

among mankind than would an army of wild beasts! It makes a man feel absolutely foolish to know that such things can take away his life. If he could strike a microbe with an axe, as he can a venomous reptile, he would not seem quite so helpless. But pestilential microbes—ugh! they are mysteriously abominable.

The idea seems almost too ridiculous to contemplate. They are unconscious things, more like seeds than anything else, and so are entirely devoid of any evil intent; yet nothing could exceed their virulence and destructiveness.

The disease is called bubonic plague because of the buboes, or inflamed glands, so characteristic of its work. It spreads epidemically. It is infectious rather than contagious—an important distinction—and is divided into several varieties according to the organs chiefly attacked. The germs differ slightly in properties, one kind being called *Bacillus pestis fulminaris*. This is fatal within twenty-four hours. Other conditions are less alarming. From five to six days is the period of incubation, or unfelt development of the microbes in the blood. Then their poison breaks out in all its revolting hideousness. The patient is suddenly seized with headache, rigor, chill, giddiness, thirst, vomiting, pains in the back, and limbs, and prostration, accompanied by severe fever, when the temperature may rise to 106 deg. Death generally follows about the tenth or eleventh day; but, if the victim survive this period, complete recovery is very probable.

Inflammation of the lymphatic glands (buboes), are the most noticeable signs of its presence; numerous carbuncles also springing into existence. The membranes of the lungs, kidneys, and other organs, are seriously affected; while frequent bleeding of the nose and lungs is a prominent symptom.

Seventy thousand people perished during the Great Plague of London, in 1665. It should be remembered that the town was a comparatively small place, so that these proportions were immense. About 90 per cent. is the average death rate now of persons attacked.

Coming to more recent times, we learn that in Hong Kong, during 1894, two thousand five hundred people lost their lives; and that in Bombay twenty thou-

sand inhabitants were destroyed between September, 1896, and May, 1897—nine months. In 1900 an outbreak at Glasgow was quickly suppressed, and was, therefore, not serious, thanks to the Authorities.

I now wish to deal with this peculiar microbe. It should be pointed out that when mounted on the slides they are soaked in an embalming medium, and have been so treated that they are rendered powerless. Upon magnifying them to a larger scale, we find that each specimen is a short, thick, round-ended rod or cylinder. Their usual method of multiplication is by division across the middle, when each half lengthens into a perfect bacillus that reproduces itself similarly. One germ is thus capable of becoming millions within a few hours, altering the composition of the fluids and other substances containing them. This is the secret of their actions. They absorb certain constituents for their own support and propagation; and in doing so, decompose or modify the remainder. These microbes were first isolated, or discovered, in 1824 at Hong Kong by the scientist Kitasako.

They may obtain admission into the body through abrasions on the skin, scratches, cuts and wounds. The pneumonic form, affecting chiefly the lungs, may secure lodgement through the breathing channels—the mouth, nose, and throat. The main means of entry are, however, through the punctures made by “biting” insects. Rats are the breeding bases for the germs, which get into the stomach of the fleas that feed upon them. These fleas are called *Pulex cheopis*; while the human being's species is named *Pulex irritans*.

No flea of any kind will feed on cold blood; so that as soon as a rat dies of the plague the insects leave its body, and, if they cannot find other rats, will attack any warm-blooded animals, including man. Although each creature possesses its own style of flea, as a rule, they are never averse to interchanging habitats. The house flea is not regarded as the source of mischief; yet the possibility is ever present that it may cause infection. Male or female rat fleas would not hesitate to interbreed with the domestic variety, among which the disease would rapidly spread. It should be understood that there are only trifling, microscopical differences be-