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 peritumescence 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 peritumescence 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.

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

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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

was connected to one pole of the galvanometer. The second pole was connected to a small silver button 2 mm. in diameter mounted in a vulcanite handle which could be brought into contact with any part it might be desired to test. With both poles in contact with the patient's body and the circuit key closed a deflection was obtained on the galvanometer scale which could be read off in millimetres.

The first case was that of a soldier under my care in the Racecourse Hospital, Cheltenham, with a wound just below the centre of the left forearm, and definite symptoms of paralysis of the median nerve below the seat of the injury. The wound had been inflicted several weeks before I saw him, and had healed.

On examination with the galvanometer the following deflections were obtained on the dates indicated, the moving contact being pressed upon the pulp of the fingers:

Galvanometric Deflections Obtained in Two Cases of Injury to Nerves.

	CASE I.—Wound of Median Nerve.				CASE II.—Wound of Ulnar Nerve.
	First Examination.	Feb. 21st.	March 15th.	April 1st.	April 1st.
Thumb ...	20 mm.	0 mm.	0 mm.	5 mm.	320 mm.
First finger ...	0 mm.	0 mm.	0 mm.	55 mm.	Off scale deflection.
Second finger	0 mm.	0 mm.	6 mm.	120 mm.	Do.
Third finger ...	75 mm.	90 mm.	130 mm.	Rapid off scale deflection 100 mm.	Do.
Radial side...	5 mm.	7 mm.	5 mm.	Do.	Do.
Ulnar side ...	155 mm.	140 mm.	150 mm.	Rapid off scale deflection Do.	3 mm.
Fourth finger	120 mm.	150 mm.	135 mm.	Do.	5 mm.
Hypothenar eminence	—	—	—	—	0 mm.
Thenar eminence	—	—	—	—	Off scale.

On February 18th, a few days after the first examination, I dissected out the median nerve, which was embedded for $1\frac{1}{2}$ in. in dense scar tissue, and was partially divided on the ulnar side. After freeing the nerve from the scar tissue I resected three-quarters of an inch of it which was densely fibrosed, and joined the ends by catgut sutures. At the suggestion of Dr. Affleck, who was assisting me at the operation, I wrapped a piece of vitelline membrane from an egg round the seat of the suture. The wound healed moderately well, with the exception of a small area in the centre where the incision went through the old scar.

On April 1st the deflections obtained were better. On this occasion the man had walked a distance of two miles to the testing room, whereas on previous occasions he had been brought in a motor. The warmth of the day and the exercise perhaps accounted for the higher readings on this occasion.

In this case I have for the sake of simplicity only mentioned the finger deflections, although others were taken which were in consonance with the results obtained above.

On April 1st I was fortunate in being able to examine a man (Case II) with a healed wound just above the internal condyle of the left humerus, which was thought to have resulted in division of the ulnar nerve. The deflections in this case were the exact complement of the previous one.

These two cases to my mind demonstrate that something—it may be electricity or it may be something else—which acts upon a galvanometer in the same manner that electricity does is conducted by the nerves. The first case also shows that anatomical continuity of a nerve does not imply also its vital conductivity, since three days after complete section and restoration of its anatomical continuity it was not conducting any current which could be demonstrated by the galvanometer. I might mention that no deflection is obtained as a rule from scar tissue which is generally devoid of nerve fibrils.

In this short communication I do not wish to go into any of the wider applications of the galvanometer as an aid to diagnosis but simply to establish the fact that the nerves obviously do conduct electricity or a "trophic influence," which is at present indistinguishable from it.

A SIMPLE PORTABLE REFRIGERATING BOX AND ITS USE AS A TEMPORARY INCUBATOR IN MILITARY WORK.

By S. DELÉPINE,

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LAST autumn a large number of soldiers who had returned from the Near East were admitted to several of the hospitals forming part of the 2nd Western Military Hospital. Most of these men were reported as convalescing from dysentery, typhoid fever, and paratyphoid fever. The excreta of all these cases had to be examined repeatedly before the men could be discharged from hospital.

At first these examinations were conducted at the Public Health Laboratory by Captain Sellers and Captain Loveday, but during the month of December the temporary services of three other bacteriologists became available.

With regard to the typhoid cases, it would have been possible by an extension of the usual laboratory arrangements to examine daily a large number of cases, but as the faeces of the soldiers returning from the East had to be tested not only for the presence of typhoid, paratyphoid, and dysentery bacilli, but also for amoebae, it was desirable that the material should be examined while the stools were still warm, as this made the detection of motile protozoa easier and more rapid and certain.

It was, however, impossible to make arrangements to examine daily, immediately after evacuation, the stools of some 100 or 150 men, and it became necessary to devise means of collecting the material and keeping it warm for some time until the bacteriologist could conduct his examination.

It occurred to me that the portable refrigerators which are regularly used in the laboratory for the forwarding of samples of water, milk, and other products, would meet our requirements if used as warm chambers. These chambers allowed room for from thirty to sixty of the special tubes I have designed for the collection of samples of faeces for bacteriological purposes (see below). It seemed probable that the use of these temporary warm chambers would render the examination of a large number of specimens under suitable conditions not only possible but also convenient, and the experience gained in five months, during which more than 10,000 examinations of dysenteric faeces were made, has confirmed my expectations.

Description of the Portable Refrigerator.

The present form of the refrigerating box is a modification of a somewhat better but more fragile portable refrigerator, designed by me in 1892, and still in use both in my laboratory and elsewhere. The original box is a double-walled zinc chamber resembling a small incubator. The proportionally large cavity between the walls is filled with ice through a large lateral bungle. The chief fault of this box is that its unsupported, comparatively thin walls suffer when the box is thrown about, as frequently occurs during railway transit. My new refrigerating box, which I have used for some years, is nearly as efficient as the first, and has great powers of resistance. It consists of a central or lateral metallic recipient, hermetically closed by means of a large screw bung. Round the ice-box a number of compartments are formed by metal partitions continuous with the walls of the refrigerating box. Each one of these compartments is

Portable Refrigerating Box (or Incubator).—The size of the box is 12 in. by 9½ in. by 8½ in. A, Recipient for ice or for warm water; B, screw bung for ditto; C, compartments for objects to be kept cool or warm; D, felt covering; E, wooden box; F, lid.

hermetically closed by means of a large screw bung. Round the ice-box a number of compartments are formed by metal partitions continuous with the walls of the refrigerating box. Each one of these compartments is