

Medical Matters.

OPSONINS.



Dr. Harold Meakin, Captain I.M.S., contributes an interesting article to the *St. Bartholomew's Hospital Journal*, on "opsonins," in which he says that: "In the course of bacteriological research it often becomes necessary to create new words in order to describe new discoveries; some of these hardly escape from the laboratories in which they are born, and others travel rapidly to all the big laboratories of the world." To the last class the word "opsonin" belongs—a word which refers to a detail in the fight with every disease which is of the nature of a bacterial invasion. The term was originated by a paper contributed to the *Proceedings of the Royal Society* by Professor Wright and Captain Douglas, I.M.S., in which they showed that in the phagocytic experiments of Leishman the rate of phagocytosis is determined by the presence in the blood serum of some body which acts on the bacteria "in a manner which renders them a ready prey to the phagocytes." Dr. Meakin says it is important to keep in mind that the effect is produced upon the bacteria and not upon the phagocytes. This effect is called by Drs. Wright and Dutton an "opsonic" effect, the term being derived from a Greek word signifying "to cater for," "to prepare victuals for," and they employed the term "opsonin" to designate the elements in the blood fluids which produced this effect. In other words, they showed that a patient subject to an invasion by bacteria might have a powerful army of phagocytes capable of devouring the bacteria, but that the activity of this army would depend upon the extent to which the bacteria had been exposed to the action of opsonin.

Dr. Meakin therefore argues that medical efforts to enable a patient to combat a bacterial invasion successfully should include, if possible, an attempt to increase the opsonic power of the blood. There appears to be a separate opsonin for each variety of bacteria.

"In some cases, and particularly when the invasion is a "local" one, as in boils or acne, the opsonic power of the blood can be raised by an inoculation with bacterial vaccine, but, as a rule, this rise in opsonic power or *positive phase* is preceded by a *negative phase* of diminished opsonic power. This negative phase, if the dose of vaccine is sufficiently small, is usually very transient, but it is not at present possible in any case to foretell exactly either its degree or its duration, and it is, therefore, of absolute importance that no second dose of vaccine be given until the positive phase has supervened. If a second dose be given during the negative phase one negative phase is superimposed upon another with a harmful result.

"In an acute bacterial invasion of a general character, such as typhoid fever or pneumonia, the patient is probably absorbing poison continually and so inoculating himself, and it is on this account that injections of bacterial vaccine are contra-indicated in these cases during the attack.

"It is clear, therefore, that a knowledge of the opsonic power of a patient's blood may afford much information as to the progress of the fight going on, and is absolutely essential if we propose to aid the patient by the inoculation of a bacterial vaccine. To inoculate without this knowledge is like firing a pistol at a couple of struggling men—one might with luck hit the enemy, but one is quite as likely to hit the friend."

The opsonic power of the blood serum is estimated by mixing together, and incubating equal quantities of blood corpuscles freed from serum, an emulsion of bacteria in salt solution, and the serum to be examined; a similar combination is also prepared with a healthy man's serum. The average number of bacteria ingested under the stimulus of the healthy man's serum is taken as unity, and the patient's opsonic power expressed in terms of this.

"There is every reason," says Dr. Meakin, "to hope that with a fuller knowledge of opsonins we shall be able to come to the assistance of patients suffering from diseases due to bacterial invasion in a much more effective manner than has hitherto been possible."

[previous page](#)

[next page](#)