the serum of animals injected with alcoholic extract was haemolytic when acting alone or mixed with alcoholic extract but unmistakably haemosozic when mixed with aqueous extract. Similarly, in some cases, the serum of animals injected with aqueous extract was haemolytic when acting alone or mixed with aqueous extract, but unmistakably haemosozic when mixed with alcoholic extract. The same serum, therefore, was both haemosozic and haemolytic.

Lastly, a mixture of our two haemosozic sera was not more haemosozic for red corpuscles suspended in bile than the more potent of the two sera.

NOTE AND REFERENCE.

¹ BRITISH MEDICAL JOURNAL, July 18th, 1903, p. 130. ² These experiments will be described shortly in the *Journal of Pathology*.

CAPSULE FORMATION BY DIPLOCOCCUS PNEUMONIAE IN CULTURE;

A POINT POSSIBLY OF USE FOR THE IDENTIFICATION OF THAT MICRO-ORGANISM IN PRACTICE.

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BEFORE a given micro-organism can be identified with *diplococcus pneumoniae*, one of the chief points to be determined is the presence of its capsule. For instance, as is well known, it is especially by dint of its capsule formation that the pneumococcus is distinguished from other virulent streptococci with which it is liable in other respects to be confused. But the pneumococcus forms its capsule only under certain conditions; and while the capsule can readily be demonstrated around the diplococci when they are present in sputum, blood, or animal exudation, it is rarely exhibited in cultures. Capsule formation, however, has been stated to sometimes take place in cultures of the pneumococcus in media containing tracheal mucus, and also in cultures in serum and in milk.¹ Be this as it may, in actual practice when capsules cannot be demonstrated around the diplococci in the original material, it is necessary before a given diplococcus can be satisfactorily identified with the pneumococcus to inject the micro-organism into a mouse and to demonstrate the presence of capsulated diplococci in the blood or exudation of the mouse *post mortem*.

The pneumococcus showing capsules in culture.

A few months since, when examining a specimen of the pneumococcus, I happened to make a subculture in gelatine and to incubate it at 37°C. On examining the culture next day microscopically after suitable staining I found that undoubted capsules could be seen around the diplococci. After seventeen to twenty-four hours at 37°C., the gelatine in the case of the pneumococcus becomes generally, but not always, uniformly turbid. To demonstrate the capsules the following procedure is used:

The gelatine used was 12 per cent. gelatine made as follows:—1 litre of distilled water is added to 1 lb. of minced beef. Boil for thirty minutes. Filter, add 12 per cent. of yellow-gold table (not bronze-gold table) gelatine, 1 per cent. peptone, and ½ per cent. salt. Make faintly alkaline to alkaline litmus paper with liq. potassae (B. P.) Add

white of egg and steam for thirty minutes. Filter, pour into tubes, and sterilize in the steamer for thirty minutes on two successive days.

A drop of the fluid gelatine culture is removed with a loop and spread over a cover-glass, dried over the flame, allowed to stand in alcohol for a minute, and then without drying transferred film downwards to a watchglass containing ordinary Ziehl's carbol fuchsin. The film is allowed to stain in the carbol fuchsin for from a half minute to three minutes at the ordinary room temperature. The cover-glass is then lightly dipped in a beaker of water, and after removal of the moisture from its upper side by means of a piece of filter paper (so as to enable a drop of oil to be placed on the cover-glass), the preparation is mounted on a drop of water on a slide. On examining the specimen with an oil immersion (one-twelfth or one sixteenth) clearly outlined, stained capsules can be seen around a good number of the diplococci.

It is important only to dip the stained coverglass lightly and rapidly into the beaker of water. If the specimen is washed in the usual way—that is to say, until all excess of stain is removed, the stain goes out of the capsules and they are invisible.

If several preparations are made it is advisable to renew the carbol fuchsin, which is much more efficient when first used.

While I have succeeded in demonstrating capsules in a one-day culture in gelatine at 37°C. in the case of five successive virulent specimens of the pneumococcus from different sources, six virulent streptococci which have been examined under the same conditions have failed to show capsules.

I believe, therefore, that this property of the pneumococcus of forming capsules in gelatine at 37°C. in one day may be applied for the identification of the micro-organism, and for its differentiation from specimens of streptococcus pyogenes. The point suggests itself as likely to be of use to those who are unable to make the animal experiment.

It should be added that it is difficult to get permanent specimens of pneumococcus showing capsules in gelatine at 37°C., as the capsules are less obvious in Canada balsam than in water, and tend rapidly to fade. The accompanying photograph, however, was made from a permanent specimen which was obtained by deeply staining with carbol fuchsin, only slightly dipping in water, and then, after drying, passing through xylol and mounting in balsam in the usual manner.

REFERENCE.

¹ Washbourn, Croonian Lectures, 1902.

ABSTRACTS OF The Hunterian Lectures ON THE PATHOLOGY AND SURGERY OF CERTAIN DISEASES OF THE PANCREAS.

Delivered before the Royal College of Surgeons of England.

By A. W. MAYO ROBSON, F.R.C.S.,

Hunterian Professor.

LECTURE I.—SYMPTOMS AND DIAGNOSIS.

[AFTER some preliminary observations, Mr. Mayo Robson dealt with some anatomical, histological, and physiological considerations bearing on the pathology of the pancreas, and then went on to discuss the symptoms and diagnosis of diseases of the gland.]

DIFFICULTIES OF DIAGNOSIS.

As our knowledge of the functions of the pancreas both with regard to digestion and metabolism is becoming fairly well established, it would seem probable that any departure from the normal would lead to such considerable disturbance of function that the symptomatology of any of the diseases of the pancreas would be so marked as to make the diagnosis easy. But this is far from being the case for several reasons:

I. It is seldom the case that the pancreas is diseased without other organs participating. For instance, the relations between cholelithiasis and pancreatitis, between gastro-intestinal catarrh and catarrh of the bile and pancreatic ducts, between ulcer or tumour of the stomach and extension to the pancreas, between affections of the liver, colon, lymphatic glands, and duodenum and pancreatic disease.

II. Every function performed by the pancreas may be vicariously taken up by another organ except the glycogenic function, and that we are not yet certain about. The stomach can digest albumen, the salivary and intestinal glands have the power of digesting starches, and the bile and intestinal secretions can emulsify fats.

III. A considerable portion of the gland may be necrosed and cast off or otherwise disabled, and yet the portion remaining may apparently be sufficient to carry on the functions of the gland. For instance, in a case of my own, a patient who is now perfectly well, had necrosis of the pancreas, which I removed at operation. As may be seen, a good pro-