

mixed thoroughly, and the tube kept at a certain definite temperature for a certain time, and if the serum has not been completely bactericidal and has not killed off all the bacteria a turbidity will be present from their growth. If the serum has been completely bactericidal the broth will be clear. A simple numerical expression for the bactericidal power of the blood is obtained by specifying the number of bacterial culture which is completely sterilized by digestion with an equal volume of serum. This method may also be employed for determining the bactericidal power of any chemical antiseptic. Under anaerobic conditions, he devised a method for measuring the bactericidal power of the blood by preventing the access of air by enveloping the blood in fatty acid-free oil.

The results of his investigations of the bactericidal power of the blood, both anaerobically and aerobically, seemed to show definitely that neither contact with the external air nor contact with ordinary glass surfaces exerts any important influence on the bactericidal power exerted by human blood upon the typhoid bacillus and the cholera vibrio.

By decalcifying the blood with a one percent solution of citrate of soda in physiological salt solution, he avoided the complications introduced by blood coagulation and made it possible to separate the white corpuscles from the blood fluids by centrifugalization, decantation and washing.

The blood, the bacterial suspension, and the soda solution, are mixed and kept for fifteen minutes in the incubator at 37°C. in capillary tubes and the phagocytosis is thus conducted here after which film preparations are made in the ordinary way, stained by Leishman's stain and examined under an immersion lens. By enumerating the bacteria ingested in a number of polynuclear white blood corpuscles and dividing, an average is obtained which is taken as the measure of the phagocytic power of the blood. It is compared, when comparative experiments are made, with the phagocytic power of a normal blood.

The opsonic content of any blood therefore is arrived at by comparing the amount of phagocytosis observed as a result of the activity of its serum with the amount of phagocytosis observed in the case of a normal serum used as control. The figure so observed is termed the Opsonic Index of the patient's blood. If, therefore, we say that a patient's blood has an opsonic index of 0.5 to the tubercle bacillus, what do we mean? Simply that it contains but one half the normal quantity of those opsonins which are essential to a combating of the bacillus tuberculosis.

From these observations he began to ask himself; Why do microbes invade the body; what does Nature do to ward off these microbes, or to