which, brought from Cuba in 1898, has spread so widely over the Southern, Western and Central States and Canada, has been true variola.

One supreme test of vaccination has enabled us, however, to prove conclusively its nature, since it has been as successfully combatted by that wonderful discovery of Dr. Edward Jenner, as the numerous outbreaks which from time to time had previously appeared since 1800. What he taught, in brief, was that by vaccination we introduce by inoculation a disease which causes a vesicle of a particular character on the teats of a cow or on the tender skin of the belly of a calf, the virus of which when inoculated into a person produces a vesicle of a similar character. We now know, what Jenner and other experimenters of his time, believed, from their experiments in variolation or inoculation with smallpox virus, that a similar vesicle can be produced through inoculating several calves in a series with virus from a smallpox patient, and that this smallpox virus thus modified produces in other calves, in man, in monkeys, and in guinea-pigs a vaccinia which protects against smallpox completely in practically all cases for ten years, in a large percentage for twenty years, and which, though decreasing, continues to protect against the severity of an attack of smallpox to a large degree throughout life. In the absence of any knowledge of the germ theory of disease, it is natural that Dr. Jenner and his associates should not have arrived at any clear idea of how this protection was produced, further than that it was the same as that caused by other eruptive maladies, whether in man or animals.

Not until Pasteur's discovery of the germs of anthrax and chicken cholera, and his success in producing immunity by the cultivation of the micro-organisms of these diseases, did it become possible to formulate any theory as to how the protection by inoculation with the germs of a disease was brought about. Without discussing modern experimental evidence regarding immunity, we have only to realize the organism of any bacterial disease as a simple cell, having its environment within the body, subject to variations, just as in nutrient media, and multiplying and completing its life-cycle in the body, obtaining its pabulum from the fluid tissues and their contained cells, and producing substances peculiar to itself, acting upon and being reacted upon by the normal tissue-cells, in order to understand that its pabulum may be exhausted as in a culture medium, that its products may become auto-toxines, and that they may stimulate in the tissue-cells of the body the production of compounds inimical to the further development of the micro-organism of the specific infection.