

to carry harmful organism than if smeared with unglycerinized pulp, and the difficulty of drying glycerinized pulp is very great. One firm of those visited is making at present a point covered with glycerinized lymph and dried by the use of blood serum. Its efficiency remains to be proven. Another is putting out what are called aseptic dry points, made by a special, secret process.

(d) *Glycerinized or Glycerinated Vaccine.*—In the preparation of glycerinized vaccine the "pulp" taken by a Volkmann's spoon, as already described, is ground up with glycerine and stored until the useless and harmful organisms in it have died of starvation. Two parts by weight of a fifty per cent. watery solution of pure glycerine and one part of pulp are ground together between glass rollers, or other form of mill, until a very fine emulsion is made. The finer the emulsion the better the result. In Japan it is tested as to fineness by suspending a loopful in distilled water from time to time during the process of triturating. The pulp thus prepared is now stored in refrigerators for a sufficient period to permit of the death of all pathogenic organisms except those of vaccinia, the period necessary being determined by plate cultures made from time to time. When this point has been reached the freedom of the glycerinized pulp from pathogens is further tested by inoculation into animals and its physiological activity in the same way. The last step in the manufacture is that of sealing the capillary tubes, and various methods have been devised to accomplish this without exposing the pulp to danger of contamination.

An effort has been made to meet the demand for points, and also supply glycerinized lymph by means of a specially prepared point. Although somewhat better than the ordinary dry point, inasmuch as the lymph has been glycerinized, still the defects of this method of putting up are obvious when compared with the capillary tubes. The exposure to contamination is of necessity much greater.

In deciding between dry points and glycerinized lymph in practice, the following questions must be asked and answered:

1. Does glycerinized lymph convey cowpox to the vaccinated individual? The experience of such countries as Germany may be pointed to. In England also there is no doubt in the minds of the public vaccinators—men who have had an almost unlimited experience of the use of all kinds of vaccine—that the glycerinized is effective. In Japan smallpox is not regarded with any serious dread, since vaccination has been made general (compulsory): glycerinized lymph is employed.

Two years ago the Provincial Health Board of Ontario passed a resolution to the effect that glycerinized lymph ought in all cases to be used, and instructing local Boards to that