

lowing this two or three died each year, i.e., as many as during the year in which the inoculations were practiced. These same facts are related of experiments at Cannawurf.

2nd. In 1886, at Kelbra, out of one hundred and forty animals sixty-four were vaccinated; seventy-six were not. Each had a death from charbon.

3rd. In 1882, the veterinary department at Omler, vaccinated during five years eighty cattle and three hundred and sixty sheep. Charbon caused among the cattle 4.2 per cent. of victims and 1½ per cent. amongst the sheep. The malady attacked re-vaccinated animals. During the two latter years there were one hundred sheep inoculated and one hundred not, all the conditions being equal, and were placed on the suspected pastures. The vaccinated beasts died of charbon and in the second year two others not vaccinated. In order to believe in the efficacy of the method Koch would demand from Pasteur the guarantee of the correctness of the French statistics. Pasteur states that, health permitting, he will furnish at the coming congress at Vienna, but if not Mr. Chamberland will defend and maintain the conclusions arrived at in the report. All that is admitted in Germany is that the method of preventive inoculation produces only a conditional immunity against communication of the disease a very small result from the practical standpoint.

Mr. Chamberland's report first relates experiments made outside France, in Austria, Germany, Italy, Belgium and England, and according to the journal, does not deduce any facts favorable to his hypothesis, supported as it is almost wholly on the facts of French practice. He considers it to be a demonstration of the procedure, that the number of the vaccinated in France has continued to increase from year to year. Since 1882 it has greatly extended. The laboratory requires of veterinarians minute and detailed reports.

In 1886, there were 202,064 sheep, and 22,113 cattle vaccinated, in which the estimated mortality, according to the report—from vaccination and from charbon—was one per cent. in the sheep and one-and-a-half per cent. in the cattle, while according to the veterinarians, the proportions before the vaccination was practised was ten per cent. and five per cent. respectively. Thus as Chamberland says he cannot doubt that immunity does not

tend to disappear, but that it continues for most animals at least one year. It is indeed certain that it continues longer, and to avoid accidents, we think it advisable and useful to repeat the vaccination every year.

In the report of M. Lydtin, of Carlsruhe, its force is considerably broken by authentic documentary evidence of M. Koch. In spite of favorable results, Lydtin comes to the conclusion that Pasteur's method confers only a relative and conditioned protection. This opinion is confirmed by Koch, Gaffky, Omler and Kill. They have shown that a relatively frequent vaccination prevents during a certain time; but as to the practical value of the operation the writer is of the opinion of the commissioners of Parkisch. From an economic point of view says this commission preventive vaccination is to be recommended for large farms where endemic charbon causes great losses. It is especially for the bovine species that the inoculations are advantageous because these animals withstand inoculations better, and they are worth more to the farmer. There is room for hope that the method will perfect itself and that the loss caused by inoculation of sheep will in the future become considerably less. In order to arrive at a definite opinion on the value of preventive vaccinations, says M. Lydtin, an International Commission ought to be appointed which might condense the results of different experiments.

M. Custer's report gives Dr. Hesse's experiences in Switzerland. The results are most favorable. He thinks vaccination against charbon in sheep has a future as important as that now assured for it in cattle.

M. Csokor, of Vienna, treats on the theoretical question and in summing up states that Pasteur's opponents have never questioned the scientific value of the discovery, but on the contrary they have confirmed the experimental procedure (Koch, Gaffky, Loeffler) and that it is only on its practical value, and the opportunities for its employment that opinions diverge.

Summing up, all the reports with the exception of Chamberland's and Custer's, agree as to this small amount of value attached to the Pasteur method. On the other hand, it is certain that in France, from 1881 to 1886, 260,000 sheep and 29,000 cattle have been inoculated.

Thus the conclusion arrived at by this Ger-