary to produce much more than its first effect, and this is produced "pari passu" with the pain. A little experience will soon teach the physician how to arrest its effect at this stage, or at least before the second is fully attained, and to vary the amount as may be required by different degrees of pain.

Care in administration as to the quantity employed and the length of time, and regularity, of inhalation, is the whole secret of successful use. As a rule it should not be regularly given until the beginning of the second stage of labor, although where progress at an earlier period seems delayed by the rigidity of the os, the inhalation of ether in small quantity will quiet irregular contractions, and effect a more rapid cervical expansion. After the second stage of labor is reached, inhalation should be allowed only with each pain, commencing when uterine contraction is first felt to be returning, by a finger in the vagina, or by the sensations of the patient, with full inspirations for a minute or two, until uterine contraction has reached its climax. The inhaler is then at once to be removed, and not again used until the pain again recurs. When little experienced in its use, the writer sometimes allowed inhalation to relieve feelings of discomfort or alleged pain during the intervals of uterine contraction. This resulted in irregularity of recurrence, and disturbance. He can clearly see that where the rule of administration just given is not mainly adhered to, disappointment as to general results might ensue. Not only should the time of administration exactly correspond with that of the commencing and augmenting pain, but as the labor progresses, and pain increases in severity, the dose should correspond.

There is no proof which the writer has ever seen, that used in such a manner, anæsthesia produces, or tends to produce, post partum hæmorrhages.

Dr. Barker spoke very positively upon this subject¹ when he said, last fall, that he had used chloroform in several thousand cases, and had not had post partum hæmorrhage but in one instance. He always, however, gives ergot after placental expulsion, to promote uterine involution.

It has been said to narcotize the child and lessen the favorable convalescence of the mother. The writer has seen no evidence that this is true. Where it has been used most fully and freely, the children have cried vigorously immediately after birth, and as to the mothers, the conviction was strongly forced upon him that convalescence was more rapid and per-

fect under its use, when compared with the previous results of six years without it. We all know how pain exhausts nervous power; this is avoided.

In conclusion, if anæsthesia ever produces post partum hæmorrhage, injury to child, or other than beneficial results, experience tells us that it must be due to the impurity of the anæsthetic employed, or to the want of that experience and discretion in its use, which is necessary not only here, but in all therapeutic measures which we employ for the relief of human suffering.

ANTISEPTICS IN PRIVATE OBSTETRIC PRACTICE.

A few words of inquiry as to the extent and necessity of aseptic precaution in ordinary labor in private practice. A little more than a year since Dr. Robert Barnes published¹ a paper upon the subject containing many valuable suggestions. He divides toxæmia into endosepsis, autosepsis, and exosepsis, and counsels measures for the avoidance of each. With auto-infection, at present, we shall mostly deal. For the avoidance of this he gives directions for routine aseptic minutiae, including washing out the uterus once or twice daily, with plain or carbolic water—the attendant bathing the hand in carbolic acid solutions, all chamber utensils being rinsed with the same, and a little left in them.

None of those prophylactic measures seem to the writer necessary in cases of uncomplicated labor, and some of them absolutely dangerous. Intra-uterine injections are especially so regarded, and even those of carbolic acid solutions into the vagina have not always been harmless. Dr. Minot, of Boston, a few months ago, wrote², that "he had been in the habit of using carbolic vaginal injections after labor, but since alarming symptoms had followed in two cases, he now only makes use of them when the lochial discharge becomes offensive." At a meeting of the New York Academy of Medicine, last March, a case was related, in which, after a week's use of uterine injections, a chill, followed by a decided rise in temperature, occurred, and Dr. Barker stated that, although he had occasion frequently to resort to this measure, it must be used with care and not too long, even in conditions which required it. He remarked that the uterine sinuses closed ordinarily within three or four days after labor, and he had seen cases where he felt convinced that the use of this means, by the Chamberlain tube, had reopened some of the blocked up sinuses, and absorption of septic material had followed. In normal cases, outside of hospital service, the writer must think it bad and meddlesome practice to use not only carbolic solutions for vaginal and uterine injections, but *any* vaginal douche, on account of its tendency to remove from the bruised and excoriated surfaces an exudation which nature provides for their protection; besides, such measures as used by ordinary nurses may, through carelessness or ignorance, be made to supply increased facilities for septic contact and absorption. But whatever may be the necessity for such measures, or others, in hospitals, when the atmosphere is loaded with poisonous emanations, and however necessary strict cleanliness.

¹ *American Journal Obstetrics*, January 1882.

² *Boston Medical and Surgical Journal*, November 23, 1882.

¹ *Trans. Am. Gy. Soc'y*, 1882.

on the part of the attendant at all times and in all places, an experience of upwards of forty years convinces the writer that either these minute aseptic usages are unnecessary, or, that a great and sudden change has taken place in our external conditions, or in the female organization; for, during the attendance of many hundreds of obstetric cases, not unfrequently severe and protracted, in which there was very little interference with nature's powers, and no aseptic precautions observed, except cleanliness as far as possible, very few cases of child-bed fever developed, none of any gravity, and among his own patients he never saw one fatal. There is no question as to the utility of vaginal irrigation, carefully performed, in cases of foetid lochia, when associated with rise of pulse and temperature. We have, in this case, absorption of the products of decomposition. It has been stated that the poisonous principle of septic fluids has been isolated in the form of two alkaloids. Dr. Simpson, of Aberdeen, considers this proved. This is, however, not material to our purpose; the poison is there, and in the present state of our knowledge, we have no proof that we can chemically destroy it in the human organism, by any agent which can be safely used. We can remove it, not by a syringe, but by thorough irrigation from a reservoir which affords a constant stream of water at 96°, until the fluid shows itself clear as it flows out. The material used is of little importance, provided it be harmless. Its value does not depend upon the addition of a germicide of sufficient strength to destroy bacteria, for its purpose is simply to wash away the decomposing detritus of blood and tissue. Lesions of the vaginal tract or uterine neck are more liable to absorb poisonous material than the uterine cavity itself, and hence vaginal irrigation, only, will often prove sufficient. As an illustration of this, the writer will append a condensed statement of a case furnished by Dr. N. Senn, of Milwaukee. Patient a primipara of twenty-eight years; labor tedious, and completed by forceps in the hands of a skillful accoucheur; child born healthy; considerable hæmorrhage after placental delivery; Dr. S. saw the patient four days after, in consultation; she had had a chill two days before, and slight chills afterward, with high temperature and profuse sweating; when he saw her the pulse was 120, temperature 102½° F.; the labia, vaginal wall, and cervix, on the right side, were found deeply lacerated, and the wound filled with coagulated blood, the vaginal discharge very offensive, and the right para metrium exceedingly tender; anti-pyretic doses of quinine had failed to control the temperature; constant irrigation was advised, and performed by means of a rubber tube attached to a fountain syringe, and inserted into the vagina, so that the upper extremity reached the highest point of the wounded surface; the reservoir was suspended above the patient's bed, and the rubber tubing secured in place by strips of adhesive plasters; a solution of 5 parts of salicylic acid, 100 of rectified spirits of wine, and 895 of pure water, kept at the temperature of the body, was allowed to slowly flow through, making its exit into a bedpan, which was changed when necessary. About two gallons were used daily. The

temperature fell the first day to 100° F.; the irrigation was continued four days; the wound assumed a healthy appearance, and the patient rapidly recovered without an untoward symptom.

At the meeting of the New York Academy of Medicine, April 26, D. R. Tauszky read a paper¹ upon treatment after parturition, in which he advised, for the relief of offensive lochia, accompanied by fever, syringing the vagina several times a day with a disinfectant solution, and thought uterine injections unnecessary, save in cases of internal violence, such as attend manual separation of the placenta or use of the forceps. When they are deemed necessary, prefers thymolized or simple water to carbolyzed water.

In a discussion in the New York Academy of Medicine, April 26, the opinion seemed quite general that septicæmia in the majority of cases originated in wounds of the vagina and cervix. Dr. Chamberlain remarked that a breach of surface anywhere in the genital canal might be causative; but "he did not deem the existence of septicæmia an indication for washing out the uterus, unless the cause could be located within that organ, though it might be an indication for washing out the vagina." Doubtless the retention of decomposing material within the uterus is, at times, the cause of septicæmia, and if the vaginal irrigations do not speedily reduce the temperature, intra-uterine irrigation may be needed. For this purpose, however, the writer believes that a very weak antiseptic solution, or even water alone, is all that is needed. The results recorded by Dr. E. Hervieux,² of Paris, thirteen years ago, in cases of hospital puerperal fever, seem to confirm this view.

While writing, an article by Dr. T. G. Thomas,³ lately published, has attracted attention from its bearing upon this subject. Two severe cases of puerperal septicæmia are detailed, in which uterine injections of carbolic acid were employed; but this part of the treatment not commenced until there had been time for a full development of the autogenetic poisoning. Two days were lost after the first manifestation of the disease in the first case, and five or six in the second, before Dr. Thomas saw them and commenced this treatment. The second case died twenty-four hours after. The first, a primipara, had a short and uncomplicated labor. The nurse was directed to syringe out the vagina carefully, the next day, with carbolyzed water, which was done. About thirty-six hours after labor the temperature was 101°, twelve hours after this 102.5°, the succeeding morning 103°, no chill having occurred, but some pain in the right iliac fossa; the same evening the temperature was 106.5°, the pulse 145. This was the condition when Dr. Thomas saw her. He found a bilateral cervical laceration reaching to the vaginal juncture, and directed washing out the uterus with carbolyzed water. This was carried out by two physicians, who remained with her during the night, every four hours, by means of a Davidson's syringe and Chamberlain tube. The next morning the pulse had fallen to 120, and the temperature to 101°. She felt much

¹ *Medical Record*, May 26, 1883.

² *Traité Clinique et Pratique des Maladies Puerpérales*, Paris, 1870.

³ *New York Medical Journal*, March 31, 1883.

better, but had taken opium freely all night. The uterus was now washed out at longer intervals, but the temperature again rose, and again the injections were resumed every three hours. Opium was also freely administered, ten grains of quinine given every eight hours, and rubber tubing, through which a current of ice water ran, was also placed over the abdomen. The injections were continued two days, and then stopped; the temperature again rose, and they were resumed. On the thirteenth day after this treatment was commenced the intervals between the injections were made longer, and they were gradually discontinued. Is there any evidence here to show what influence the carbolic acid had in the result? We see that very active medication of another character was resorted to, and we are not informed of the strength of the injections, or whether the quantity of fluid was sufficient to thoroughly cleanse the uterine cavity, so that the fluid ran out clear at the close of the procedure. A syringe was used, not steady irrigation, and it appears doubtful whether this result was fully attained. The temperature and pulse improved after each injection, and we might suppose that the carbolic acid aided to produce this effect, had it not been observed again and again, as a result of simple cleansing, when no acid was used. It appears to the writer that the poison which had already been absorbed before the injections were begun, continued to produce its effects in the organism, more or less influenced by the powerful medication employed; possibly increased, or renewed by the frequency of the injections; certainly only modified, as far as their influence was concerned, by the imperfect washing away of the uterine contents. It is very probable that in this case the seat of absorption was the lacerated cervix, and that constant irrigation of this region, earlier begun, would have produced speedier and more decided results.

Dr. Thomas' conclusion from this case is, that puerperal fever should be treated upon as simple a plan as septicæmia of any other kind, viz.: by washing out with some antiseptic fluid the surface where the disease originated. In his language: "With some fluid which will remove the poisonous material which is being absorbed, and also, *as far as possible neutralize its poisonous qualities.*" The last part of this sentence intimates a doubt as to the possibility. Is there any evidence that an antiseptic agent can be safely used of such strength as to destroy, or neutralize, a formed poison in the tissues or cavities in the body? We know that they can be so used as to prevent the formation of such poisons, but it is necessary that this influence should be constantly present and in action, and not pass away with the morbid products which are removed by injections or irrigations. In the latter case the writer can see no cause for the relief except in the *removal* of the poisonous material.

The case is quite different with the treatment advocated by Dr. Alloway, of Canada,¹ who reports, recently, three cases of puerperal septicæmia which he treated by first washing out the uterine cavity with

plain or carbolized water, and then, by means of a Sims' speculum and a tent insertor, passing a suppository of iodoform of ten, fifteen or twenty grains to the fundus uteri and leaving it there. He usually employed this procedure night and morning, and had observed no poisonous or unpleasant results.

By the use of this agent in this manner, a constant antiseptic influence is generated which should prevent the development of poisons, if it can be used safely in sufficient quantity.

Similar in operation, and less liable to objection, is the effect of the oil of eucalyptus globulus, so much lauded by Dr. Sloan¹ as a preventative of septicæmia, when it is to be feared, on account of lesions in the parturient canal from forceps or any other source. He employs it in the form of suppositories, consisting of oil of eucalyptus two parts, white wax one part, ol. theobroma two parts. Each suppository contains about twenty minims of the oil. He states that it is neither poisonous or irritating in this quantity, does not coagulate the lochia, its odor is agreeable, and it appears to aid in uterine contraction. Mr. Lister has also stated that this germicide was entirely devoid of any deleterious effects.

The conclusions which the writer thinks can be legitimately drawn from what has been presented, are, that the danger of auto-genetic poisoning after ordinary labor in private practice is not such as to demand the routine precautionary minutiae which Dr. Barnes has suggested; that very many cases in which the lochia are offensive, are attended with, and followed by, no disturbance; and that cleanliness as thorough as can be attained, and care as to the general condition of the patient, are only usually necessary. That even in cases where rise of pulse and temperature occur, vaginal irrigation is frequently sufficient. That in cases where relief has followed the use of carbolized injections, vaginal or intra-uterine, the advantageous results do not so much depend upon antiseptic virtues as upon the cleansing effects by even a simple fluid, used in such manner and quantity as to secure entire removal of any decomposing matters retained in the uterine or vaginal cavity.

That when there is reason to apprehend absorption of morbid material by existing vaginal or cervical lesions, the suppositories of ol. eucalyptus are much preferable to carbolic acid syringing, though they may be advantageously preceded by vaginal irrigation. That if these means should not avert a rise of pulse and temperature, continued irrigation of the parts affected, by a weak solution of Condyl's fluid, salicylic acid, or some similar agent, should be employed. If these do not soon lower the temperature, or if the seat of absorption appears to be located in the uterus, intra-uterine irrigation of the same character may be adopted, to the extent of washing away all decomposing material. When antiseptic intra-uterine action is clearly indicated, the introduction of iodoform suppositories will accomplish everything additional that can be done locally, in the present state of our knowledge of the subject.

¹ *Canada Medical Review*, March 17, 1883.

¹ *Med. and Surgical Reporter*, March 17, 1883.

PLACENTIA PRÆVIA.

The report of M. Hoffmeier, of Berlin,¹ upon this subject, deserves notice from its unusually favorable maternal results. He cites forty-six cases, thirty-five of which occurred in one year. Three of these were so near death from hæmorrhage when first seen that there was no opportunity for treatment. Of the remaining forty-three, six were treated by the waiting method and the tampon; in the other thirty-seven no tampon was used. Of the six treated at an earlier date by tampon, one died, two had a long and severe illness, and four of the children were dead. Of the thirty-seven others treated differently, one mother only died, and she had been treated by the tampon for twenty-four hours, and the placenta was offensive when delivered.

This is a maternal mortality of 2.7 per cent., which is much less than any previously published rate. The results for the children, even with no hurried delivery, were: Seventeen already dead, three died from perforation of the placenta, and three were premature—giving 37 per cent. of the whole living, which reaches the usual standard. The placenta was located centrally in nineteen, laterally in sixteen, marginally in eight.

In central insertions he favors perforation of the placenta and bringing the feet through. This was done in five cases, in three of which it was necessary on account of the urgency of the symptoms, and two in which the child was already dead. His practice is to wait until some symptoms of labor are present, in the shape of uterine contraction or a funnel-shaped dilatation of the cervix, then as early and actively as possible proceed to deliver. The earlier this is done the more easily version, by the combined external and vaginal method, (one or two fingers in the os,) can be effected. This version was practiced whenever possible, and the hand introduced into the uterus only when absolutely necessary; the feet having been guided to the os and there seized, firm traction made, and the hæmorrhage effectually stopped by the buttocks. This was done in thirty cases. In six—three of which were breech presentations—internal version was used, and in one, a head presentation, forceps applied. After bringing the breech into the uterine opening, the rest of the delivery should be slowly accomplished. The condition of the child may modify this rule, but must not increase the mother's risk. He says: "One must have the courage to let a doubtful child's life be lost in his hands, rather than subject the mother to an increase of danger."

He states that hæmorrhage occurred after delivery in some cases, although ergotine was given, subcutaneously, during extraction. This was easily controlled by ergotin and iced or hot water injections.

Such maternal results are certainly worthy of attention, for Mueller estimates the total mortality in such cases at not less than thirty-five to forty per cent., and Lusk states that as many as one in four die during or shortly after delivery.

Dr. E. I. Partridge, of New York, has recently

reported¹ four cases of this affection, in three of which labor was induced, at full time, by the use of Barnes' dilators, in the other labor occurred spontaneously. Internal version was practised in three of the cases, the fourth, a head presentation, was delivered by the forceps, the child being probably premature, was still born. All the mothers recovered, and two of the children were saved. The relator objects to tampons, and deems the rubber bags safer and more efficient. He states that the cervix is usually soft and easily dilatable, but uterine action does not follow to the same extent as after the dilatation of a healthy cervix; the contractions are generally insufficient to drive the head firmly down, if it presents, and the use of the forceps is difficult, from the necessity of avoiding the placenta, and often from the length and thickness of the cervix; hence, almost without exception, turning is preferable. As associated with the treatment of this condition, a new method of plugging the vagina may be here mentioned, which Dr. Chassagny, of Lyons, recently described to the Paris Academy of Medicine.² He states, that he had made use of it in two cases of abnormal insertion of the placenta, with the effect of inducing premature labor without hæmorrhage. The apparatus consists of a bladder to which a rubber tube is firmly attached. The empty bladder is introduced into the vagina, and a syphon is then connected with the tube, which allows a flow of water into the bladder from a vessel placed about two and a half feet higher than the pelvis of the patient. To prevent the expulsion of the bladder a cylindrical speculum is introduced after it is in place, which is forced out as the water enters. The act of distension separates valves attached to the sides of the speculum, which by resting upon the internal surface of the vaginal opening, occlude the outlet and prevent expulsion. The pressure of the full bladder causes abundant secretion, and soon induces rapid dilatation of the os and energetic uterine action. It is also stated that, in cases of post partum hæmorrhage, when this apparatus is introduced into the uterus and distended, it closes the uterine sinuses and determines uterine contraction, which occurring, the water is allowed to flow out slowly, until the organ is fully contracted.

PART II.

DYSMENORRŒA.

A few remarks concerning a painful female affection, which we are all, and often, called upon to relieve. Our object is not to enter upon a full discussion of the etiology of dysmenorrhœa, but to question the causative influences of some conditions supposed to produce it, to suggest the close alliance of many of its ultimate determining causes, and allude to some methods of local treatment.

Anteversions and flexions have not only been shown by Fritsch, of Breslau; Vedeler, of Christiana; Herman, of London, and others, to be generally normal conditions; but both these and stenoses, once deemed principal factors in the production of this affection, are proved to rarely exist to such a degree as

¹ *American Journal of Obstetrics*, Supplement, November, 1882.

¹ *New York Medical Journal*, December 1882.

² *British Medical Journal*, March 3, 1883.

to prevent free egress of the menstrual fluid. They are not present in many instances of painful menstruation, and where either, or both, do exist, they are not necessarily attended by it. We may fairly assume that, although at times factors in the production of dysmenorrhœa, they are so only quite exceptionally, and, as Dr. Macan remarks, "we must look elsewhere for the cause." Perhaps we may gain a clearer idea of the usual nature of this affection, not only by reviewing some of the morbid conditions and states which have been assigned as causes, but by also noting the treatment which has proved effective, and deducing thence the character of the abnormal conditions which such measures would be reasonably supposed to relieve.

Mr. Clement Godson,¹ of London, in some remarks, about two years since, upon what is called spasmodic, or obstructive dysmenorrhœa (though he doubted the obstruction, and prefers the former term), says: "It seems tolerably certain that the most sensitive part is the so-called internal os, that portion of the uterine cavity which merges into the cervical canal. I cannot explain the pathological cause why this part is so hyperæsthetic. I know, however, that the morbid sensibility can be overcome by the passage of metallic bougies." This treatment, in his hands, used about midway between the menstrual periods, was quite successful; though in some cases the difficulty returned, and he was obliged to resort to the introduction of intra-uterine silver stems, which proved curative.

This same method, the introduction of metallic bougies, was also employed quite successfully by Dr. Mackintosh, of Edinburgh, as early as 1836. His theory was that of obstruction, although he remarks, "I believe it may sometimes depend upon inflammation of the lining membrane of the uterus, as well as inflammation in the substance of the cervix, and on the encroachment of tumors diminishing the calibre of the outlet."

Dr. Godson, after advancing valid reasons for not believing obstruction the cause of the difficulty, and yet regarding it as curable by dilatation, asks the pertinent question, "How does the dilatation relieve the dysmenorrhœa?" In reply, he remarks, I have already suggested that the pain seems due to spasm, which, at the approach of the menstrual flux, seizes upon the uterus, the endometrium of which is in a state of hyperæsthesia. The contact of a foreign body like a bougie or dilator seems to increase the morbid sensibility at first, but as the structures become accustomed to its presence, the spasm subsides. The impression left upon the endometrium, after the withdrawal of the bougies, is such as to render it less sensitive and liable to spasm. How is this explained? This he does not attempt, and it would be difficult upon the assumption that hyperæsthesia alone was the condition of the cervical mucosa. The beneficial action of the bougies would, in this case, always be transitory. But assuming hyperæmia to exist, and to cause, or at least aggravate the hyperæsthesia, an attempt at explanation can be offered. The pressure produced by bougies, tents, intra-uterine

stems, dilators, etc., would not only lessen the hyperæsthesia, but effect, by frequent or prolonged pressure, a change in the hyperæmic condition, by producing absorption, or other nutritive modification of the tissues, and thus restore the lining membrane to a normal condition. This idea is in harmony with the results secured by such remedial agents. Dr. Munde says that for temporary relief he employs Ellinger's dilator; but for permanent cure, tupelo tents. The latter, by their prolonged pressure and contact, naturally produce more effective modification in the tissues.

What is the nature of the pain in dysmenorrhœa? The spasm induced by the disordered condition of the lining membrane, which was accepted by Dr. Godson, might have led him to the conclusion arrived at by Dr. C. D. Palmer, of Cincinnati², who regards dysmenorrhœa as essentially a neurosis. The writer fully accords with this opinion, and, if he understands Dr. P.'s remarks correctly, also with the view that in some cases this neurosis is a result of general health disturbance, of neurasthenia, anæmia, want of development, etc. These often find relief from change of climate and surroundings, or other agencies which improve the general condition; but in other, and perhaps the majority of cases, the neurosis is the consequence of the abnormal condition of the endometrium, the mucous membrane of which is turgid, or hyperæmic, and "its sentient nerves in a state of hyperæsthesia," as a result. Even in cases where shreds are discharged the pain is still neurotic, though the false membrane acts obstructively in producing it. The most plausible explanation of the origin of this latter form, is that of Dr. Reamy—that the membrane is not a product of inflammation, but a normal one, that is usually removed by undergoing gradual change through fatty degeneration, and then forms the debris of the menstrual discharge. This solution and disintegration of the membrane is prevented by lessened vital activity, and consequent failure of the normal nutritive changes. This is also the view of Williams and Aveling.

Professor Heinrich Fritsch, of Breslau, in a recent article² upon dilatation of the os uteri, etc., ascribes dysmenorrhœa, in the large majority of young women, to a dilatation and hyper-secretion of the muciparous glands. To facilitate the passage of this over-secretion he dilates the external os, or makes small crucial incisions, snipping off the little lobes thus formed, and then employs free irrigation of the uterine cavity with weak disinfecting solutions for one or two weeks, for the purpose of reducing the over-action; he also dilates the internal os if not already patent. He speaks of other cases occurring in parous women as well as in virgins, and, although he considers most cases of this affection as of complicated origin, states that he has both temporarily and permanently effected cures by a single, and by repeated, use of his dilators.

The local agents which have been mentioned, whether mechanical or medicinal, appear to have produced their beneficial effect by acting upon the

¹ Transactions of London Obstetrical Society, 1881.

² Cincinnati Lancet and Clinic, April 8, 1882.

² American Journal of Obstetrics, February, 1883.

cervical and uterine mucosa. When the bougies or stems fill the cervical canal they cause a determination of blood to the part; so much is this, at times, the case, that in the use of the stem pessary it has been asserted that some bleeding, or even a free discharge, is an indication that the application will be effective. To this same alterative effect must be ascribed the relief obtained from local excitant or mildly caustic applications to the uterine mucosa. Dr. Fordyce Barker stated, a few years ago, that he had cured cases of membranous dysmenorrhœa by dilating the os and modifying the condition of the uterine lining membrane by the introduction of pencils of iodoform.

There is another agent, which, from the experience recently published of its results, as well as from its success in the hands of the writer, appears better adapted to produce the nutritive changes in the endometrium necessary for the cure of this affection than any generally employed.

Dr. I. D. Mann says, upon this subject,¹ "The old-fashioned term, neuralgic dysmenorrhœa, still expresses all that is known of the causation of many cases. There is also often an irritable condition of the mucous membrane of the uterine cavity, which, under certain circumstances, evokes painful uterine contractions. In such cases electricity affords great relief, probably by modifying nutrition, and from the direct action of the current upon the terminal nerves. The anode is carried into the os, and the cathode applied over the ovarian regions. If ovarian neuralgia exist it can be relieved by placing the anode over the ovary and the cathode over the lumbar spine. It is inadmissible in ovaritis proper, but tenderness, with slight enlargement and absence of systematic disturbance, is probably due to passive hyperæmia, and is often quickly relieved by the same means. The relief in simple ovarian irritation is speedy and very decided."

Dr. J. S. Rockwell² speaks very decidedly of the beneficial effect of galvanism in what he terms spasmodic dysmenorrhœa, and, in cases where great tenderness of the os uteri and the neighboring vaginal walls existed, he ascribes the satisfactory results to the influence of this agent in relieving spasmodic muscular contractions of the os. The results are undoubted, but the writer thinks the action of this agent far more comprehensive. It brings relief, not only by removing the spasmodic action, but, which is of much more importance, by also modifying the disordered conditions which underlie the neurotic disturbance. This is probably effected by what Remak calls the catalytic action of the current.

Over thirty years ago the writer treated dysmenorrhœa upon the stenosis principle, with fair success by dilatation; farther experience convinced him that it was not the narrowness of the passage which lay at the foundation of the difficulty, and experimenting first with faradism and later with galvanism, he ascertained that even better results could be attained without any pressure upon the mucosa of the uterine neck. No record has been preserved of the cases thus treat-

ed, they weremany, extending over a period of at least thirty years. Faradism, with a moderate current was found efficient, but preference in most cases was given to galvanism; the covered anode is placed usually over the region of the lumbar vertebræ, at times over the pubis or ovaries, while the cathode, connected with an insulated sound is applied to, or carried into the uterine os; the current should not be strong, from 8 to 10 cells of a Bartlett or Fleming battery, never sufficient to produce pain or annoyance, and occasionally reversed. The sittings, from twenty to thirty minutes, should be repeated at intervals of three to five days between the menstrual periods, until a week before the expected return, then daily for four or five days. After a few applications, the next menstruation will sometimes be attended with less pain, and if continued regularly, the second nearly or quite painless; usually, however, a longer use is required, and in cases of long standing the treatment must be quite protracted. Positive proof is wanting that membranous dysmenorrhœa has been cured by this method, in the hands of the writer, but he feels quite assured, from the description of the discharge, that this was effected in some instances.

The deductions which the writer thinks may be made, are, that dysmenorrhœa is a neurosis, sometimes resulting from derangement of the general health, and especially that of the nervous system, but more often due to morbid conditions of the lining tissues of the cervix and uterine cavity, which differ rather in degree and extent, than in character or location (always excepting those caused by virulent infection) and which vary from simple hypersecretion of the muciparous glands, to hyperæmia and hypernutrition of the endometrium and escu of the uterine tissues.

In the former cases medical and hygienic measures are most essential; in the latter, the morbid conditions are relieved in the earlier stages by mechanical agents, the pressure from which produces a change in the nutrition of the affected parts, and in this stage as well as in some more advanced, by local applications which act upon the same principle and produce a like result. That faradism and galvanism not only relieve spasmodic action, but the latter especially is curative by the power it possesses, when properly and perseveringly employed, to effect such favorable changes not only in the uterine mucosa, but in the submucous tissues, and even in the parenchyma of the uterus itself, as render it a most efficient means of cure in this affection.

THE APPLICATION OF ELECTRICITY TO GYNÆCOLOGY.

Although the effects of electricity in some of its forms have been already mentioned, as a method of treatment in pelvic affections, and its manner of use partially described, the recent indications of a better recognition of its value, and of an increased disposition to investigation of its various powers, will perhaps warrant a few more remarks.

We fully agree with Professor Erb,¹ when he urges "the more extensive utilization of a curative agent which has gained for itself a permanent position, and the effect of which, for manysidedness, energy, and

¹ *London Lancet*, July 23, 1881.

² Lectures upon Medical Electricity, 1881.

¹ *Handbuch der Elektrotherapie*, Leipzig, 1882.

reliability, are not surpassed by any remedies with which we are acquainted."

In regard to the explanation of its action, we have, at present, little more than hypothesis. After discussing different theories, Prof. Erb concludes that our main task should now be to discover the therapeutic resources of this agent in a somewhat empirical manner, as our knowledge of the precise method in which the unquestionable therapeutic results are attained is still defective; and it is premature to limit its use, or always endeavor to make it accord with physiological premises, while we know next to nothing of the molecular disturbances of nutrition.

Professor Dujardin Beaumitz, of Paris,¹ in a lecture recently given, after speaking of the action of galvanism upon the nervous and circulating systems, touches upon the important physiological effects which we may expect to obtain from it in pelvic affections, when he writes: "Under the influence of continued currents, nutrition is seen to improve, and the vitality of tissues is restored with new energy. Although we have no absolutely scientific explanation of this effect upon nutrition, it results probably from a double action. First—that directly exerted upon the trophic nerves; second the action upon the tissue molecules of the organisms whose vital energy is increased." Remak has called this a catalytic action, to distinguish it from the electrolytic, which is destructive, by producing solution of the tissues, while the former promotes circulation and absorption by dilating the walls of the blood-vessels.

The rules for selection of the different forms of this agent for producing the best effects in varied conditions, are not fully settled. The directions of Prof. Beaumitz are brief and practical, and are based upon experience: "When we desire to modify cutaneous sensibility and nutrition in general, we make use of static electricity; when we seek to limit the action to a group of muscles, or to restore contractility to certain muscles, we use Faradism; when we wish to modify the molecular action of certain nerves, or give new activity to certain tissues, we employ the galvanic current."

A fact is recently stated to have been determined by careful experiments made by Professor Ziemssen,² viz: that the induced current has no influence whatever upon the frequency of force of the cardiac contractions, while the continued current most distinctly affects them. This is of practical importance, especially in case of threatening death from chloroform.

The rules just quoted are, of course, general, and only experience can teach, in our present state of knowledge, which particular form is best applicable to each case. The writer's deduction, from his own use, would be, that galvanism is more generally indicated for gynecological use, although Faradism is efficient in some conditions. Static electricity, made recently more available by improvements in the instrument, does not promise to be as directly useful to the gynecologist, except as an adjunct to general tonic treatment. It has been used, however, efficiently in amenorrhœa by Golding Bird and others many

years since. Dr. Blackwood, of Philadelphia, has made use of it as a galactagogue, and states that it is the only form from which he has obtained beneficial results in agalactia.

In regard to the strength of the current used, as well as the frequency and duration of the application, there is considerable difference in the practice of operators. They of course must vary in accordance with the affection treated and the result desired. As a general rule, unless for the check of post partum hæmorrhage, a medium current is sufficient to produce pain or disturbance, and employed daily, or once in two or three days, for twenty or thirty minutes, is preferable, for gynecological use, to a more powerful application for a shorter time. Dr. W. O. Stillman, in a recent article,¹ commending the general tonic effects of galvanism, remarks that its best effects are often not realized from using a too powerful current, and that in nearly all classes of cases he has observed the best results from decidedly weak ones. This is also the conclusion of Drs. Beard and Rockwell, and the writer's experience is similar.

The successful employment of these agents in extra-uterine pregnancy and dysmenorrhœa has been already noticed. Galvanism is also efficient in uterine subinvolution and its results. This condition has recently attracted attention as the cause of subsequent and serious uterine derangements.

We can only recognize the physiological change occurring in involution, by the gradual and nearly regular diminution in the size of the organ. When normal, according to most authorities, the uterus cannot be felt above the pubis after the tenth day, and the time necessary for the entire removal of the old tissues and their replacement by new material is estimated by A. Serdukoff, of Moscow, as eight to ten weeks. The frequency of subinvolution may be inferred from statistics similar to those presented to the British Medical Association by Dr. J. Williams.² He stated that of 113 deliveries in one year at the London lying-in hospital under his charge, only ninety might be considered as normal in involution at the twelfth day; that is, the uterus had then retired into the pelvis; but this does not necessarily ensure subsequent normal progress. He thinks hæmorrhage, dysmenorrhœa and prolapsus are often results of imperfect involution.

The causes retarding or checking involution are both general and local. The former can often be beneficially treated before as well as after labor. Some of the latter, as retained portions of placenta, or membranes, rents in the perineum or cervix should receive early attention, and will not be here considered. Dr. Williams says: "The prevention of subinvolution means three things: an empty uterus, a well contracted uterus, and the absence of fever." An empty uterus being secured, the indication is to produce and perpetuate normal uterine contraction. For this purpose the claims only of electricity will be now noticed, as it promises the best results, not only in the early stages, but even in the later and more confirmed conditions of uterine-hyperæmia and hyperplasia.

¹ *Boston Med. and Surg. Journal*, April 12, 1883.

² *New York Medical Record*, January 6, 1883, page 16.

¹ *Medical and Surgical Reporter*, April 21, 1883.

² *British Medical Journal*, September 2, 1882.

Its action is both local and general; and in this, as well as in many other affections where galvanism has been beneficial, the result may be ascribed not only to the favorable nutritive changes effected in the uterus, but also to its tonic power in improving general nutrition.

At a meeting of the Paris Academy of Medicine, a little more than a year since, Dr. George Apostoli read a paper in which he proposed the use of the Faradic current in all cases of labor, immediately after delivery, for the purpose of producing more thorough uterine involution and averting engorgement or metritis. In cases of normal and full-term labor, he employed it eight or ten times within about six days. In difficult or premature labor, it was continued longer. In thirty-two cases he had found it always harmless, its effect being invariably calming and sedative. It hastens convalescence by securing more rapid and perfect involution, reduces the amount of the lochial discharge; and prevents uterine deviations; but Faradism is not the best agent. Dr. Paul Helot, in November, 1881,¹ states, among his conclusions from trials of different forms of electricity, that uterine contractions can be produced by a Faradic current when the interruptions are very rapid, but that the process is painful, and should be restricted to the treatment of post partum hæmorrhage; that galvanism with the constant current, interrupted, is the best method, the pain being very slight, and the catalytic action adding to its value.

The testimony of a competent observer, Dr. J. D. Mann,² shows that galvanism will not only secure full involution in an empty uterus after labor, but also that in cases of subinvolution of some duration, it will effect more than any other agent in reducing and removing hypertrophy. He says, in reference to this condition: "It should be treated in the early stage, for when prolonged hyperæmia has produced hyperplasia of the areolar tissue, and the stage is reached when an excess of fibrous tissue preponderates over the muscular elements, absorption becomes a matter of grave difficulty." Again, "In dealing with an hypertrophied uterus, composed of muscular fibers infiltrated with fluid, but sparingly so with cellular growth, any method of treatment which will stimulate the nutrition of the organ, and accelerate the absorption of the morbid products, tends to promote a cure, and such is galvanism." He introduces into the uterus an insulated sound, connected with the cathode, placing the anode over the lumbar spine; a moderate current, 90 dix millevebers, is passed from ten to twelve minutes every alternate day, the current being stable for the first half of the time, and during the last, interrupted at intervals, the strength being then reduced. The patient should remain in the horizontal position some hours after each application. If the uterine wall is so soft as to make the passage of a sound dangerous, a cervical electrode is substituted. He states that in a case recently treated, each application was followed by a temporary discharge, and slight pains of the after-pain type.

¹ *American Journal of Medical Sciences*, January, 1882.

² *London Lancet*, July 23, 1881.

The uterus was reduced to its normal condition in seven weeks.

Dr. Paul F. Munde, of New York¹, states that he has frequently used the galvanic current to reduce the hyperplastic uterus and bring on the menstrual flow; also, that in a case of large cellulitic exudation in the right pelvic fossa, which produced severe sciatica by its pressure upon the sacral plexus, galvanism, vaginal and post-trochanteric, cured it permanently in less than a week. The same author, in another paper², after mentioning the varied and usually unsatisfactory treatment of uterine displacements, says: "Electricity rationally and scientifically employed for a sufficiently long time, offers chances of cure in cases comparatively recent, which call for a more thorough and persistent trial." Still later, before the State Medical Society of New York, last January³, speaking of cervical erosions and their treatment, he says: "In a few intractable cases I have found the negative pole of a galvanic battery applied by a round button to the erosion, the positive sponge being placed over the abdomen, produce a marked tendency to cicatrization. In one such case, grafting of healthy tæubrane upon the denuded surface occurred to me, but the galvanic current finally effected a cure."

Dr. Frank P. Foster, of New York⁴, has used it with relief in oöphoralgia, and concludes an article thus: "The three great remedies for chronic extra-uterine inflammation, are hot water, iodoform, and galvanism." In a private communication he states that galvanism has appeared to hasten the absorption of pelvic exudates, and that in some cases, where great tenderness existed, it has been the only local measure he has found that did not add to the patient's discomfort for the time being; that in pure ovarian pain, apart from inflammatory conditions, he has generally found Faradization more useful.

The writer would add that he has found Faradization and galvanism very useful in amenorrhœa, where general anæmia was not present, and even when the latter existed, and constitutional treatment was obviously required, has found them valuable adjuvants. He has also used galvanism with advantage in cases of cervical and uterine catarrh, and recalls one of long standing, where the beneficial effect was very marked.

We have yet much to learn of the influence of this agent, even in the conditions which have been relieved by its employment, and still more concerning its, until recently, almost unrecognized power of producing favorable modifications in diseased organs and tissues, independently of any electrolytic or destructive action. It certainly deserves attention, investigation, and more careful and thorough trial than has hitherto been accorded.

In the beginning of this paper a reference was made to the recent brilliant advances in gynecological surgery. Prof. Heinrich Fritsch, of Breslau, begins an article upon uterine therapeutics thus: "The general surgical teaching of recent years forces gynæ-

¹ *Am. Journal of Obstetrics*, October, 1882.

² *Am. Journal of Obstetrics*, October, 1881.

³ *Medical Record*, February, 1883.

⁴ *New York Medical Journal*, March, 1882.

cologists, also, to employ uterine surgery more and more, in place of *medical* gynecology."

Dr. Angus McDonald says:¹ "We live in times when thoughtful gynecologists cannot avoid feeling that a tendency to a too frequent resort to surgical and instrumental methods in dealing with woman's diseases is widely, and not infrequently disastrously, present." These are utterances seasonable and pregnant with meaning.

What is to be most earnestly sought by us in the future? The notable success which has attended operative gynecology, since Lister taught the use of carbolic acid, and, by implication, of perfect cleanliness, has had a tendency to call attention away from the less demonstrative, but even more important, investigation of constitutional as well as of local medical methods. Is there not great danger that the patient search for therapeutic resources, general, local, hygienic and all others, which it should be our aim to undertake, will be comparatively neglected?

A successful and brilliant surgical procedure is very attractive; but is not a resort to mutilative surgery, though a great boon to humanity in our present state of knowledge, an avowal of ignorance, or of our inability to cure? While we hail gladly any advance in our surgical art and in the devices for lessening its mortality, we should not forget that, were our attainments in knowledge more thorough and perfect respecting the causation of diseases with which we have to deal,—were our skill in early diagnosis and treatment more sure and extensive, such disordered condition might be arrested and cured before reaching that stage which can only be relieved by the knife of the surgeon.

Our grandest aspirations should lead us to the study of the underlying morbid processes which *precede* graver deviations from the normal state in the pelvic organs. Our endeavor should be to forestall and prevent the latter, not only by rational therapeutics, but by teaching conformity in daily life with nature's laws. "Obsta principiis" should be a motto in medicine as well as in morals.

Woman has in action, for a period of about thirty years, a set of organs upon which depend the perpetuation of the race. At the time these organs begin their functional activity, the greatest care is requisite both physically, mentally and morally to secure to them freedom from injurious influences, and that proper balance of development, which shall fit the woman for her after duties. Here is work in preventive medicine for the gynecologist, if he be, as he should be, also physician, of the most important character. At the very threshold of female life a thousand dangers beset the neophyte. To those resulting from climate and constitutional proclivities, are added, in our artificial life, the exactions of the tyrant fashion, in dress, habits and manners, with all their attendant dangers. It is here the physician alone, who, by instruction, warning and admonition, may exercise some influence in restraining and correcting habits and influences, which may render after life but a scene of illness and suffering.

The necessity of careful constitutional treatment in

pelvic disease has often been urged, but does not receive the attention its importance demands. Specialism, when exclusively practiced, is apt to produce narrowness of view, its efforts for cure to be only a variation in local treatment rather than a careful study of the relations existing with functional disturbances elsewhere, which influences, if they do not produce, will intensify the local troubles. Especially is this the case with those educated as specialists "ab ovo." No one who has not received thorough training in general medicine, and has not tested, confirmed and enlarged the knowledge thus attained, by many years of general practice, is fitted for a specialist.

The human body is an entity, not a mere collection of organs. We must consider not only the local expression of trouble in the pelvis, but aim to fully understand and appreciate the relations of the various parts of the organism; to investigate the influences which general disturbances, neurotic, functional or organic have upon the generative system; which influences are sometimes primarily causative, but more often come into action when disordered parturition, or some other deviations from normal function occur. We hail everything which aids to enforce the usefulness of such studies as a harbinger of onward progress.

Such has been the tendency, for some years, of the utterances of Dr. Fordyce Barker, whose able paper, of last autumn, upon the constitutional origin of leucorrhœa, and the cure of its resulting local lesions by rational therapeutic and hygiene measures, should be thoughtfully read and re-read by every gynecologist.

A paper has been recently published, by Dr. L. C. Boislaniere, of St. Louis, which, in no uncertain tones, calls attention to general conditions as causative in pelvic disease, closing by the statement that our extreme tendency to specialize has led us to attach too much importance to pelvic lesions, and too little to the general condition. In the same direction was also an address of Dr. William Goodell, of Philadelphia, which shows that many affections of the "reproductive apparatus" are merely local expressions of their cause, general neuroses.

Time will forbid dwelling upon this all-important subject. It is only by realizing that the physician is larger than, and must include, the specialist,—that we can progress toward the goal we ultimately hope to reach. All that is new is not progress. We sometimes follow the will-of-the-wisp light of error into devious paths, from which we return, not always enough wiser for the lesson, to prevent again going astray in another direction. True progress in medicine, as in most human affairs, is not usually by a directly onward course, but rather by following a rising spiral curve, which in time brings us again quite near to the point of departure, but upon a somewhat higher plane.

"Experience teaches slowly, and at the cost of mistakes," and through long tentative efforts only, can we arrive at truth. Patient, protracted, arduous labor is necessary. We must

"Still achieving, still pursuing,
Learn to labor and to wait."

Like the first Napoleon, we must veto the word im-

¹ *Edinburgh Medical Journal*, July, 1882.

possible, When medical gynæcology is thus studied and practiced, the writer has confidence to believe, with the larger general and local therapeutic and hygienic resources which such research will in time develop, with closer attention to any deviation from normal functional conditions, and with the clearer and surer diagnosis which the future will bring, that the time will come when the present "brilliant triumphs" of the surgical gynæcologist will pale before the achievements of his medical co-workers:

"Kühn ist das Mühn,
Herrlich der Lohn."

DIFFUSION OF ARSENIC THROUGH THE BODY WHEN THROWN INTO THE MOUTH AND RECTUM AFTER DEATH.

BY VICTOR C. VAUGHAN, M.D., AND
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Within the past six months there has been tried, in this State (Michigan), a murder case, in which an interesting and important question was presented to the medical experts. The facts of the case, so far as expert testimony was concerned, are briefly as follows:—Mathew Millard was accused of poisoning his wife with arsenic. The lady was taken sick about April 18, 1882. She was seen nearly every day, and sometimes twice a day, by a physician, and twice the attending physician had counsel. The lady had long been subject to uterine trouble (the nature of this trouble does not seem to have been understood by the attending physician). During her illness she vomited frequently, and, indeed, seldom retained either food or medicine. The testimony as to the symptoms manifested was so confused and conflicting that nothing could be made out of it. The attending physician thought she had fever, but he never took her temperature. The lady died May 7. After her death the husband requested the undertaker to embalm the body, so as to preserve it until a casket could be brought from Detroit. The undertaker replied that he did not know how to embalm the body. The husband then asked the undertaker to procure some poison, and he (the husband) would inject it into the body. The undertaker procured a poison (he states strychnine), and the accused claims that, aided by his brother, he injected arsenic suspended in water into the mouth and rectum. He claims to have put about a teaspoonful of arsenic into a teacupful of water, and to have injected one syringe into the mouth and two into the rectum. The syringe which he claims to have used was an ordinary bulb syringe, with rectal tube attached.

One hundred and five days after her death the body was taken up, and the stomach and rectum placed in one jar, and a piece of the liver and one kidney in another; and the jars were sent to Prof. A. B. Prescott for analysis of their contents. (When the officers came to remove the body the husband stated that he had embalmed it.) Dr. Prescott found in the stomach and rectum together about twenty grains of arsenious oxide, and from his analysis he

calculated the amount in the whole liver to be from six to fifteen grains, according to the size of that organ. Later the body was again taken up, and the brain and a part of the muscles of the calf of the leg sent to Prof. Prescott for analysis. In these he failed to find any poison.

The question asked the experts, and the one which this paper considers, was: "Granting that the arsenic was injected into the mouth and rectum in the manner claimed, could it reach the liver and other organs outside the alimentary canal?" This was the main question, and on it the experts were divided. Drs. Kedzie, Thomas, and Vaughan held that arsenic so injected after death might reach any or all of the organs of the thoracic, abdominal and pelvic cavities. On the other hand, Drs. Prescott, Duffield, and Gundrum held that arsenic would not diffuse through the body after death.

This seems to be a new question in medico-legal science, and authors have not mentioned it directly. However, whatever testimony can be found in the books certainly supports the negative of the question.

Having determined to investigate this matter, we made the following experiments:—

A large musk-rat, which had been caught by one of the students, was killed, and about 50 grains (3.24 grams) of arsenious oxide suspended in cold water was injected with an ordinary bulb syringe with rectal tube attached into the mouth and rectum. The rat was placed in a pine box and buried. After twenty-five days it was disinterred and the various organs removed and subjected to analysis, with the results shown in the following table. In this experiment we did not think to weigh the different organs.

Name of Part Examined.	Amount of Arsenic calculated as As ₂ O ₃ found.
Kidneys,.....	.00095 gram.
Liver,.....	.01082 "
Lungs,.....	.19252 "
Stomach and contents,.....	.00686 "
Large Intestine,.....	.40339 "
Small Intestine,.....	.10157 "
Heart,.....	.02507 "
Brain,.....	.03960 "
Total As ₂ O ₃ recovered,.....	.78078 gram.

It will be noticed that the lungs contained a much larger amount of arsenic than the stomach. Evidently the larger portion of that injected into the mouth passed down the trachea instead of going down the œsophagus—indeed, the amount found in the liver is larger than that found in the stomach. It is likely that the poison passed from the lungs into the liver. The amount found in the brain is large, but in the musk-rat the bones of the skull are thin in texture, and are not firmly united.

In the second experiment a cadaver was used. The person had been dead between two and three days when the injection was made. An unweighed quantity of arsenious oxide was suspended in cold water, and this was injected by means of a common bulb syringe, with rectal tube, into the mouth and rectum. The body was lain away in a dry cellar for twenty-five days. The various parts, as given in the table below, were then removed, weighed, and subjected to analysis. In dissecting the body it was observed that, although the cuticle had decomposed to a certain extent, the internal organs were firm to the