

Canada, and more especially in this Province of Quebec, cannot but be warned by the grim history that comes to us recently from the county which gave birth to Jenner.

We have learnt other things also during this last century which Jenner at first did not recognise, and first and foremost that there is a possibility, remote it is true, but nevertheless existent, that in inoculating from man to man the diseases to which man is liable may be conveyed and inoculated along with the lymph. We now know that as a precaution against such an untoward event there should be constant return of the virus to the cow, and that calf lymph, and calf lymph only, should be employed. And only within this last year or two the researches of Copeman and Straus have shown that the admixture of such lymph with glycerine leads to the gradual destruction of the microbes in general harmless which constantly contaminate fresh lymph, while at the same time the glycerinated lymph appears not to have decreased but to have increased in activity, thus employing glycerinated lymph that is two months old we can be absolutely sure that we are using a pure and aseptic material.

Despite all efforts a century of vaccination and of study of vaccine lymph has not as yet disclosed to us the specific organism of vaccinia, or, as I have recently shown elsewhere, of the more virulent modification of the disease, namely, variola. We cannot, therefore, state that we have fully mastered, or even that we have begun to master the bacteriology of vaccinia; we cannot cultivate its germ or supply to the public pure attenuated cultures for purposes of inoculation. But this we can say with certainty, first, that a single vaccination protects against small-pox for at least four years and for a longer period in the majority of individuals; secondly, that re-vaccination reduces the likelihood of infection with small-pox almost to nil; thirdly, that the vaccinated and *à fortiori* the re-vaccinated individual, if attacked by small-pox, suffers from a mild and modified form of the disease; fourthly, that the employment of matured glycerinated calf lymph is a means whereby the uncontaminated virus is introduced into the system, so that erysipelatoid and other disturbances can be reduced to a minimum, and when present are due to want of cleanliness on the part of the individual and not to the lymph inoculated.

But, now, what is the essential nature of the process of vaccination and of the immunity conferred thereby?

To answer this question adequately in the few minutes remaining is practically impossible; to deal with the subject as it deserves would require a series of lectures. It would imply showing how nearly a century after Jenner made his first vaccination the principles which