Meningococcus has been isolated frequently from the blood of children suffering from septicemia. In these cases total leucocyte count of 20-40,000 per c.mm. with polymorphonuclear leucocytosis of 90-95% suggests inflammation and cultural examination of blood often shows growth of meningococcus. The percentage of children suffering from such an acute condition is rather low. Generally, the patient expires before a proper diagnosis by a thorough clinical investigation can be made. However, opportunities were available during the last short epidemic to try the effect of intravenous meningococcus bacteriophage therapy in such cases. One group of cases was treated with meningococcus bacteriophage and the other with anti-meningococcal serum. The results of treatment appeared to be the same, mortality being about 33% in both groups. Details are given below. After further passage for yet a long time, which is being done, the result of treatment by phage is expected to be much better than by serum.

There is considerable difference of opinion regarding the value of bacteriophage therapy. Some consider the oral administration of bacteriophage in intestinal diseases, particularly in bacillary dysentery very effective. Its failure is thought to be caused by the absence in the particular preparation used of races of bacteriophage necessary to lyse an infective type of bacillary dysentery, where a combination of infections perhaps exists. But others do not believe in its efficacy at all. Bacteriophage, in order to be effective, in septicæmia, must have to be
injected intravenously, as it is in the circulating blood only where the bacteriophage can come in contact with the infecting organism.

It has been shown that bacteriophage is inactive in the presence of blood or serum and as such, the question of parenteral injection has to be considered. Treatment of urinary infections by the local instillation of bacteriophage was successfully done by Wehrbein. It was chosen for its capacity to lyse the organism causing the infection. He is emphatically of opinion that the introduction of bacteriophage into the urinary tract alone can lead to this lytic action; subcutaneous injection produces only a "vaccine effect." Bacteriophage contains not only the lytic principle but also the constituents of lysed bacteria. MacNeal and Frisbee were perhaps the first to try the intravenous effect of bacteriophage in septicemia. They treated 15 cases of staphylococcus septicemia, with some amount of success, by intravenous injection in large and increasing doses, at intervals of 2 hours until 'shock' was produced. Whether this shock is caused by the lytic effect of bacteriophage element on the bacteria and consequent liberation of endotoxin or it is caused by the bacterial lysed products, already present in the bacteriophage, is difficult to say. It is also difficult to isolate the active bacteriophage from the lysed products. Whatever the cause may be, it is well worth trying bacteriophage therapy in some cases of septicemia.

MENINGOCOCCUS BACTERIOPHAGE:

Meningococcus bacteriophage was isolated from C. S. F. of a case of meningitis. After repeated passages through many generations of locally isolated and foreign typical and locally isolated atypical meningococcus (6 A group) it is now found to lyse most of them, and to acquire high virulence. But all the locally isolated typical strains are not found to be lysable yet though foreign typical strains are all found to be lysable now. This bacteriophage was put up in ampoules aseptically for intravenous and intrathecal administration. Animal experiments were first carried out and artificial meningococcus septicemia was successfully treated in the rabbits. Emboldened by the success of animal experiments this method of treatment was done on 10 patients in whom diagnosis was confirmed by the presence of meningococcus in the cerebrospinal fluid. One of these was a girl of 6 years whose history is given below. The strain isolated from this case was numbered 556.

* "Studies on Meningococcus Bacteriophage" will be published soon.