

also be remembered that the mere prick of a pin or needle or inhalation of chloroform are often attended with fatal results--indeed, many of the minor accidents incident to modern life are followed or attended with suffering, and often result fatally, without ever the opponents of vaccination raising a word of complaint or protest.

*The figures in the hotbed of prejudice, in England, are as follows: During the years 1881 to 1889 the average number of certified deaths connected with vaccination was 53, or an average death-rate of one to every 14,159 primary vaccinations, while the deaths from chloroform inhalation were one in every 2,000 anaesthetics, and for ether, one in every 20,000.

The German figures indicate that vaccination is more free from serious results than in England. †Voight states, that within the last five years he had vaccinated 100,000 people with but one death, and he stated the ratio of deaths to have been one to every 65,000 vaccinations.

The discussion of this question with the laity is most difficult, as naturally their grasp of medical theory and practice is, at the best, but hazy, and they cannot be expected to grasp the true inwardness of cause and effect. Those complications to which death is ascribed as the direct result of vaccination will be mentioned.

(a) Septicæmia and Pyæmia (blood poisons). This is a rare result of vaccinations. It was, however, much more frequent in the days when humanized vaccine was employed. Deaths reported as following the use of glycerinated bovine vaccine must be looked upon as due to secondary infection.

(b) Erysipelas, which is an acute infectious disease due to a specific germ which generally gains entrance to the body through a wound, hence it is not to be wondered at that with bad personal hygiene and unsanitary environment, there would be an increased liability to this disease. This trouble, too, like the former, was common during the period of the employment of human vaccine; the reported deaths from this cause in Germany, as reported in 1877,* were only two in 1,252,534 vaccinations.*

(c) Tetanus, or lockjaw, is, so far as the writer is aware, unknown in Continental countries, while the minority (or antis) of the British Royal Vaccination Commission in 1896, after careful, almost microscopic examination, could only find one instance where this disease could be by them considered as complicating vaccination. After a careful study of 52 cases reported as coming under this heading, Dr. R. N. Nelson came to the conclusion that while the tetanus infection gained entrance at the site of vaccination, it was not introduced with the vaccine virus, but at some period subsequent thereto. If, as has been suggested, the tetanus germ could be derived from hay or manure, and thus find its way in the bovine virus, there would naturally be found a larger number of cases, due to the infection of the serum when taken from the calf, which is ultimately made into 5,000 vaccinations, for infection of a particular tube in the laboratory is impossible, and the *Director of the Hygienic Laboratory of the United States Public Health and Maine Hospital Service was unable to find the tetanus (lockjaw) germ in a large

*Welch & Schamberg. (1905).

†History of Smallpox and Vaccination. (1901).