complaint. Ten days before admission he complained of slight abdominal pain which increased in severity. Diarrhoea did not commence until four days later; from that time the number of motions varied from six to twelve per day, and were associated with some degree of tenesmus. It was not until the fourth day of diarrhoea (two days before admission) that he noticed "blackish blood" in the stools, and from this time onwards they continued to be blood-stained with an average of about twelve in the twenty-four hours.

On admission the temperature was 99° F., and the pulse 80. The tongue was furred, the teeth discoloured and carious, and he complained of pain across the lower part of the abdomen. There was marked tenderness in the left iliac region, and also to the right of the umbilicus, but no rigidity of the abdominal wall. The liver and spleen were not enlarged, and nothing was felt on rectal examination. The faeces were dark in colour, and contained mucus and dark red blood. A microscopical examination of the motion the following day revealed the presence of a large number of *Entamoeba histolytica*.

On the patient's fourth day in hospital emetine treatment was commenced. One grain of emetine hydrochloride was given by hypodermic injection daily for fourteen days (one-third of a grain in the morning and two-thirds of a grain at night).

During the first three days after admission the number of motions averaged twelve in the twenty-four hours; they were quite loose, and contained a quantity of blood and mucus. After six days of emetine treatment the number of motions had fallen from twelve to four in the twenty-four hours; they were still loose, and contained mucus but much less blood. Three days later the motions had diminished to three a day; they were loose, but there was only a small quantity of blood, and the patient was feeling much better. On the twelfth day with emetine the motions, though still inclined to be loose, were free from blood, and for the first time amoebae were absent. On the last day emetine was given the patient had but one motion, semi-solid, with a little mucus but no blood. Five days later the motion was fully formed, and mucus and blood were absent. From this date the patient progressed favourably without further incident.

The faeces were frequently examined throughout the illness, and active forms of *Entamoeba histolytica* were found up till the tenth day of treatment with emetine, but at no time afterwards. No cystic forms of the parasite were ever seen, although the motions were examined until three weeks after the patient's recovery, and no bacilli of the typhoid-dysentery group were isolated.

The blood tested as regards agglutinating power against the dysenteric organisms "Shiga," "Flexner," and "Y" types, proved negative.

The tongue, which was furred from the beginning, continued so until about the seventh day with emetine injections, when it began to clear. It was quite clean when they were stopped. The liver was frequently examined, but at no time was any enlargement noted. Abdominal pain persisted with diminishing severity until, practically, the motions were fully formed. During the first ten days in hospital he frequently complained of considerable pain after defaecation. The tenderness to the right of the umbilicus, mentioned on admission, had quite disappeared by the ninth day of emetine treatment, while that in the left iliac region did not disappear until three days after the motions were quite normal.

As regards temperature, at no time was it above 99.4°, which point it frequently reached during the first ten days after admission, but from this time onwards it was normal. Although we failed to find pathogenic amoebae or their cysts in the faeces of those men examined, it is possible that the carrier was among other men in the unit who had been transferred to duties elsewhere before the patient came under observation.

The case we have recorded, therefore, appears only to be the second reported as occurring in Britain in which amoebic dysentery was diagnosed as a primary condition, and during life.

REFERENCES.

- ¹ Dickinson, *Trans. Pathol. Soc. Lond.*, vol. xlii, 1862, p. 121.
² Dickinson, *ibid.*, vol. xxxii, 1881, p. 127. ³ Moore, *ibid.*, vol. xxxii, 1881, p. 132. ⁴ Sandby and Miller, *BRITISH MEDICAL JOURNAL*, March 27th, 1909. ⁵ Marshall, *Edin. Med. Journ.*, p. 229, March, 1912.

SIXTEEN cases of plague have been notified in Hong Kong since January 1st.

The *Boston Medical and Surgical Journal* states that it has been computed that there are now more than two hundred open-air schools and classes for tuberculous and anaemic children in the United States. Massachusetts heads the list with 86, of which 80 are in Boston; next come New York with 29 and Ohio with 21. The first school of this kind was opened in 1907, and in 1910 there were only thirteen at work. It is estimated that there should be in cities one open-air school for every 25,000 of population.

THE TREATMENT OF PUERPERAL SEPSIS BY UTERINE SUCTION AND DRAINAGE.

BY

NORMAN PORRITT, M.R.C.S., L.R.C.P. LOND.,
 CONSULTING SURGEON, HUDDERSFIELD ROYAL INFIRMARY.

THE suction tube has all the advantages with none of the dangers of the uterine douche. In at least two cases I have seen the uterine douche convert a smart sapraemia into a rapidly fatal general infection, whilst in another case it set up acute, presumably chemical, peritonitis. Whilst I was administering the douche the woman was seized with agonizing abdominal pain, which was quickly followed by general collapse and rapidly developing abdominal tenderness and distension. The douching was at once stopped, but the patient died five hours after the onset of the acute pain.

Dr. Goodall¹ has collected sixteen examples of chemical peritonitis following intrauterine douches. He says:

My eyes have been opened recently to the great ease with which fluid can be forced from the uterine cavity into the peritoneum. This was first brought to my notice by the frequency with which watery fluid was found in the peritoneal cavity after curettage. In not a few cases I have been astounded at the amount, and have examined the uterus for evidence of puncture, but this was never found. But the condition was readily explained when, later, Dr. Chapman began to inject a strong solution of iodine into the uterus in carcinoma cases in order to kill out the malignant cells and prevent their contaminating the field of operation. It was then found that, though a minimum of force was used, invariably the pelvic peritoneum was deeply stained, and contained fluid iodine in variable quantity.

To illustrate the patulousness of the Fallopian tubes Dr. Goodall narrates a case of congenital atresia of the sigmoid. The abdomen was markedly distended, and dark liquid blood was coming in spurts from the vagina. On operating, the abdomen was found full of blood and meconium, the sigmoid having ruptured. At the autopsy, four hours later, blood was still coming from the vagina.

In the cadaver Dr. Goodall has injected methylene blue into the uterine cavity with douche-can and cannula, imitating as closely as possible the technique of operative work. With a pressure of only two feet of elevation, and in some cases only eighteen inches, and with a temporary obstruction to the outflow, such as is frequently caused by clots and fragments of tissue, he was able to send fluid into the peritoneal cavity through the Fallopian tubes. Hence, he says, the risk of chemical peritonitis, not to speak of septic peritoneal contamination.

Then it should be possible to remove retained decidua from the uterus by means of the suction tube, and obviate the need for the deadly curette and the dangerous digital exploration of the uterus. The method of treatment is illustrated in the following cases:

CASE I.

On August 4th, 1914, I was asked to see a primipara, aged 25 years, who nine days before had been attended by a qualified midwife, who is also a trained hospital nurse. The labour was normal, and the placenta came away intact in about twenty minutes. When I saw the patient she had a temperature of 103.5° and a pulse of 140. The lochia had been and were normal and odourless, but the large uterus was retroverted. The uterus was reduced and a saline ordered. Next day, after vaginal douching, a gauze drain was put into the uterus, and renewed daily. For three days the temperature hovered round 103°, the patient was apathetic, semidelirious, had intense headache, there was some abdominal distension, and the lochia became fetid. On the thirteenth day after delivery a glass Budin's catheter, to which the inlet end of a Higginson's enema syringe was attached, was passed into the uterus. To secure the syringe to the Budin's catheter the inlet valve was removed. The tube of the syringe between the bulb and the catheter was held firmly and the bulb squeezed, so as to drive out the contained air through the nozzle. On releasing the pressure on the bulb, the valve behind the nozzle closed and prevented the return of the air. There was then a vacuum in the syringe, and on releasing the pressure on the tube, between the bulb and the Budin's catheter, suction was exerted through the catheter within the uterus. No air was drawn into the uterus, although the suction drew into the orifices of the catheter thick, grumous, semipurulent masses, which were too big to pass through, and, when the catheter was withdrawn, came with it. Reintroduction of the catheter and suction drew out more of these thick pieces. The vagina was syringed, and a gauze drain was inserted into the uterus. The next day the patient was free from headache, and the temperature had fallen to 100.8°. The fetor of the discharge was less, though the labia were swollen and red, and an abscess with no well-

defined limits formed over the sacrum. This was incised later. Suction was applied to the uterus on two successive days, after which the temperature did not rise above 99°, and the patient made a good recovery.

CASE II.

I was called to a primipara, aged 21, on January 6th, 1915. Just before my arrival she had given birth to a dead, decomposing six or seven months child. The placenta came away intact whilst I was separating the child. No vaginal examination was made. The same night the temperature was 99.4°, the next night 101.2°, and on the following morning 103°, with a pulse of 140. The vagina was douched night and morning, and Budin's catheter passed into the uterus. On suction by means of the Higginson syringe thick debris filled the tube and was brought away; after which a gauze drain was left in the uterus; 3 grains of calomel were given. The temperature at night was 100.8° F., pulse 120. There was no abdominal distension. The lochia were most offensive, and the smell was intensified when the gauze drain was taken out of the uterus. The suction tube was passed daily, and a gauze drain left in the uterus. On January 13th there was some odourless discharge on the diaper, and the smell in the room was only just perceptible. As soon, however, as the catheter was passed into the uterus it filled with thick, dirty, bloody liquid, smelling most offensively. About an ounce and a half of this offensive material, together with a quantity of blood clot, were sucked out of the uterus. On the next day, although there was only a little almost odourless discharge on the diaper, a quantity of thick fetid red liquid was evacuated from the uterus.

On the next day there was a similar experience. Though the diaper was covered with more discharge, free from offensive smell, thick, foul-smelling liquid was obtained from the uterus. The temperature, which for the last six days had not been above 101° at night, now reached 102°; the pulse was 120. As there was evidently imperfect drainage from the uterus, a piece 3 in. long was cut from the end of a large size celluloid Budin's catheter, and, held in a pair of forceps, was passed into the uterus. A string was attached to the piece of catheter for withdrawal, and the tube was retained in the uterus by a gauze vaginal plug. The tube was removed, sterilized, and reinserted daily. In two days the temperature fell to normal, and as it was normal on the following day, and only a small quantity of odourless, glairy mucus was obtained on suction of the uterus, a gauze wick was substituted for the celluloid drain. The next day the temperature rose to 100°, and as some thick, grumous liquid, very like thick pus, together with mucus and blood came away, the celluloid tube was reinserted into the uterus. The same night the temperature dropped to normal, and, next day, though nothing could be sucked out of the uterus, the gauze in the vagina, as well as the diaper, were soaked with discharge. Evidently the uterus was draining well. The temperature remained normal for three days after the reinsertion of the tube, and it was then removed and no drain of any kind was put into the uterus. The same night the temperature rose to 102°, and the patient had a rigor. It was found impossible to insert the celluloid tube into the uterus, which was acutely anteflexed, but the next day after softening the tube in hot water and bending it, it was inserted without difficulty. It remained in the uterus forty-eight hours, when it was finally removed, and as tender peritubal thickening became perceptible, and as it was impossible for the girl to remain longer where she was, she was removed to the Liverpool Hospital for Women. The peritubal swelling subsided satisfactorily, and the patient left the hospital in nine days.

I was not aware when I drained this girl's uterus, by placing a tube within it, that the same thing had been done before. Mr. H. Milton² has drained the puerperal uterus, keeping the tube in the uterus six, ten, and fourteen days; whilst Dr. Ernest Gallant,³ of New York, has reported 252 cases of continuous uterine drainage in non-puerperal cases. The tubes were worn in the uterus without removal for so long as five, six, and seven months. The results of Mr. Milton and Dr. Gallant suggest that I need not have removed the tube from my patient's uterus so soon after the temperature fell.

The following is another case in which similar principles were adopted:

CASE III.

Mrs. E., aged 30. The child was born just before I arrived at the house, and the placenta was easily expelled intact in about four minutes. No vaginal examination was made, but three stitches were put into the perineum. In an adjoining room the patient's father was dying from an ulcerating epithelioma of the lips, face, and mouth. The stench from it filled the whole house. The day after the child was born the mother's temperature was 99.6°, on the second day 103°, after which it fell to 100°. The lochia became very offensive, the smell resembling closely that from the father's room. Till the seventh day vaginal douching night and morning was used, and then, as the temperature remained above 100°, Budin's catheter was passed, and a small quantity of offensive brown liquid was withdrawn on using suction. A gauze drain was passed into the uterus. The next day, on inserting the tube into the uterus, it filled at once with thick brown liquid, less offensive than before. The suction tube was used daily, and each day the fluid removed became less offensive,

less opaque and thick, until, at the end of five days, just a small quantity of clear, odourless, blood-stained fluid, free from shreds and semi-solid matter, was sucked out. After this the only local measure used was a vaginal douche night and morning. The condition of the patient, however, became more grave, though Dr. Wille t of Liverpool, who kindly saw the patient with me, agreed that there was then nothing abnormal in or around the uterus. The clinical picture—profound anaemia, intractable vomiting, lethargy, intermittent abdominal distension and visible peristalsis, pigmentation of the breasts, legs, and abdomen—suggested Addison's disease. On the twenty-fourth day after delivery the patient died.

This case was one of true septicaemia, apparently, producing fatal blood destruction. The woman's father, whom I look upon as the source of the infection, died ten days after the birth of the child. I regret now that I did not give the woman antistreptococcal serum at the outset. But the first symptoms were not severe, and my experience of serum treatment in puerperal cases has been most disappointing.

Uterine suction tells us the conditions in the interior of the uterus. It is most instructive to watch the gradual alteration of the stuff withdrawn from a thick, offensive fluid, loaded with semi-solid purulent masses, to a clear red liquid, and from that to an inoffensive mucus. Moreover, it prevents us from being misled, as we doubtless often are, by the deceptive character of what we find upon the diaper. The diaper may be covered with discharge, which may be only an overflow, or may not come from the penthouse in the uterus at all, for there may be odourless discharge on the diaper, and foul, fetid fluid in the uterus. And efficient drainage of the uterus is the key to the successful treatment of puerperal sepsis.

The holes in the uterine end of the ordinary Budin's catheter are too small, and Messrs. Down Bros. have made to my instructions a larger model, which will allow the passage of uterine debris into the catheter. They have also made for me a grooved celluloid drain for intra-uterine use, when the use of a drainage tube is indicated. Syringes other than the Higginson could be used to exhaust the suction tube, so long as they do not pump air into the uterus.

My cases are not numerous enough to dogmatize upon, but as now my opportunities for seeing such cases are limited I venture to publish them.

REFERENCES.

¹ Jas. R. Goodall, M.D., *Canadian Medical Association Journal*, July, 1914. ² *Lancet*, October 17th, 1891. ³ *New York Medical Journal*, October 10th, 1914.

A NOTE ON THE USE OF THE GALVANOMETER AS AN AID TO THE DIAGNOSIS OF NERVE LESIONS.

By C. NEPEAN LONGRIDGE, M.D. VICT.,
F.R.C.S. ENG., M.R.C.P. LOND.

SOME two years ago an article appeared in a medical periodical dealing with the electric currents which could be detected in the human body with the aid of a sensitive galvanometer. From the results obtained it was surmised that the brain is the seat of generation of an electro-motive force which is carried to the tissues by means of the nerves. Being sufficiently interested I put myself into communication with the author of the paper, and found that Mr. A. E. Baines, a submarine cable electrician, was the author of the theory. After some correspondence and interviews with this gentleman I obtained and set up an extremely sensitive astatic galvanometer of the Kelvin type. The instrument I am using has a resistance of 99,000 ohms.

Recently I have had an opportunity of examining two cases which, to my mind, constitute definite proof of the main truth of the theory. The examinations were made in a room at least half a mile away from the tram lines in the town which carry a continuous current of 500 volts, and in all cases the precaution was taken of earthing the patient before the readings were made. The method used was to fix a circular silver plate about an inch in diameter in the exact centre of the forehead; this plate