apt to carry fatal infection to other women who have had perfectly normal labours, notwithstanding careful ablution, and even considerable use of disinfectants. Must these virulent organisms have been originally derived from some special source, such as a transformed erysipelas, or a micrococcus which dwells in sewers, or may they be the organisms whose germs are commonly present in the air, but possessed of acquired virulence?

The contagious virulence of puerperal fever, in some cases, probably exceeds that of any other disease commonly met with. Practitioners are now so well aware of the danger that a wide spread of infection is rare, though sometimes we still meet with two or three deaths among patients attended by one practitioner, within a few days, before he had become aware that he was likely to be a source of danger. It is necessary to go back nearly fifty years for instances like the following. In the town of Sunderland, within one year, there were forty-three cases of puerperal fever. Of this number, forty occurred in the practice of one medical man and his assistant.²⁶ A midwife delivered a woman who shortly died with symptoms of puerperal fever. Within one month, the same midwife delivered thirty other women, of whom sixteen caught the disease, and all died.²⁷ I know of no such propagation of surgical septicæmia in the private practice of a surgeon, although something similar has occurred when wounded men have been crowded in an insanitary hospital.

It has generally been held that the so-called autogenetic form of the disease is little, if at all, contagious. The following case, which I have met with, appears to me to indicate the probability that organisms commonly present may acquire an increased infective virulence. A woman miscarried about the third month, and a portion of the ovum was retained. This decomposed, and produced an offensive discharge from the uterus. Pyrexia and general peritonitis were developed, and the patient died in a few days with symptoms resembling those of ordinary puerperal septicæmia. Notwithstanding free use of carbolic acid, this case appeared to be the starting-point of a series of cases of puerperal septicæmia in women attended within the next few days by the practitioner in charge, and his assistant who had also seen the patient. Two of these proved fatal, and both the practitioner and his assistant had to give up midwifery practice for some time.

The point which chiefly comes out in the *Collective Investigation Record* as to the danger of contagion is, that it is from fatal cases that danger is most to be feared. Out of the 356 cases, there were nineteen in which there was a probable conveyance of contagion. In eight, this was to other puerperal women; in nine, to the infant. All but one of the nineteen cases which were the source of contagion proved fatal. In only two of them was there a probable autogenetic source for the original disease.

In conclusion, I have to say that the Collective Investigation Committee still hope for more evidence, and will be grateful to any who may furnish it.²⁸ I may indicate two points of special interest: 1. In what forms of the disease is contagion most to be feared? 2. Can, not only erysipelas and scarlatina, but other zymotic diseases—typhoid fever, diphtheria, small-pox, pneumonia—give rise to a disease in the puerperal woman closely resembling septicæmia? Of special interest would be an instance, if any such occur, in which an apparent puerperal septicæmia is itself traced to the contagion of a zymotic disease, and reproduces the original zymotic disease again by contagion to the infant, or to some other person.

THE TREATMENT OF TUBAL FŒTATION BY GALVANO-PUNCTURE.

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THE treatment of ectopic gestation by means of electrolysis is one of the most important questions of the day, and anything bearing on the subject is of interest to obstetricians and gynecologists.

Although Bachetti, of Pisa, published a successful case in 1857, which, as far as I know, is the first on record, it is only lately that in this country our attention has been seriously directed to this plan of treatment.

It is true that in 1865 Dr. Braxton Hicks used the faradic current in a case published in the *Transactions of the Obstetrical Society*, but there was no puncture by needles. One rheophore was placed in the vagina, and the other on the abdomen. The operation failed, and it is

as yet an open question whether in the early stages this treatment will succeed, unless a strong current of eighteen or twenty zinc carbon-cells is applied every day for half an hour at a time, for four or five days. There are reasons to believe that any shock that would kill a fœtus of say four or five months, would endanger the life of the mother. Its nervous organisation being undeveloped, it is more tenacious of life; and as Dr. Steavenson has said, in an article published in the *St. Bartholomew's Hospital Reports* for 1883, vol. xix, "A powerful electric shock causes the death of an adult by its stimulation of the inhibitory fibres of the pneumogastric, but a fœtus has no inhibitory apparatus. At two to three months, at any rate, the nervous apparatus is not fully differentiated, and it is probable that a shock would affect the mother rather than the embryo."

It is our American brethren who have come to the front in this matter of electrolysis. Without directing attention to all their published cases, which, beginning with Allen's, of Philadelphia, in 1862 (published 1872, in *American Journal of Obstetrics*), are now well on to forty in number, I would say that the papers on this subject in the *American Journal of Obstetrics*, by Dr. Gaillard Thomas and Dr. Garrigues, seem to point to the formulation of the rule that before the fourth month of gestation treatment by electrolysis should be adopted, while after that date laparotomy is to be preferred. Dr. Thomas, remarking on twenty-one cases of extra-uterine pregnancy, said that if the condition be diagnosed before the end of the fourth month of gestation, he would destroy the vitality of the child by electricity in preference to all other methods which have been proposed. Dr. Garrigues, of New York, reported nine successful cases in the *Transactions of the American Gynecological Society*, 1883. In this country, Dr. Aveling had a successful case, and Dr. Petch reported one at the last meeting of the British Medical Association at Brighton, in which he says that the fœtal tissues were actually dissolved, after being directly submitted to a strong current. The patient recovered, and there was no verification of the diagnosis. There are many questions arising out of this method of treatment which cannot yet be answered with any degree of certainty, and I shall cite a case which was recently under my care at the Samaritan Free Hospital, rather because it illustrates some of these than for any other reason. Given a case of supposed tubal pregnancy under five months (the diagnosis generally being more or less obscure), how can we destroy the fœtus without injury to the mother? If an electric shock that would kill the fœtus would endanger the life of the mother, we need only consider daily faradisation and galvano-puncture. Galvano-puncture would seem to be by far the more certain, and backed by the writings of Thomas, Garrigues, Lusk, and Emmett, I adopted this in my case, which I regret to say ended fatally.

In a case published in the *St. Bartholomew's Hospital Reports* for 1883, the fœtal heart was heard a considerable time after this treatment had been carried out. Eventually the fœtus died, and the mother also; on *post-mortem* examination the fœtus was found to have been considerably damaged by the electricity, though it continued to live the day after the operation. It seems clear that the pregnancy was too far advanced to be suitable for galvano-puncture, and that in all cases where the fœtal heart can be heard, laparotomy is certainly the proper treatment.

In the following case, under eight weeks pregnant, I employed galvano-puncture. M. S., aged 24, married, came under my care at "Dorset House," on July 10th, 1886. She had been confined of her first child a year previously, and stated that she had miscarried a month before coming into hospital, and had been losing blood ever since. She had some abdominal pain at the time, and passed clots and membrane, but saw nothing else. She still complained of irregular pains. She had only missed one period before the so-called miscarriage, but considered herself about two months pregnant when it took place, as a second period was then due. Her last proper "period" was early in April. In May she saw nothing. In June she thinks she miscarried, and has been losing more or less ever since. The uterus was found to be to the left of the mesial line of the pelvis, the os rather patulous and soft, the uterine cavity three inches long. To the right of the uterus, and at least one inch separated from it, was a circumscribed, globular, somewhat elastic tumour, as big as a goose's egg. It was tender, not to say painful on pressure, and was well-defined and movable. The temperature taken in the vagina was subnormal. The breasts showed evidences of recent pregnancy. They were enlarged, and there was a marked areola, and some moisture could be expressed from the nipples. There could be no doubt that the patient had been recently pregnant, and but for the tumour and the continued pain and loss, I should have considered that she had aborted.

What, however, was the tumour? If inflammatory, it would scarcely have been so defined and movable, it would have been more tender on

²⁶ Armstrong, *Facts and Observations Relative to Puerperal Fever*. London. 1814.

²⁷ Robertson, *London Medical Gazette*, January, 1840.

²⁸ Forms of return can be obtained from Dr. Isambard Owen, Secretary to the Collective Investigation Committee.

pressure, and, in spite of the hæmorrhage, the temperature would most probably have been above normal. After watching the case for a week, during which time the tumour had distinctly increased in size, I concluded it was a tubal pregnancy, and I asked my colleague, Mr. Thornton, to give me his opinion. He agreed with me so entirely that the only question was whether it should be treated by electrolysis or by abdominal section. It appeared a typical case for the former, and we decided that I should adopt it.

Several of my colleagues saw the case, and were interested in it; and on August 2nd I operated. Dr. W. S. Griffith administered the anæsthetic. Dr. W. E. Steavenson, Electrician to St. Bartholomew's Hospital, kindly gave me his valuable advice and assistance with the battery, and Dr. Day and Dr. Prickett were present. The vagina having been thoroughly douched, I passed three curved needles by the vagina into the tumour. The needles were new, prepared specially for the operation. Except an inch and a half for insertion into the tumour, they were insulated by a thick coating of shellac; moreover, to protect the vagina, they were wrapped round with a strip of lint. The ends of the needles projecting beyond the vulva were connected with the positive pole of a 30-cell (Stöhrer) constant-current battery, all the cells being in use. Dr. Steavenson then applied a flat sponge electrode connected with the negative pole on the left thigh of the patient, moving it gently about for the space of six minutes. The needles were a little difficult to extract, owing to roughening of the points and deposit on and about them during the process. The patient was put back to bed.

It would be tedious to narrate all the notes from this point to the day of death, so I will abbreviate them. For the first four and a half days the patient had no bad symptom. On the evening of August 6th the temperature was 99° and pulse 96. She had a restless night, and complained of pain in the right iliac fossa on the morning of August 7th. The temperature was 101° F., pulse 120, and on examination there was some inflammatory fixing of the tumour, with swelling and great tenderness. I ordered a quarter of a grain of morphine by the rectum, a salicylic mixture, a poultice over the abdomen, and a hot water douche. At 2 p.m. the temperature was 104° F., and I ordered an ice-cap. At 8 p.m. the temperature was 106° F. The ice-cap did not fit sufficiently tightly, and was changed for another. The next morning, at 10 a.m., the temperature was 102° F., and at 8 p.m. 101.4° F. Until the day she died, it never rose again over 101° F. On August 13th the ice-cap was discontinued.

The general treatment consisted of one drachm of Warburg's tincture three times a day, opium or morphine by the rectum as required, ice and iced champagne by the mouth, and four ounces of enemata of beef-tea and brandy, or milk and brandy, every three or four hours. On August 15th she was much better; she had had five hours' natural sleep, and had taken and enjoyed some boiled bread and milk by the mouth, also a little beef-tea and brandy. The pulse was 108, the temperature in the vagina 100° F. On August 16th she was about the same; but on August 17th she had had a restless night, she had been sick, and the bowels were relaxed. On August 18th she was better, and in much the same condition as on August 15th; but on August 19th she was not so well again. This day I had to leave London for the Continent, and I transferred the case to a colleague during my absence. On my return I heard that the patient had remained much as I left her during August 20th and 21st, and died on August 22nd, the *ante-mortem* temperature running up to 105° F. The husband objected to a *post-mortem* examination, but leave was obtained to remove the tumour, and this was done, but the specimen was accidentally destroyed by a nurse before it was examined. Altogether, a more disappointing termination to an interesting case could not be imagined.

From examination by the vagina before I left London, it was clear that the tumour was much reduced in size, and the pelvic thickening had nearly disappeared, and I should fancy that suppuration had occurred, with rupture into the peritoneum.

A fetus of eight or ten weeks would not weigh one ounce; and, if we consider the caustic effect of the electricity and the tremendous destruction caused by it in the five months' fetus at St. Bartholomew's, I should not have been surprised to find that in my case complete disintegration had occurred, and that what was removed for examination was only a collapsed tubal cyst. The case has taught me that galvano-puncture is by no means free from danger, while it is not suitable for cases advanced beyond the fourth month. In a future case I should prefer to use the faradic current daily for several days, as first applied by Dr. Braxton Hicks; and, this failing, to resort to abdominal section further on. Personally, I certainly should not again employ galvano-puncture until we know more about the exact dose that is advisable.

A METHOD OF TREATING SOME CASES OF SCANTY MENSTRUATION AND OF AMENORRHOEA.

By JAMES BRAITHWAITE, M.D. LOND.,

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PUTTING aside cases of deficient or absent menstruation from constitutional causes and from some ovarian affections, many cases of amenorrhœa, or of very scanty menstruation, remain, in which the fault appears to lie with the uterus alone. Some of these cases are attended with the most distressing symptoms, and when the system generally and the ovaries are healthy, relief is urgently required. This is usually sought by the administration of emmenagogues and other well-known remedies, but usually with very little success. It will, I think, be admitted by all who have frequently to treat these cases that the means at our disposal for doing so are very inefficient. A really good emmenagogue has not yet been discovered. The announcement that permanganate of potash is a reliable one was welcomed by the profession. Cases have been published showing very frequent, if not almost uniform, success from its administration. This has not been my experience, and I have given it in not less than forty suitable cases. Any benefit from its use was very seldom met with.

Many years ago, reflecting upon the hæmorrhage caused by intra-uterine polypi, I introduced into the uterus, when I wished to bring on menstruation or to increase its amount, small foreign bodies, which were left in its cavity. At the same time other means of treatment were not neglected, such as the use of hot baths, the administration of iron, aloetic aperients, and alteration in the diet and habits of patients, when luxury and indolence appeared to be at the root of the matter, as they sometimes are. The most convenient foreign body is a piece of hempen ligature, doubled several times, knotted, and impregnated with pitch. These were easily passed up to the fundus without any preliminary dilatation, and left there. Some success resulted from their use; but the uterus generally expelled them before they had done their work, and I therefore abandoned them for a Greenhalgh's rubber stem. This is very efficient, and I have, by means of it, been able to do everything useful in a considerable number of cases. The stem, carefully washed in carbolic water, should be introduced and left in position a week before menstruation is due, or supposed to be due. Usually a hæmorrhage will result within a few days; but the stem should remain *in situ*, whether it comes on or not.

CASE I.—As an instance of the occasional rapidity of this mechanical treatment of amenorrhœa, I can give no better illustration than one I had in December last (1885). A young woman, aged 17, came as an out-patient to the Leeds Infirmary on account of amenorrhœa of four months' duration. She was pale, but not chlorotic, and attributed the amenorrhœa to a chill. No complaint was made of her sight; but on her second visit, in a week, she had to be led into the room, as she was going blind. This loss of sight was already very serious, but it only dated back four days. The disease was ascertained to be optic neuritis, caused by lead-poisoning from the use of dry colouring materials in the manufacture of porcelain. It seemed, however, not improbable that the amenorrhœa, resulting, as it appeared to have done, from suppression by cold, might be a factor in the case, and that relief by a copious hæmorrhage from the uterus would be of use. Accordingly, after slight dilatation, I introduced a Greenhalgh, with the result of bringing on within forty-eight hours a very free sanguineous discharge. Remedies for lead-poisoning were at the same time administered. The neuritis, however, was most acute, and ended in permanent blindness. This deplorable result does not impair the case as an illustration of what can be done by this mechanical treatment in suitable cases. The stem was withdrawn by the girl's mother before the next period was due; but menstruation has recurred regularly up to the present time.

CASE II.—Mrs. M., aged 30, married two years, but childless, was of healthy parentage. She appeared to be, although rather pallid, a strong and vigorous woman, fond of out-of-door exercise, and stated that she could walk some miles without fatigue. During 1883, without any assignable reason, her periods became more scanty, and the colour of the discharge paler. Although her complexion was pallid, she was not anæmic or chlorotic. She next began to have headaches at and preceding the periods, and these soon became exceedingly severe, and more or less continuous between the monthly periods. I