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Occurrence of Hemophilus Influenzae in Throats of Polar Eskimos.*

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In the fall of 1930, we began a study of the origin of immunity to diphtheria among the Central and Polar Eskimos and of the nature of their throat flora. The materials were collected from 115 Eskimos by Dr. Peter Heinbecker during the late summer of 1930 and in a report soon to be published[1] we have stated that no hemophilic organisms were found. At the beginning of the current year we continued this study with a new supply of approximately twice the number of throat cultures and with additional safeguards against the dying off of these more delicate organisms, in case they should be present in the original materials.

From this latter group of throat cultures, 18 strains of Gram negative hemophilic bacilli possessing the accepted characteristics of *Hemophilus influenzae* were isolated, and this preliminary report is made to supplement and correct our statement already referred to, while a more detailed and complete description of these strains will appear later in the *Journal of Infectious Diseases.*

All these strains refused to grow on plain agar and only occasionally produced scanty growth on infusion agar to which filtered raw tomato juice had been added. On the contrary, all strains grew well on fresh blood agar and still better on this medium after the addition of tomato juice. The "satellite" phenomenon was very marked with many of the cultures, especially around colonies of hemolytic staphylococci, thereby strengthening the evidence that they required both a vitamine-like factor and hemoglobin for growth. Several strains were hemolytic and all strains tested showed nitrate reduction, indol production, ability to ferment dextrose, and bile solubility.

Of 5 strains saved for a more complete study, 4 were hemolytic, capsulated, and agglutinable by type "A" serum of Pittman.[2] The other strain was non-hemolytic, non-capsulated, and non-agglutinable at 37° in this serum, thereby corresponding to the "R" strains of the latter investigator.

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[1] *J. Infect. Dis.*, 1932, **50**, 281.

[2] Pittman, *J. Exp. Med.*, 1931, **53**, 471.

The isolation of these organisms strengthens our already expressed belief that the respiratory flora of the Polar Eskimos is very similar to that of persons living in warmer climates without such a great degree of isolation.

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The Heat Inactivation of Bacteriophages.*

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In testing the therapeutic value of the lysed cultures of *B. diphtheriae*, it became necessary to destroy the slight amount of toxin present with bacteriophage in some of the filtrates. Since bacteriophage is comparatively resistant to heat it was thought that simple exposure to heat may destroy the toxin without destroying the phage present in the lysates. This, however, we were not able to accomplish. Exposure to heat sufficient to destroy all the toxin caused almost complete destruction of the phage. In a study of the mechanism of inactivation of phages by alcohol we concluded that the effect of alcohol was not due to the direct destruction of the active agent, but to the denaturation of the protein vehicle on which the lytic agent was adsorbed.[1] Suspecting that somewhat similar relation may exist in the inactivation of phages by heat, we attempted 2 series of experiments.

In the first we made use of our earlier finding that the addition of polyvalent cations to the medium containing phage protected it from inactivation by alcohol.[2] We found that the addition of enough $CaCl_2$, for instance, to bring its concentration between 0.002 m and 0.015 m, some degree of protection against heat inactivation may be secured. Optimum concentration of $CaCl_2$ differs with each phage, and it thus becomes necessary to find a suitable concentration for each phage and even for each batch of the same phage, a laborious and time-consuming procedure.

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[1] Bronfenbrenner, J., and Korb, C., PROC. SOC. EXP. BIOL. AND MED., 1923, **21**, 177; *J. Exp. Med.*, 1926, **43**, 71.

[2] Bronfenbrenner, J., PROC. SOC. EXP. BIOL. AND MED., 1925, **23**, 187.