of the first week the patient was convalescent; she left the hospital at the end of the month. There was no trouble with the long abdominal wound.

The flatulence and obstruction followed by diarrhoea probably represented an attack of peritonitis, which was presumably localised, else vomiting and other well-known symptoms would have been present. Want of space prevents me from entering into questions relating to the beneficial or evil effect of actions of the bowels, spontaneous or otherwise, during the first week after abdominal section. Nor can I dwell on certain minute details of treatment except that I must observe that in my opinion careful and frequent emptying of the drainage tube greatly contributed towards saving this patient. I only wish to emphasise the essential features of the case in respect to the nature of the tumour. The case proves that a new growth in the ovarian ligament may develop so as to form a large, solid tumour, bearing a pedicle which may be safely secured by ligature. Owing to the fact that the ovarian ligament is practically uterine tissue, ligature of its pedicle apparently causes disturbances often seen in other operations where uterine tissue is tied or clamped. I observed similar disturbances in a former case where I removed a sessile ovarian cyst with a small portion of the adjacent cornu of the uterus; the opposite ovary was left alone, and the patient still menstruates. I relate this because the fact that I removed both ovaries in the present case must be taken into account, nor can I doubt that the double oophorectomy at least had a share in causing the profuse metrostaxis.

THE ARREST OF GROWTH IN CANCER BY A POWERFUL INTERRUPTED VOLTAIC CURRENT (ELECTRO-NECROSIS).

By J. INGLIS-PARSONS, M.D.,
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MANY of those gentlemen interested in my paper in the JOURNAL of April 27th, who have written to me on the subject, have confused my method of treatment with electrolysis. The following details will explain the difference between the two.

Electrolysis, as the term is now understood in the profession, consists in the concentration of a continuous current for a given time by means of a small electrode in contact with the object to be electrolysed. Whenever this occurs, three distinct actions take place:

1. The decomposition of molecules in the immediate neighbourhood of the poles.
2. The formation of acids and alkalies, at the positive and negative poles respectively, with the caustic action resulting from their presence.
3. The transport of elements from one pole to the other going on through the interpolar region.

This last action, even when a continuous current is used with an intensity of 300 milliamperes, and applied twenty times or more, with a duration of from ten to fifteen minutes at each application, has no appreciable effect on tumours. No change can be detected to have occurred in the interpolar region. The cases and experiments detailed in my previous paper bear out this statement.

But in the immediate neighbourhood of the poles a destruction of tissue occurs, due to the molecular decomposition and the caustic action of the acids and alkalies resulting therefrom. When a current of 200 milliamperes is kept on for half an hour, this local destruction does not extend for more than an inch round from the point of the electrode. At each application, then, the result produced consists in a local destruction of a small amount of tissue. It has, however, this great disadvantage, shared also by caustics and the knife, that not only is diseased tissue destroyed, but also the healthy as well. Like other caustics and the knife, it leaves untouched the outlying foci of cells, whose presence cannot be detected, and yet are known to be scattered about in the tissues surrounding the primary growth. The existence of these was shown by Dr. Heidenhain, of Berlin, at the recent Surgical Congress. He demonstrated by numerous preparations the presence of minute cancerous foci in the lymph channels after operations by the knife, and especially in the pectoral muscle after removal of the breast. Many so-called cases of recurrence are in reality nothing of the kind, if we may judge from these preparations, but are nothing more nor less than a

continuance of growth in these foci of cells which have not been removed or destroyed. Lying hidden away in the healthy tissues, and giving no indications of their presence in the early stages when they first form, they cannot be detected, and escape the knife of the operator, while the older portion of the growth, which has attained its full development, and may therefore be said to have done its worst, and might almost as well be left alone, is the only part entirely removed. The outlying freshly-formed proliferating cells are most to be feared; it is they that form the new growths and secondary deposits. The older portions, if left alone, are very likely to atrophy.

Electrolysis, used as it has hitherto been, utterly fails, for the same reason that the knife and caustics do, to remove the whole of the disease, sometimes even at a very early stage. It has, however, one advantage over both the knife and ordinary caustics. Isolated glands and nodules can be destroyed without injury to the skin, beyond a minute puncture, when ordinary caustics would necessitate a destruction of the overlying healthy tissue. Again, where a secondary growth is in close proximity to important vessels or nerves, a fine needle can be introduced until the growth is pierced. The current being then turned on, the caustic action can be localised, and handled as required, when an operation by the knife would be out of the question.

The great advantage claimed for my method of treatment by a powerful interrupted voltaic current, and which I propose to call electro-necrosis, is that it can be passed through healthy and diseased tissues alike; and if my theory of the nature of cancer and observations on cases treated in this way be correct, it takes advantage of the difference in resisting power between the two, and kills the latter, while it leaves the former only partially damaged, and able to recover. By this means, all outlying cancer-cells can be reached and destroyed, even when their exact location cannot be made out. In addition to this, the applications can be repeated as often as necessary, should recurrence occur, whereas with treatment by the knife, or with caustics, there is a distinct limit to the number of applications.

Faraday found that electrolysis occurred with every form of electricity, whether voltaic, franklinic, or faradic, when passed through an electrolyte; and there is no doubt that some electrolysis occurs with my method of application, but it is comparatively small. The duration of each flash is at the most two seconds, and the number of flashes required for each portion of the tumour, before reinserting the needles, is not more than from twenty to thirty, so that the actual total of the time during which the current is flowing only amounts to one minute. Further than this, the alternation of the current at each flash causes the acids and alkalies formed at their respective poles to neutralise each other at each succeeding flash. By this means the caustic action round the electrodes is reduced to a minimum, consequently very little healthy tissue is cauterised, while the whole of the cancer-cells in the interpolar region appear to be destroyed. Nor is there any development of heat to speak of. The very fact of the needles used being insulated with gutta serena proves this beyond a doubt.

NOTES ON THE BIRTH OF A DOUBLE FŒTUS RESEMBLING THE SIAMESE TWINS.¹

By ALEXANDER SCOTT, M.D.,
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On the night of November 21st, 1888, Mrs. T., aged 30, was taken in labour in her third pregnancy, having previously borne two perfectly normal children. The membranes had ruptured about eleven o'clock, and at four o'clock next morning she was seen by my assistant. It was a mento-anterior face presentation. For a time the pains were severe and continuous, and the progress, though slow, was quite satisfactory till the outlet was reached. At this stage, notwithstanding the administration of ergot, the pains almost ceased. With some difficulty the occiput was brought down, and the head expelled with the cord firmly wound round the neck, and in which pulsation was quite distinct. Further progress seemed impossible.

I arrived about 7 A.M., and found that the head and shoulders of a child had been born, but that there seemed to be the utmost difficulty in effecting further delivery. There was now no pulsation in the cord. On applying slight traction and leverage in all directions, I discovered that the point of greatest obstruction was

¹ Read before the Glasgow Obstetrical and Gynaecological Society.