

halo; they are so small as best to be studied under the one-eighteenth or one-twentieth immersion lens, although they can be made out, yet with some difficulty, under the one-twelfth immersion (*vide* Fig. II.). The method of staining found by me to demonstrate them most surely was by carbolised fuchsin followed by bleaching in the bright sunlight for several days.

As an appendix to my paper, I described a case of cirrhosis which had within the last few days come to the *post-mortem* table at the Royal Victoria Hospital. From the liver and other organs of this case was gained a polymorphous bacillus appearing in early cultures as a diplococcus, and later assuming a bacillary or diplobacillary form (*vide* Fig. IV). I pointed out that while in certain respects it resembled the colon bacillus, I must provisionally assume that it was a distinct species. More especially was I led to this conclusion from the fact that upon lactose and glucose broth there was no fermentation of sugar, while preparations made to demonstrate the presence of flagella showed one, or at most a pair, of these, appearing to be terminal and not lateral.

Such, in brief, were the main facts gained by me up to the middle of July. Since then the subject has widened greatly, and I can here give but an epitome of my later researches, the full details of which will be published elsewhere.

Further study of the form isolated from the case of human cirrhosis and of cultures from a second case (for the material of which I am indebted to my friends, Professor Wyatt Johnston and Dr. Anderson) have conclusively proved that this form must be regarded as at most a variety of the colon bacillus. The colonies upon agar plates and tubes made during the first days of growth were much smaller than those obtained ordinarily from the colon bacillus. A growth on fresh acid potato, while visible, was less abundant than that formed by the stock bacillus, and was of a very pale fawn colour rather than brown, and, as already stated, sugars were not fermented, and lateral flagella appeared to be absent.

But now, with frequent transfers upon slightly acid glycerinated agar, the colonies have become larger, and after passage through the rabbit they are scarce distinguishable from those of the ordinary colon bacillus. Glucose and lactose broths are now fermented with a development of the proper proportion of gas (one-half the closed limb of a Smith's fermentation tube), films made from young cultures in broth and glycerinated agar, show abundant lateral flagella. No distinction can be made out in the behaviour in milk, litmus milk, and on fresh acid potato.