

in the case of man, found that the internal administration of yeast produced an increased opsonin production as well as a marked leucocytosis.

As the matter now stands, practically all investigators are agreed as to the fact that the blood serum contains substances which are absolutely essential to phagocytosis, but some doubt still exists as to the nature of these opsonins of Wright and Douglas. Dean, for example, holds that opsonins are thermostable and are, therefore, to be identified with the specific immune body, "fixateur" or "substance sensibilisatrice," previously described by other observers, notably, Denys, Metschnikoff, Savtschenko, and Levaditi. Dean was able to make out from experiments both with normal and immune sera that the destruction by heating of the opsonin in both kinds of sera is only fractional and that its apparently complete disappearance is due to the method of observation employed, which demonstrates its presence only over a very short range. His observations, also, tend to confirm the idea that the opsonins of normal blood serum are the same as those of immune sera. The fact that normal sera contain an immune substance has, of course, been known for some time. The normal anti-toxin (e.g., of diphtheria) and anti-ferments need only be mentioned. The work of Pfeiffer, Bordet, Moxter, Ehrlich, and Morgenroth, has firmly established the fact that the bacteriolytic and hæmolytic actions of normal serum are due to the presence in the serum of an immune body plus a complement. With regard to opsonins, it is still undetermined whether free complement may take part in the preparation of the microbes, but Dean's work goes to shew that this at all events is not a necessary factor in the case.

In the light of these experiments we are in a position to appreciate more fully something of the nature of infection. When bacteria gain an entrance into the economy some of them are immediately sensitized by the serum and are engulfed by the phagocytes. The amount of the immune substance in the plasma is, however, small and the supply is soon exhausted. Consequently, the organisms that escape its action are able to multiply and are either indifferent to the phagocytes or exercise a repelling influence upon them in the absence of the naturally present immune substances.

Hektoen and Ruediger have shown that, like complements, opsonins may be neutralized or bound by various salt solutions. (CaCl_2 , BaCl_2 , SrCl_2 , MgCl_2 , K_2SO_4 , NaHCO_3 , $\text{Na}_3\text{C}_6\text{H}_5\text{O}_7$, $\text{Na}_2\text{C}_2\text{O}_4$, $\text{K}_4\text{Fe}(\text{CN})_6$) and other substances, such as formalin, so that they cannot act on bacteria. They suggest that antiphagocytic action of this nature may be an important factor in the establishment and progress of various