CASE XI.—This was a cow in a byre of sixteen. Her breathing was accelerated, and after watching her for a short time she was noticed to cough. An examination of the front wall revealed some specks of matter, and these on examination showed tubercle bacilli. The owner of this animal was indignant when he was told that the cow was tuberculous. He maintained that she was in perfect health and a heavy milker. She was ordered out, and was slaughtered two days afterwards. The lungs contained a quantity of softened caseous matter throughout their substance. The mediastinal and bronchial glands were enlarged and caseous; the mesenteric glands were about the size of hens' eggs and contained caseous matter. The other organs were not invaded.

In the above cases the expectorate was carefully scooped up in a piece of paper torn from a note-book; the paper was then rolled into a scroll and placed in a sterilised test tube, the test tube being closely corked to prevent desiccation during transit to the laboratory.

More cases might be cited, but these will suffice, the object of this paper being to show the value of this method of examination.

A cow will occasionally cough up purulent matter in other conditions than tubercle, such as a common catarrh, but an examination of the expectorate in these cases will show only catarrhal cells and the complete absence of tubercle bacilli.

[I have had an opportunity to examine Mr Riddoch's preparations, and can vouch for the accuracy of his observations. It may be well to add that there is here no question of "grass bacilli," as the preparations show that the bacilli always occur together with well-staining leucocytes and other cells derived from the lesions or from the air-passages.—J. M'F.].

A FURTHER NOTE WITH REGARD TO THE STAINING REACTION OF ANTHRAX BLOOD WITH METHYLENE-BLUE.

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In this Journal for March last (p. 35) I described the peculiar colour reaction which is obtained when an imperfectly fixed film of blood containing anthrax bacilli is stained with aqueous solution of methylene-blue. The fact that such a peculiar and striking reaction was obtainable in this way with anthrax blood had been known to me for a number of years, and during the whole of that time I had never failed to obtain it with more or less distinctness according to the number of bacilli present. It was therefore with some surprise that on a recent occasion I failed to obtain the reaction described with a preparation of anthrax blood in which the bacilli were abundantly present. As this was the first preparation stained with a freshly-made 1 per cent. solution of Grubler's methylene-blue, it was immediately surmised that the uniform success which had formerly attended the use of the stain must have been due to some impurity in the dye used. This appeared to be the more probable since for a number of years past the solution in use in the Laboratory had been from time to time made from the same stock-bottle of methylene-blue powder.
This stock, indeed, had been in use for several years, and I am unable to say from whom it was originally obtained. The failure to obtain the reaction with the freshly-prepared solution of presumably pure methylene-blue was a little disconcerting, but, fortunately, the explanation of the discrepant results was soon discovered. A 1 per cent. solution of fresh Grubler's powder was prepared by boiling, with the addition of a \( \frac{1}{2} \) per cent. bicarbonate of soda, and this was found to give the specific reaction with great brilliance. Apparently therefore the stock of methylene-blue which had been in use in the Laboratory for a number of years either had the polychromatic quality originally owing to some impurity, or it had acquired it by keeping. Subsequently it was found that a freshly purchased sample of Merck's pure medicinal methylene-blue gave the reaction without the addition of bicarbonate of soda.

With this explanation the directions given in the previous note on the subject may be allowed to stand. Further experience only serves to impress me more with the practical value of this method of staining in the diagnosis of anthrax. Alike in respect of simplicity, and in the characteristic appearance of the picture which it produces in the blood film, it is much superior to any other method yet devised, not omitting those directed towards the staining of the capsules of the bacilli. As previously stated, the reaction is macroscopic as well as microscopic, and this to such an extent that in dealing with ordinary samples of anthrax blood from the ox, sheep, or horse, in which the bacilli are nearly always very numerous, one can generally recognise the peculiar reaction with the naked eye. Conversely, when the sample of blood being examined comes from one of the animals mentioned, and it is not putrid, one can with very little chance of error pronounce the case to be not anthrax if the stained film lacks a purple shimmer, and presents only a greenish-blue tint. It need hardly be said that these remarks must not be construed as a recommendation to dispense with microscopic examination of the stained preparation; they are merely intended to emphasise the remarkably distinct nature of the reaction.

As the reddish-purple reaction is due to the staining of the disintegrated capsules of the bacilli, it is entirely prevented by any procedure which fixes the capsules, and care must therefore be taken not to heat the film too strongly. For the same reason, the distinctness of the reaction depends upon the richness of the blood in anthrax bacilli, and in cases of that disease in which a general invasion of the blood stream had not taken place at the time of death this method of staining is obviously of no value. There is, however, probably only one domestic animal in which death may occur from anthrax before this general invasion of the blood has taken place, viz., the pig. In an animal of that species failure to detect anthrax bacilli in the blood by any method of staining does not warrant one in concluding that the case is not one of anthrax. In recent cases of anthrax in the pig, however, I have found the methylene-blue method of staining very valuable when applied to scrapings taken from the lymphatic glands of the throat.

In conclusion, it may be mentioned as a point of interest, though not of importance, that the reddish-purple tint of anthrax films stained in this way is apt to fade, even in preparations that are protected from light.