

of the immune serum and bacteria there was added a very small amount of the fresh blood of another animal. It was argued from this that the bacterial destruction seen in Pfeiffer's reaction was due to two substances, one of which was fairly stable, the other, however, disappeared on standing. Such an immune serum which had lost its bactericidal qualities on standing was described as an inactive serum, and when these qualities were restored to it by the addition of fresh serum, it was said to be reactivated. It was soon found, however, that a serum could be inactivated most readily by heating; a temperature of 55°C for thirty minutes being sufficient for this purpose.

The importance of these observations became more apparent when the attention of the investigators was turned to the action of blood serum upon other cells than bacteria. It had long been known that when the red blood cells of an animal were mixed with the serum of an animal of another species that they were dissolved: from the color change which took place owing to the passage of the hæmoglobin into the serum, the blood was said to be laked. Now it was found that if the red cells of an animal were injected into another animal in gradually increasing doses the serum of the second animal gradually acquired an enormously increased power of laking the cells of the first animal. For instance, if, say the serum of a guinea pig lakes the corpuscles of the hen in a given strength in a given time, after treating the guinea pig with the hens corpuscles by intraperitoneal injection for some months, it is found that the serum will lake the corpuscles in the same time in solutions containing perhaps only one-hundredth as much serum; that, in fact, the serum has acquired an enormously increased destructive action upon the corpuscles. This has been called hæmolysis, as the destruction of bacteria in the immune serum has been called bacteriolysis. This condition, it has been shown, can be produced not only for bacteria, or red blood cells, but also for almost any other cell of the body, so that by adopting similar methods it is possible to obtain sera which are leucocytolytic, neurolytic, nephrolytic or spermatoxic. In every case the active condition in the blood serum has been produced in exactly the same way in which immunization is produced for a specific bacterium. It was natural to suppose that the changes which took place in the blood serum were similar, and the compounds which were formed were of a similar character. It was indeed an easy matter to demonstrate that, for instance, in the case of the hæmolytic serum there was present a fairly stable body which was not destroyed by heating to 55°C for thirty minutes, and a second body which was so destroyed, but which could be restored by adding the fresh serum of another animal. This