The relation of the cholesterol in the free state to that combined as ester appears to be the same in both the female and male animals, and is similar to that reported for human subjects,[6] although the concentration of total cholesterol in the plasma of rats is only approximately one-half that found in human subjects. The values for fatty acids indicate a higher concentration in the plasma of breeding female rats than in male animals.

9206 P

Phage-Specific Heat-Labile Factors in *B. dysenteriæ* Sonne.

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It was previously reported[1] that from a certain multivalent Shiga phage, most Sonne strains absorbed distinctly but only the rough fraction, *i. e.*, detectable only when a rough Shiga strain or a susceptible Sonne strain was employed in the test for residual phage. In these and earlier experiments[2] the bacteria were heated for 2 hours at 70°C.

Subsequent studies were then made with phages derived from chicken-stools and propagated with Sonne organisms. Although these phages gave equally strong reactions on all (15) Sonne cultures available, curiously enough none of our strains heated to 70°C. showed distinct absorptive effects. This result seemed to indicate the presence of heat-labile factors. So, we compared organisms heated at 56°C. and at 85°C. for one hour. Absorption was obtained only with some strains subjected to the milder degree of heat. The nature of absorbing and non-absorbing strains could not be correlated with the above-mentioned differences in ability to absorb the rough fraction of the Shiga phage, nor with the quality of smoothness or roughness, nor with the direct titer. Indeed, from one of the absorbing strains, smooth and rough variants were obtained and both exhibited thermal lability.

In view of the stability to formalin of heat-labile antigenic (flagellar antigens) and/or phage-specific factors (*V.* antigen of

6 Sperry, W. M., *J. Biol. Chem.*, 1936, **114**, 125.

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1 Levine, Philip, and Beerman, P., *J. Immunol.*, 1936, **30**, 377.

2 Levine, Philip, and Frisch, A. W., *J. Inf. Dis.*, 1935, **57**, 104.

B. typhosus (Craigie)[3]), absorptions were made with formolized strains.† Thus treated, only the strains that possessed the heat-labile factor absorbed from the Sonne phage and they were just as effective as the bacteria heated at 56°C.

These observations on the Shiga and Sonne phages indicate that while thermostable Sonne factors are involved in reactions with the former phage, the latter (homologous) phage reveals heat-labile bacterial components.

The Sonne phage reacted intensely also on a small number of strains of *B. dysenteriæ* Flexner, but suitable absorptive tests failed to reveal the presence of corresponding fractions of phage. The absorbing surface of one sensitive Flexner strain studied in its relation to the Sonne phages, in contrast to the absorbing Sonne strains, was found to be thermostable.

Although both Shiga and Sonne phages are capable of lysing a number of Sonne strains, they differ strikingly in thermal stability. After the Sonne phage was heated at 65°C. for one-half hour, its titer for the homologous Sonne culture and the susceptible Flexner strain was reduced from 10^{-10} to 10^{-5}; after 4 hours at 65°C. the residual titer on both organisms was 10^{-1}, and no lysis whatever could be demonstrated after 5 hours' heating. In contrast, even after 5 hours at 65°C. the titer of the rough fraction of the Shiga phage on either Sonne or rough Shiga strains was hardly affected.

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Cobalt Content of Iron Compounds and Its Possible Relation to Treatment of Anemia.

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The physiological importance of cobalt has taken on greatly increased significance due to recent work in Australia and New Zealand demonstrating its value in the treatment of certain fatal diseases of sheep and cattle, which are characterized by progressive

3 Craigie, J., and Brendon, K. F., *J. Path. and Bact.*, 1936, **43**, 233.

† The formolized bacteria were washed several times with distilled water to remove free formalin which inhibits phage action.

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