

showed a fine rather thin growth at first of minute discrete colonies; later these ran together into thin waxy lines which upon the expiration of four or five days assumed a faint yellowish tinge. Other tubes were made directly from the pipettes of the kidney and spleen into beef broth. This upon the following day showed a faint turbidity, which, just as in the case of the Pictou cattle disease, if anything, lessened with further growth. while a whitish deposit formed at the bottom. Since then, using the remaining pipettes, I have obtained a great number of broth cultures, the growth being much more free upon this medium than upon the agar, and further, yielding forms which are more characteristic and less liable to cause confusion; for the micro-organism is most remarkable in its characters.

Grown upon broth, in 24 hours it is present in the form of minute diplococci surrounded with a faint halo or capsule. Often these tend to be arranged in irregular chains in which the separate appearance of the dots are not quite regularly arranged, the long axis joining the two dots not of necessity coinciding with the long axis of the chain.

Grown upon glycerinated agar, the appearance is most puzzling, and although I had similar experience when working out the character of the micro-organism of the Pictou cattle disease, these agar cultures have given me a week of profound anxiety, until within the last 24 hours I have solved the problem. A 24 hour culture at 37° upon glycerinated agar, reveals minute forms which upon careful staining with fuchsin, not too deep, are clearly forms of diplococci. One gets every transition from the frank diplococcus form through one in which only very careful focussing shows that the somewhat oval bacterium has at either pole a deeper stained mass, to forms in which the polar staining cannot be made out so that one appears to deal with true short bacilli. Add to this, a certain number of oval forms can be seen still smaller than the diplococcus, in which the distinction between the two ends cannot be made out.

In 48 hours, and still more in 72 hours, the same culture which had given this appearance at the end of 24 hours appears to be contaminated by the presence of long distinct bacilli; that is, if sections be well stained with fuchsin, while this is still more the case after staining with Loeffler's methylene blue. At first sight, a culture from this variety showing these bacilli of irregular length with rounded ends, often lying side by side, appears to be undoubtedly of the colon bacillus or some allied form. And here I gain an explanation of the contrary results obtained by a bacteriological *confrère* and myself in London two years ago. I took to him cultures isolated from two cases of cirrhosis which, on examination in Montreal, seemed to be