Microscopically, the lesions occur in the submucosa, especially in the lymphoid tissue of the cecum. The process is essentially a mononuclear infiltration, and cells with 2 and 3 nuclei are found. Polymorphonuclears, lymphocytes and nuclear debris make up the other constituents, while acid-fast organisms are to be found in the lesions, often in large numbers, either extra-cellular or phagocytosed. This lesion in every respect resembles the tubercles formed in normal animals in contradistinction to reinfected animals.

These observations raise the question of the hematogenous origin of infection in intestinal tuberculosis, rather than of direct transplantation through the gut wall. It is interesting that in guinea pigs, as in man, it is that portion of the gut supplied by the ileocecal branch of the superior mesenteric artery which is most often involved, and the glandular structure in this situation particularly.

This is a preliminary report.

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Relation of Temperature to Susceptibility of Host to Disease.

I. J. KLIGLER.

From the Department of Hygiene, Hebrew University, Jerusalem.

In a previous paper[1] experiments were reported indicating that insolation or immersion in water for short intervals lowers the resistance of guinea pigs to a trypanosome infection. Since the insolation produced a rise of 1.5° C., and, immersion a fall of 2.5° C. in body temperature, there was a possibility that the effect might be referable to temperature changes. Experiments were therefore undertaken to ascertain the effect of low and high environmental temperatures on the relative susceptibility of animals to infection.

In the present series of experiments white rats were used instead of guinea pigs. Rats of the same age and weight were injected intraperitoneally with the same dose of trypanosomes *(Tr. evansi)* and divided into two groups. One set was placed in a dark room maintained at a temperature of 28° to 30° C., and a relative humidity of 45, the other was placed in a similar room and kept at a temperature of 10° to 12° C. and relative humidity of 70 to 80. In some experiments the rats were kept at the respective temperatures throughout the duration of the test; in others, groups of rats were transferred at short intervals from the hot room to the cold room and vice versa.

Rats were considered preferable to guinea pigs for this type of experiment. In guinea pigs the disease is chronic in character, and the duration of the illness is 3 to 4 months; the criteria for differences in reaction to the virus are, therefore, the incubation period and the intensity of the infection. In rats the disease is acute and of short duration. The duration of illness can be used as a gauge of the effect of various factors on host susceptibility.

The results of the experiments thus far indicate that temperature has no effect on the course of a trypanosome infection in rats. In one experiment the animals subjected to changing temperatures succumbed much sooner than the controls at constant temperature; but these results were not duplicated in subsequent experiments. In general, no differences were observed in the cold and warm rooms.

The following experiment is illustrative: 16 rats, averaging 40 gm. in weight, were injected with 10,000 Trypanosomes each. 8 were placed in the warm room and 8 in the cold. The average duration of the disease was 17.5 days in the warm, and 18.4 in the cold room. In the former the minimum was 14, and in the latter 15 days.

Another series of experiments, also with rats, was made to ascertain the effect of temperature on an intestinal infection. Rats were fed varying doses of *B. enteritides,* and placed in warm and cold rooms respectively. In these experiments a striking difference in effect was observed. The infection was not uniformly fatal, the mortality in the cold room was 50 per cent higher than in the warm room.

The experiments are still in progress. The results, however, obtained thus far, indicate that the temperature effect as such varies with the two types of infection. It apparently exerts no effect on the course of a trypanosome infection in rats, which is essentially an acute blood infection, but has a marked influence on the progress of an intestinal infection *(B. enteritides)* in the same animal.

It is possible that in trypanosome infections of guinea pigs (which is primarily a chronic infection localized in the tissues, and only secondarily a blood infection), the temperature effect will differ from that in the rat. This possibility is now being investigated.

This is a preliminary report.

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[1]Kligler, I. J., and Weitzman, I., *J. Exp. Med.,* 1926, xliv, 409.