

Pathogenic or disease bacteria when they have gained entrance into the body are attacked by the leucocytes, which make great effort to destroy the invaders. This warfare may be described from attacks actually witnessed by Metschnikoff in the water-flea, *Daphnia* (a small fresh water crustacean animal). Spores gained an entrance into the body of the crustacean, germinated, and were dispersed by the blood over the body and deposited where the blood moved slowest. In these places heaps of conidia, the developed fungoid cells or microbes, collect. The leucocytes are not idle. They attack and devour the intruders, take them into their interior, and digest them. If a conidium is too much for one cell, others join it, form a giant cell, and thus struggle with the invader. Should the leucocytes overcome the spores, the *daphnia* lives. If not, the conidia overrun the crustacean and death is the result.

Similar processes in animals more highly organized take place, the defending power of leucocytes being well illustrated in avian tuberculosis. In birds this disease is more common than in human beings. The liver and intestines of birds that have died from it present numerous pale-yellow,

rounded masses, the centres of the larger ones containing pus. The smaller ones are homogeneous, containing in the centre small circular cells with larger, giant-cells lodged among them; outside these a layer of smaller cells; and lastly, a layer of fibrous tissue. The microscope reveals minute tubercle bacilli clustered in the centre of the mass, and even occupying the interior of the giant-cells.

The bacilli may be too numerous for the leucocytes, and the point where they gain entrance into the tissues be transformed into a most interesting battle-field. Large numbers of other leucocytes quickly reinforce their comrades. Many of these die, others fuse and form giant-cells. The dead leucocytes form pus, or "matter." The bacilli are conveyed by blood-vessels, or are even carried away by the leucocytes—a giant cell sometimes containing fifty bacilli—and initiate new struggles in distant parts. When the bodily conditions are favorable to them, bacilli multiply very rapidly and overrun the whole system, little masses of tubercular products arising in the liver, lungs, brain and skin; function is soon interfered with and death results.

MISCELLANEOUS NOTES AND EXTRACTS.

INTERESTING HISTORY OF THE INFLUENZA EPIDEMIC.

At the recent annual meeting of the British Medical Association, Dr. Franklin Parsons read a paper on "The Influenza Epidemics of 1889-90-91 and their distribution in England and Wales." He showed that in 1889, when the epidemic broke out, the majority of medical men were unacquainted personally with epidemic influenza, and many were not prepared to recognize as such a disease in which catarrh was often absent. The name influenza, he thought, should be retained for the epidemic disease and not applied to severe cases of ordinary catarrh. He showed that it was more than a year between the time that it appeared in Russia and reached some remote parts of the

world. Its general course in the northern hemisphere was from east to west; in the southern hemisphere from south to north. Influenza was present in London in December, 1889, and became epidemic about January 1, and it did not reach some outlying places in hilly districts in the west and north until March. Market towns were attacked before villages, and neighbouring villages were not necessarily attacked at the same date. In suburban places, city-going men were usually the first to suffer, and among railway servants, clerks suffered in higher proportion than engine drivers, though the latter are more exposed to the air. Deep-sea fishermen and lightship keepers at sea almost entirely escaped. Medical men and nurses suffered in large proportion, but the disease showed little tendency to spread among patients in hospitals. The epidemic of 1891 began in March at Hull, and then spread thence to other towns,