were subendocardial hemorrhages in the left ventricle, and acute hemorrhage or ulceration in the pylorus or duodenum. Pleural effusion, ascites, congestion and edema of the intestines were never observed and pericardial effusion was very infrequent.

The decrease in hemoconcentration resulting from removal of the nervous factor may perhaps be accounted for on the basis of elimination of the reflex rise in arterial pressure, contraction of the spleen and vasoconstriction. Filtration of fluid into the burned skin is apparently decreased by functional deafferentation.

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On Infectious Mononucleosis.

A. NETTLESHIP. (Introduced by E. M. K. Geiling.)
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In the spring of 1941, during the occurrence of an epidemic of infectious mononucleosis, we attempted to isolate a transmissible agent from sterile Berkefeld filtrates of nasal washings and whole blood by inoculation into the chorio-allantoic membrane of the chick embryo. Material was obtained from patients who gave a characteristic history, blood picture, and whose heterophile antibody titers ranged from complete agglutination of 160 to a high of 2560. We also attempted passage from patients whose clinical history and leucocyte picture were typical and who later gave heterophile agglutinations in the range mentioned. The nasal washings and blood from some patients were frozen for 12 hours before they were used. Two additional cases made their appearance this fall. In all, a total of 8 attempts was made to transmit the agent from 8 cases; positive results were obtained from 4. The sterile filtrate, when inoculated onto the membrane, showed small pearl-gray reactions with a spreading cloudiness about them. This reaction occurred after the third to the fifth day of inoculation and continued to grow until the membranes were harvested for study. Of 66 membranes which were inoculated with sterile nasal washings, 19 showed positive reactions. Of 30 membranes inoculated with whole blood, 13 showed positive reactions. Cultures from all infective membranes were bacteriologically sterile. Nasal washings and blood from 2 normal individuals were negative. Microscopically, the positive membrane showed an ectodermal proliferation and heavy monocytic cell infiltration. Although special

stain was applied, (Mallory phloxine-methylene blue) no inclusion bodies were found. We were able to continue the reaction through 4 to 14 passages obtaining positive results with about 50% of the membranes. The agent finally died out, showing a dramatic drop of positive takes in the last 2 generations of each passage. An attempt to transmit the virus into 25 mice through the intraperitoneal route was unsuccessful. While we could reproduce a monocytosis (prolymphocyte) in rabbits, by injection of a suspension of infective ground chick membranes we were unable to get a heterophile reaction of significantly high titer against sheep cells with the rabbit serum. Serum from normal rabbits did not give a positive heterophile reaction against sheep cells. The leucocyte picture in rabbits made its appearance 4 to 6 weeks after inoculation.

There have been attempts to prove the relationship of various bacteria to infectious mononucleosis. The only trials which have been made, insofar as we could determine from the literature, with the use of bacteria-free filtrates were those by van den Berghe and Liessens.[1,2] They consider the agent a virus with which, after primary isolation on tissue culture, they were able to reproduce the disease in monkeys. They obtained a typical blood picture and heterophile reaction. A suggestion of theirs[3] that the virus survives at a low temperature prompted our freezing the material prior to inoculation on the membrane. This seemed to increase its infectibility.

I wish to thank J. Gray for technical assistance.

[1] van den Berghe, L., and Liessens, P., *Compt. rend. Soc. de Biol.*, 1939, **130**, 279.

[2] van den Berghe, L., and Liessens, P., *Compt. rend. Soc. de Biol.*, 1939, **131**, 156.

[3] van den Berghe, L., and Liessens, P., *Compt. rend. Soc. de Biol.*, 1939, **132**, 90.