

cure the invasion after it has begun? When a microbe is introduced, such as staphylococcus, into the artificial nutrient media employed in the laboratory it increases, and millions of microbes are produced in a very few hours. It is obvious that the blood cannot be such a medium. When you introduce microbes into the blood, they do not proliferate at random in that fashion—there are protective or bacteriotropic substances in the blood that prevent them growing and increasing in the body. When one considers how the blood differs from the nutrient medium used in the laboratory two outstanding differences will be found. It contains white blood corpuscles and these have the faculty under certain circumstances of picking up the microbes and ingesting them, and killing them. Now the blood fluids are not simply an indifferent medium, as Metchnikoff the author of the theory of phagocytosis thought; the blood differs from the broth not only in the fact that it has white corpuscles but that it also contains substances which act on the bacteria. They act upon them somewhat after the manner of antiseptics. The analogy is not very close, but it is something of that sort. In other words your blood represents a fluid somewhat comparable to weak carbolic acid in which are white corpuscles. These antiseptics in the blood may be partly responsible for keeping the blood free from bacilli but are not wholly so. By a certain technique he found that it was possible to separate the white corpuscles from the blood fluids, to test them separately and see what white corpuscles could really do. So he took white blood corpuscles obtained from his own blood and an emulsion of bacteria, mixed them together in capillary tubes, kept them at blood heat for about half an hour, and watched to see what occurred. He was astonished to find that under these circumstances the white corpuscles did not ingest the bacteria, and therefore it looked as if the white blood corpuscles were of no use. He then mixed with the bacteria and the white blood corpuscles a portion of the fluid of the blood and he found that this influenced the microbes in such a way as to prepare them for ingestion. He found then that when you mix bacteria and white blood corpuscles together the white blood corpuscles have no power of taking up the bacteria; but when you add the fluid of the blood to the mixture of leucocytes and bacteria, the fluid of the blood alters the bacteria in such a way as to make them palatable for the white blood corpuscles. In other words the blood has prepared the bacteria for ingestion.

For this phenomenon he had to find a name, and, spending some time over Greek and Latin dictionaries, he found the word *opsono*, which means, "I prepare for dinner." It must be sharply distinguished