vegetable matter and is known as a parasite. Twelve thousand of them placed end to end would measure only one inch. They multiply very rapidly under favourable conditions, dividing into two about every 40 minutes, which in the course of 24 hours would result in the production of millions but for the lack of sufficient food.

They cannot develop in intermediary hosts, such as fleas, mosquitoes, etc., like certain other micro-organisms; but they can exist for several months in various substances, and thus be transmitted from one person to another. Fortunately, the sunlight destroys them in from four to eight hours.

After being taken into the mouth in food or drink, or on the fingers, the germ finds its way into the intestines, whence it is carried by the blood to all parts of the body and produces a poison known as the typhoid toxin, which affects the tissues and organs in such a manner as to cause the symptons of the disease.

(2) Dr. Ehrlich, a German scientist advanced the theory that besides the poisonous toxin another substance is formed in the body, as the result of the invasion by the typhoid bacilli or other germ, which is antagonistic to it and is known as its anti-toxin.

(3) In 1884, the great Russian scientist Metchnikoff advanced the theory that the function of the microscopic cells, the white blood-corpuscles, which are found in great numbers in all parts of the body, is to act as policemen of the blood, and that it is due to their eternal vigilance that disease germs in the blood, such as the typhoid bacilli are destroyed. He calls these miscrobeaters "phagocytes," Certain diseases, such as typhoid fever, smallpox, plague, etc., practically never attack the same individual twice, because these defenders have become so actively energized in their efforts to overcome the germs during the first attack that they remain in this active state indefinitely.

WRIGHT INTRODUCES PREVENTATIVE VACCINE.

(4) As the result of the work of Sir Almroth Wright, an Irishman, the two theories above were united to explain the resistance of the body to disease. He showed that the substance mentioned by Ehrlich first attacks and sensitizes the foreign organisms in the body, and that the white corpuscles then absorb and carry them away.

The most remarkable exhibition of this functioning is now given to the public by means of moving pictures, a film having been prepared by a French scientist and exhibited by MM. Pathe Freres which "shows the white corpuscles of the blood gradually altering their shape and position and fulfilling one of their best-known functions as scavengers and absorbing such abnormal substances as microbes, disease-cells, and granules of inert matter."

These facts being known to science, experiments were made to produce anit-typhoid vaccines, which when injected into the blood would have in a mild degree the same effect upon the body tissues as the disease germs.

(5) The French scientist Pasteur made the first successful experiments, in the immunization of chickens against cholera, which led up to the immunization of man against typhoid. His experiments were conducted solely upon animals. Others continued his researches.

(6) Later Sir Almroth Wright demonstrated that the dead bacteria of typhoid could be made into a preventive vaccine, and in 1897 he published a report of the first 20 anti-typhoid inoculations on human beings.

HOW THE WORK IN AMERICA BEGAN.

(7) The scene now shifted to the United States. One autumn afternoon in the year 1908 there assembled in the office of the Surgeon General of the Army a group of distinguished physicians and surgeons:

Brig. Gen. R. M. O'Rielly, Surgeon General: Drs. Victor C. Vaughan, Wm. T. Councilman, John H. Musser, Alexander Lambert, Simon Flexner, William S. Thayer, and Capt. Frederick F. Russel, Medical Corps, U. S. A.