

search further. In the third, which occurred a little over a month ago, the growth was very slight, and although pure, it had apparently died out on the fifth day and I was unable to gain any further cultures, if indeed what I saw was anything beyond the frequent presence of diplococci already existing in this liver juice at the time of extraction.

The difficulty that has pursued me in this search has been that which has prevented me from publishing so far any extensive report of my studies upon the Pictou cattle disease, namely, the extraordinary difficulty in staining the micro-organism in the tissues. I have tried a very great number of methods, and while with many I have been able to recognise the bacteria, the results obtained have been so inconstant that I have felt that others following me might very possibly have negative results; thus I have been unwilling to make any full statement until I should be able to state clearly how to be able to recognise the micro-organism. While this micro-organism stains deeply it appears to lose its stain even more rapidly than does the tissue. Sometimes Gram's or Weigert's method shows them perfectly, but while the iodine appears to have a deterrent effect upon the decolorisation of the microbes, the stain is not properly fixed by its means. And while again I have obtained good results by staining with methylene blue dissolved in anilin oil, a momentary passage of sections so stained, through a mixture of anilin oil and xylol and so through xylol into Canada balsam, yet even here the colour appears to fade out rapidly so that in a few days the micro-organisms are unrecognizable. Eventually the thought struck me that bleaching in the sunlight might be a possible means. By this process there would be no diffusion currents set up, and if, as my previous work had shown, the bacilli took up the stain with rapidity then the deeply stained sections would have so much of the dye in the bacilli that, upon bleaching out, the bacilli would be left stained when the tissue itself had become colourless.

My laboratory assistant, Mr. E. W. Hammond, prepared a large series of sections in this way and obtained some excellent results. He found that, as I had suggested, strong staining with carbolised fuchsin followed by bleaching for a short time each day for a period of a fortnight or more, demonstrated the bacteria admirably. While the process is a slow one it has the undeniable advantage that each day the mounted section can be examined to see how far the process of bleaching has progressed. By this means I was able to find out that in the Pictou cattle disease the micro-organisms, while present scattered through the new fibrous tissue, are present also in large numbers