

at intervals of fifteen minutes, thirty minutes, one and two hours. The various organs were immediately placed in formal-Müller, and were subsequently cut in celloidin and paraffin, the sections being stained by carbol thionin.

Our attention was at first especially directed to the liver. Here already in the animal killed at fifteen minutes after intravenous inoculation a definite series of changes was seen to have occurred. (*Vide* Figs. 13 and 14, Plate II.) In the bloodvessels of the liver free bacilli of normal size and appearance were occasionally to be observed, but already bacilli could be recognized within the leucocytes in the blood-stream. (*Vide* Fig. 13.) The number of these leucocytes was not excessive, but each contained a relatively large number of bacilli. In addition, already the endothelium lining the vessels was seen to be very prominent; here and there these cells contained a fairly large number of bacilli.

In thirty minutes the number of bacilli in the endothelium cells and the number of endothelial cells containing bacilli were markedly increased. The bacilli, situated within the endothelial cells, already show strongly marked differences from those free in the blood-stream. The latter were of normal length and thickness, and took on a homogeneous stain. Those within the endothelial cells were short and stumpy, sometimes almost coccus-like. The appearance given is that of primitive bacilli having been broken up into shorter lengths.

In the rabbit killed at the end of one hour the number of bacilli seen in the blood-stream was distinctly less, but there was a further increase of those in the endothelial cells. Occasionally, in the endothelial cells relatively large bacilli could be seen, but the majority of forms were, as in previous specimens, very short and stumpy, and the impression gained by a study of the sections is that the bacillus is taken up in the long form and subsequently broken up into shorter sections. So far no well-stained bacilli could be seen in the liver cells. Already in the endothelial cells certain of these stumpy forms had the appearance of diplococci of fair size.

In the liver of the rabbit killed at two hours after inoculation the same appearances were to be made out as those seen in the rabbit of one hour—namely, the presence of short and stumpy bacilli in the endothelial cells; we were of the opinion that a larger proportion of these had the appearance of diplococci than in the previous sections.