lung, in that there can be no eroding pressure on any large vessel, and also because it is not liable to extrusion, as so frequently happens with drainage tubes in thoracic surgery.

Fortunately the lung was adherent to the costal pleura, and thus what might have been a very difficult operation was much simplified. Finally, although the consideration is of quite secondary importance, one need not in children, as the later photograph (Fig 2) (taken July 22nd, four and a half months after operation) illustrates, be deterred from excising considerable portions of ribs by the fear of future deformity, an observation which strictly applies also to the surgical treatment of empyema.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, January 21st, 1899, p. 133.

A MODIFICATION OF NEISSER'S DIAGNOSTIC STAIN FOR THE DIPHTHERIA BACILLUS.

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Now that the Klebs-Loeffler bacillus has been universally regarded as the cause of diphtheria, it is of extreme importance that the physician shall be able to recognise it with certainty.

Unfortunately the bacillus, although it possesses certain morphological characteristics, has, unlike the tubercle bacillus, no definite staining reaction, and in films stained by the ordinary methods it is sometimes very difficult to distinguish it from the so-called pseudo-diphtheria bacillus.

The usual method of staining as recommended in the textbooks is to stain for two or three minutes in Loeffler's methylene blue solution. I find that by this means the contour or general outline of the bacillus is well defined, but the granules contained in its interior are masked by the deep colour. In order to bring out the internal structure more clearly staining for a few seconds in carbo-thionin solution has sometimes, especially in older cultures, very clearly demonstrated the terminal granules, which often show well-marked metamorphatism as well as the involute forms.

Staining in very weak solutions of carbo-fuchsin shows the sheath and the contained granules even better than methylene blue; but none of these stains—at least in my hands—have proved sufficiently diagnostic, especially in films of membrane.

Neisser¹ has somewhat recently introduced a new method of double staining the bacillus, which is regarded as diagnostic.

The method has been described in the BRITISH MEDICAL JOURNAL, 1889, ii, p. 599, by Dr. Hewlett as follows:

1. One gram of methylene blue (Grubler's) is dissolved in 20 c.cm. of alcohol (96 per cent.), and mixed with 950 c.cm. of distilled water and 50 c.cm. of glacial acetic acid.

2. Two grams of benzoin are dissolved in 1,000 c.cm. of boiling distilled water, and the solution is filtered. Coverglass specimens prepared from fresh serum cultures are stained in No. 1 for 1 to 3 seconds, rinsed in water, counterstained in No. 2 for 3 to 5 seconds, washed in water, dried and mounted in Canada balsam.

So treated, the diphtheria bacillus appears as a slender longish rod, stained brown, and generally containing granules of a deep blue or ink tint. There are usually two granules, situated at the poles; occasionally a third at the middle of the rod.

The value of Neisser's stain has been borne out by Fraenkel.²

Having had the opportunity of seeing a slide so stained, I tried to get similar results from a pure culture of the diphtheria bacillus, and found that although occasionally successful, more frequently I met with failure. To anyone who has experienced the difficulty of double staining—say the leucocytes of the blood with eosin and methylene blue—this is not surprising. I therefore regarded Neisser's method as most unreliable in cases in which one has to determine the presence or absence of the bacillus.

My friend, Mr. F. Tanner, of Bournemouth, after experiencing similar failures, suggested modifying Neisser's method by treating the films with a solution of iodine after staining with methylene blue. The following is the method which we have found to give absolutely constant and reliable results:

1. The films from a culture or membrane are spread on slides or cover glasses, preferably the former.

2. They are fixed in the ordinary way by heat or by immersion for a few minutes in equal parts of ether and absolute alcohol.

3. Stained in Neisser's acid methylene blue (the formula given above) for 10 to 30 seconds.

4. After washing they are immersed in Gram's iodine solution or Weigert's modification (namely, iodine 1, potas. iodid. 2, water 200) for 10 to 30 seconds.

5. Again, thoroughly washed in water and stained in the vesuvin solution (formula as above, or preferably double this strength) for 10 to 30 seconds.

6. Dried and mounted in Canada balsam.

We have found that the exact time for immersion in these three solutions seems of little importance, except as regards the depth of colour, but half a minute in each gives good results.

The diphtheria bacilli thus stained appear as slender rods of a yellowish-brown colour, each containing a granule at both ends, with sometimes one in the centre. The granules are always contained in, and appear somewhat larger than, the bacilli. They are said to be oval, not round; but as far as I can determine they are perfectly round.

This modified method, like the original process, is extremely useful in films from a culture, as by its means no granules are demonstrable in the pseudo-diphtheria bacillus. I have also succeeded in films made from the membrane or from swabs of the throat in cases of the disease, but here a difficulty may arise from the resemblance that fragments of certain forms of leptothrix bear to the Klebs-Loeffler bacillus.

The ordinary form of leptothrix is never likely to be confused with the diphtheria bacillus, but small pieces may appear as narrow short rods having round granules of a bluish-black colour at their extremities, and in a film made from a swab taken from the throat a single bacillus may be either leptothrix or the diphtheria bacillus. If a group of eight or ten bacilli about the same size are seen together the case is almost certainly one of diphtheria.

Two cocci placed some distance apart may, when stained by Neisser's original method, appear somewhat like a diphtheria bacillus; but if one remembers that the granules are never found free, and that the fact that the cocci—even if they retain the methylene blue—are separate, no difficulty will be experienced.

REFERENCES.

¹ Zeits. f. Hyg., 1897, p. 443. ² BRITISH MEDICAL JOURNAL EPITOME, January 22nd, 1898.

MEMORANDA:

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

NEUROTIC ULCERS OF THE MOUTH.

IN connection with Dr. Sibley's interesting paper on this subject, may I venture to suggest the possibility that the affection may be due in some cases to a perversion or partial failure of the thyroïdal functions? Cracks and fissures of the tongue have often been observed in myxœdema, and an elderly patient of mine suffered at intervals from a burning pain in the tongue for years before being put on thyroid treatment. Singularly enough, the day after Dr. Sibley's article appeared a lady of 40 years consulted me about profuse menstruation, and she stated that during the last period she had had a burning pain in the tongue and roof of the mouth, with swelling of the lower eyelids and the lips, so that she had even experienced a temporary difficulty in speaking. I believe there may be symptoms of thyroïdal disease long before the development of general myxœdema, and that there may even be cases in which the latter never appears at all. It is impossible to enter at length into the question; but numerous circumstances related by Dr. Sibley, especially in connection with the stomatitis which he describes, seem to me very significant; indeed, it is probable that the state of the tongue and parts of the mouth in two of his cases was really due to a localised, if temporary and recurrent, myxœdema.

Turning now to Dr. Jacobi's cases, for the reference to which I beg to thank Dr. Sibley, this view of the pathology receives further confirmation. The first case he describes occurred in a man who, though fairly well developed, had no whiskers, no hair on the pubes nor in the axilla, whose sexual organs were those of a child of ten years, and who had great difficulty in