

commission in 1852. This determined the infectious nature of the disease, showed that one and the same malady affected horse, sheep and cow, that inoculation with the blood of an animal dead of the disease induces the disease in another, and, what for our present purpose is of especial importance, showed that small animals, rabbits and guinea-pigs—animals which can be employed for purposes of research—can be inoculated and will manifest the symptoms associated with anthrax.

Next in order of time may be placed Davaine's advances upon his early observations, observations confirmed by Pollender and others, that the blood of animals suffering from anthrax contains innumerable minute and characteristic rodlets. Davaine and Rayer had first found these in 1850 and had described them very accurately. But not until Pasteur's papers in '60 and '62 upon the micro-organisms causing lactic and butyric acid fermentations could any explanation be given of their significance. If microbes be the cause of fermentation, it might be that they could also cause disease; there might be truth in the old vague fermentative theory which time after time had been brought forward to explain epidemic and other maladies, and thus Davaine was led to renew his studies upon anthrax. He found the rodlets constantly present in the blood of animals suffering from anthrax, that whenever they were present the blood was virulent, that foetal blood from animals that had died of anthrax did not contain them and was not virulent. To Koch, however, we owe the complete proof that the bacilli are the active agents in the production of anthrax. He was the first to gain pure growths of them outside the body, and to show that the most minute quantities of such growths could cause the disease, and, again, by discovering that the bacilli formed spores, he cleared up a large array of difficulties in connection with the propagation of anthrax. These spores are little bodies—germs—formed within the bacilli; they can stand heat and cold and drying up, and can retain their vitality under conditions which are rapidly fatal to the bacilli containing them.

All this was a very great advance. We were taught that an infectious disease might be due to the entrance into the system