is, of course, only feasible in the anterior, lateral, or posterior wall of the middle and upper zones. When the peritoneum is included in the ablation, free drainage of the bladder must be maintained in order to afford the bladder wound time to heal. As an example of the value of resection, I may mention that I ablated a large piece of the left lateral wall of the bladder for epithelioma two years ago.¹ The patient is still at work and in good health.

RESULTS.

These 70 ablations include recurrences. I have had 5 deaths, 2 as the direct result of the operation.² The remaining 3 deaths occurred in carcinomatous cases at or about the third week after the operation, the patients dying of renal complications.

A NOTE ON THE EMPLOYMENT OF DIPH- THERIA ANTITOXIN AS A CULTURE MEDIUM FOR THE DIPHtheria BACILLUS :

AND ON SOME PRACTICAL POINTS IN CONNECTION WITH THE
PREPARATION OF DIPHtheria ANTITOXIN.

BY

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THE bacteriological diagnosis of diphtheria is at present almost exclusively in the hands of bacteriological specialists. The practitioner takes a portion of the diphtheritic membrane, or a swab which has been in contact with the diphtheritic throat, and sends it in for diagnosis to a central laboratory. Cultures are there made from the diphtheritic material upon tubes of blood serum; these cultures are kept at blood heat for twenty-four hours; the bacteria which have grown are then examined microscopically, and the result is reported to the practitioner. This deputing of the task of making the bacteriological diagnosis has been found to work well in practice. But there are numerous occasions when, either owing to distance from a laboratory or other causes, this course can not be adopted. In such cases the practitioner must himself undertake the bacteriological diagnosis. He has hitherto been deterred from doing so by the fact that blood serum, which constitutes by far the best culture medium for the diphtheria bacillus, is not easily obtained.

We propose to show that this difficulty can be easily overcome. The practitioner who is dealing with diphtheria will, we may take it, generally have beside him a supply of antitoxic³ serum or plasma. Now, in this antitoxic serum or plasma the practitioner has at his disposal as good a culture medium for diphtheria as the serum which is derived from a non-immunised animal.

The method by which the culture medium can be prepared is as follows. A small quantity of the antitoxin (half a teaspoonful will amply suffice) is to be poured into any clean—but not necessarily sterile—small wide-mouthed bottle. The bottle is to be brought into the horizontal position, and the albuminous substances of the serum are to be coagulated in this position so as to adhere to the side of the bottle. This may be conveniently done by laying the bottle sideways over the mouth of a steaming kettle. The bottle is to be removed as soon as the serum is firmly coagulated. Any water of condensation that may have accumulated is to be poured off, and the culture medium is to be allowed to cool down. It is then to be inoculated by passing a stout wire or glass rod which has been brought in contact with the diphtheritic throat lightly over its surface. The stopper is then to be replaced, and the bottle is to be kept as nearly

as possible at a blood temperature. If a higher temperature cannot be obtained, the temperature of an inside pocket will generally suffice. The microscopical examination may be undertaken after 24 hours have elapsed. The material for examination may be obtained by lightly scraping the surface of the culture medium with a platinum needle.

This method of preparing a culture medium from antitoxic serum or plasma may also be employed in the laboratory. There will probably, in every laboratory in which antitoxin is prepared, be enough leavings of antitoxic serum or plasma to make it unnecessary to employ serum derived from other sources. About 1 to 2 c.cm. of the antitoxin suffice for each examination, and the serum may conveniently be coagulated in a Petri's dish held over a beaker of boiling water.

In this connection it may not be out of place to advert to the following practical points in connection with the preparation of diphtheria antitoxin :

1. There are certain advantages of convenience in employing the plasma instead of the serum of immunised animals as an injection material. (a) A larger yield, often over 65 per cent. of the blood volume, of an equally effective antitoxic fluid is obtained and this amount is not dependent upon the degree to which the clot contracts. (b) Antitoxic plasma can always be obtained perfectly free from red blood corpuscles. The blood corpuscles of horses' blood sediment very readily, and there is no need to disturb them when the antitoxic fluid is siphoned off.

There are no disadvantages to be balanced against these advantages. Experience has shown that no danger whatever is to be apprehended from the injection of plasma. Urticaria is an exceedingly rare sequela. The antitoxic plasma is readily prepared by leading off the blood from the horse's vein into a little citrate of soda dissolved in normal salt solution. An addition of 5 grammes of citrate of soda for every 1,000 c.cm. of blood is all that is required, provided that the tube through which the blood is led into the receiving vessel reaches quite down to the bottom of that vessel, so as to ensure complete mixture.

2. The easiest method of siphoning off the antitoxic plasma from the layer of red blood corpuscles appears to be the following.

A glass tube is to be bent into the shape of a U in such a manner as to leave one limb considerably longer than the other. Near the extremity of the longer limb another glass tube is to be fused on at an acute angle. To this side tube a piece of india-rubber tubing is to be attached. The other end of this india-rubber tube is fitted with a mouthpiece plugged with cotton wool. A siphon will thus have been formed which can be started by exhausting the air in the side tube. A tap or a piece of india-rubber tube fitted with a pinchcock is fixed at the end of the long limb of the siphon. This completes the arrangement.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, Etc.

A CASE OF BREECH-PIN OF GUN IN ORBIT: REMOVAL: RECOVERY.

TANG SHAN, Chinese farmer, 31 years of age, was injured in the face by the bursting of a shot gun. After being for upwards of two months under the treatment of native practitioners, he came to me on December 4th, 1891.

I observed a cicatrix on the right side of his nose, and above this a sinus still unhealed, the orifice of which involved the inner canthus of the right eye, and extended downwards and inwards for about a centimetre. The sight of the right eye was entirely lost, and the anterior surface of the globe was so uniformly red that the cornea could hardly be distinguished from the surrounding conjunctiva. There was no perceptible enlargement or protrusion of the eyeball, and it did not appear to have sustained any mechanical injury or loss of tissue. The ophthalmia and keratitis were possibly caused by the irritating substances applied by the Chinese doctors to the wound.

The sinus on the side of the nose gave exit to a continuous

¹ *Clinical Trans.*, 1894.

² BRITISH MEDICAL JOURNAL, 1893, i, 1209.

³ Where antitoxin cannot be obtained, hard-boiled white of egg, which was proposed as a culture medium by Sakharoff, will serve as a very fair substitute. The culture medium may be prepared from the raw white of egg by the same method as that here recommended for the preparation of the nutrient medium from the antitoxic fluid.