Grateful acknowledgment is made to the Carnegie Institution of Washington for financial support of this work.

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## Further Consideration of Transmissibility of Human Upper Respiratory Infections (Common Cold) to the Ape.

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In a previous communication[1] we have reported the suitability of the anthropoid ape as an experimental animal for the study of the upper respiratory tract infections usually grouped under the term "common cold".

We showed (1) that the upper respiratory flora of these animals during periods of normal health very closely resembles that of humans, and (2) that these animals are extremely susceptible to "colds" when exposed to humans suffering from such infections and that the clinical manifestations of these infections in the ape are more or less identical with those observed in human beings similarly affected.

Further, in an effort to ascertain the possibility of communicating to anthropoids, by means of a filterable agent, upper respiratory infections comparable to the human cold, it was shown that filtered nasal washings obtained from humans suffering with typical colds when injected intranasally into apes produced typical colds in about half of the instances attempted. In all positive experiments Gram-negative anaerobes of the type described by Olitsky and Gates were cultivated. However, no etiological significance was assigned to these organisms.

The importance of control experiments was recognized and early in the above investigations, plain broth and heated filtrate intranasal inoculations were carried out but were soon given up as inadequate. It was felt that it would be of more value to use for controls filtered nasal washings obtained from humans who were not suffering from colds. However, in view of the difficulty of excluding, with any degree of certainty, carriers of the active agent

[1] Dochez, A. R., Shibley, G. S., and Mills, K. C., PROC. SOC. EXP. BIOL. AND MED., 1929, xxvi, 562.

during the time that the transmission experiments were being performed (October to March) it was deemed advisable to postpone this phase of the study until an inter-epidemic period.

These control experiments were carried out in June and July of this year. During these months "colds" were at a minimum. The apes were taken in turn and were placed in quarantine for periods varying from 4 to 19 days and were then inoculated intranasally with filtered nasal washings. The procedure which had been used for the transmission experiments of the winter[1] was carefully followed throughout. As a source of nasal washings, healthy individuals, who had had no colds nor sequelae for at least 3 to 4 months and who had had no known exposure to current colds, were used.

The results of these experiments are striking in that they were absolutely negative. No change whatever was noted in the health of the animals either constitutionally or with respect to their upper respiratory tracts. In contrast with the changes noted in the positive transmission experiments there were no changes noted from the characteristic normal flora of their noses and throats. There was an entire absence of even small amounts of nasal mucous discharge following inoculation. In the light of these findings we have been led to consider as positive transmission experiments certain of our earlier results in which the symptoms and signs were rather inconspicuous and which we considered as doubtful.

It is very important to note that Gram-negative anaerobes of the type described by Olitsky and Gates were cultivated from these control filtered nasal washings in 75% of cases. Although this would seem to provide strong evidence against the probability that these organisms play an etiological rôle in the production of the common cold, it may be possible that there exists a specific type of these anaerobes that is a factor. This aspect of the problem is still under investigation.

The findings herewith presented taken in conjunction with the results of the transmission experiments already reported, seem to lead rather strongly to the assumption that the type of upper respiratory tract infection under consideration is caused by filterable virus.