

Increase in Lymphocytes in Healthy Persons Under Certain Emotional States.

EDMOND J. FARRIS. (Introduced by M. X. Sullivan.)

From the Department of Anatomy, Georgetown University School of Medicine, and the Department of Anatomy, Medical College of the State of South Carolina.

The purpose of this preliminary report is to call attention to a relative lymphocytosis observed in healthy individuals under certain emotional states. Menkin¹ showed that excitement in cats of 10 to 15 minutes duration caused a relative emotional increase in mononuclears, averaging 13% with a return to normal within 30 minutes after. As far as known, no other similar investigations have been reported.

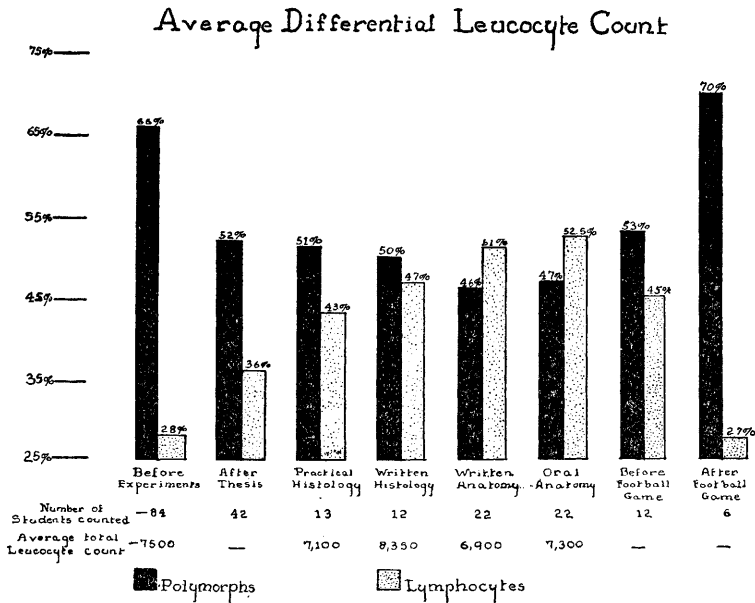
Freshman medical students and members of a football team, all apparently in good health, were used. All blood samples were drawn from the fingers, and the smears stained with Wright stain. Two hundred cells per smear were counted and the percentage of lymphocytes determined. In the preliminary work, total leucocyte counts were made in every case, but not continued because no departure from the normal count was in evidence. The experiments were carried on for 3 successive years with respect to medical students, and one season only with respect to the football team.

Blood counts were made on the medical students at the beginning of each session, and a normal for each class established. During the final examinations, blood counts were made as follows: (1) a group during the practical histology examination, (2) a group during the written anatomy examination, and (3) a group during the oral anatomy examination. Also, a differential leucocyte count was made on the members of one of these classes on the completion of an assigned thesis. On the members of the football team, blood counts were made approximately one-half hour preceding the start of a match game, and approximately one-half hour after the end of the same game.

The results of the experiments showed percentage increases in lymphocytes as indicated in the chart. Examination of this chart, columns (3-6), indicates clearly that as the emotional strain was continued, the lymphocyte count rose correspondingly.

The physiology of the relative lymphocytosis cannot be explained at present. The work of E. F. Muller² and associates, and of

¹ Menkin, V., *Am. J. Physiol.*, 1928, **85**, 489.



Camp³ and others suggests a complex reaction of the nervous system.

Summary. Emotional states produce a marked relative lymphocytosis in healthy persons.

7671 P

Note on Absorption of Phage by Heat-Killed Bacilli.

PHILIP LEVINE AND ARTHUR W. FRISCH.

From the Department of Pathology and Bacteriology, University of Wisconsin, Madison.

Investigations on the Salmonella were carried out employing the method recently described by us¹ for studying the specificity of absorption, particularly from polyvalent phages, by heat-killed bacilli. In principle the method depends on the fact that the absorption of phage by heat-killed bacilli is largely irreversible and consequently the residual phage may be studied both qualitatively and quantitatively without removing the absorbing organisms.

² Muller, E. F., *PROC. SOC. EXP. BIOL. AND MED.*, 1925, **22**, 95.

³ Camp, W. J. R., *J. Lab. and Clin. Med.*, 1927, **13**, 206.

¹ Levine, Ph., Frisch, A. W., and Cohen, E. V., *J. Immunol.*, 1934, **26**, 321.