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A further note on specific hyperleucocytosis in immunized animals.

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In a previous communication,[1] we have mentioned the specific and extreme hyperleucocytosis which occurs on injecting a culture of the typhoid bacillus in a typhoid immunized rabbit. Further study shows that this reaction precedes and is remarkably more intense than the reaction that occurs on injecting *B. typhosus* in normal rabbits. In both instances there is an initial leucopenia two hours after injection followed by a rise and subsequent fall and a second higher rise in both normal and immunized rabbits. A mean of a considerable number of determinations shows that in immunized animals the first rise occurs at about 12 hours and averages a leucocyte count of 62,800. Counts of 100,000 to 150,000 have occurred not infrequently. This is followed by a fall at about 16 hours followed by a second rise which reaches at 18 hours an average of 74,700 leucocytes. In the normal animal these two rises are also evident, occurring at 18 and 26 hours respectively, and giving an average of 39,200 and 37,000 leucocytes to the cubic millimeter.

This specific type of leucocytosis has also been found to occur in rabbits immunized against red blood cells (sheep and guinea pig) and also against horse serum. In both these instances the highest leucocyte count occurs much sooner than in the case of typhoid immunized animals, somewhere between 4 and 8 hours following injection. It does not occur with equal intensity in all animals, and the intensity would seem, from preliminary observations, to bear some relation to the hemolytic titer or the precipitin titer of the animal concerned. This latter fact led to a crucial experiment designed to expose the mechanism by which the specific hyperleucocytosis is produced.

It is found that when a normal rabbit is given an intravenous injection of 1 c.c. of well-sentitized sheep-blood corpuscles, subse-

[1] *Journal American Medical Association*, LX, 1913, 1950.

quently washed to remove excess of hemolytic serum, that a hyperleucocytosis follows equalling in intensity the one produced in an immunized animal. No such phenomenon occurs in a control rabbit given sheep blood treated with the serum of a normal rabbit. In other words, the marked leucocytic response in the immunized animals is due to the tropic action of its serum on the antigen in question.