either the producer, the operator, the patient, or two, or, indeed, all three together.

As regards the producer, we must realize that while bovine vaccine has been produced and used largely during the past twenty years in America, the methods adopted being in the hands only of private producers, would not be likely to be improved beyond the scientific knowledge of the biological theories, explaining the modes of its production. Not until bacteriology had made known to us the part played by staphylococci and streptococci in pyemia and septicemia, could we understand why the secondary infections were unnecessary and avoidable complications of vaccination, recognized, however, as to their existence, even by Jenner, who said, "That the most material indisposition, or at least that which is felt most sensibly, *does not come primarily from the first action of the virus on the constitution,* but that it often comes on *if the pustules be left to chance as a secondary disease.* Hence it was not uncommon, up to quite recent years for lymph to be taken from vesicles on a second or even third day, and for clamps to be used for extracting the largest amount of lymph possible from the vaccinifer. Within the last ten years, however, with the experimental work of Blaxall, Copeman, and others, all this has changed; and to-day we have producers everywhere supplying or endeavoring to supply a vaccine free from extraneous organisms. As usual, the very virtue of the method has become in some instances a defect, and it is found that at times the activity of the virus itself has disappeared. New producers have entered the field, widespread outbreaks have created unexpected demands for vaccine, and between the inexperience and commercial necessities the practice of vaccination has been injured by lymph at times of excessive virulence, and oftener by that having no protective value. It is, therefore, apparent that until all vaccine sent to the operator has been tested and indeed standardized, as diphtheria anti-toxine, by experiments on persons and animals, we must feel that the ethical demands of the situation have not been altogether met. That it would make lymph more costly can be no valid reason for its not being done, and no State with a compulsory law can evade the responsibility for neglecting to demand of producers that all vaccine supplied be tested, or, failing to secure this, must supply adequate facilities for its production by qualified State officers. When we turn to the operator, or public or private vaccinator, we find that while the State licenses medical practitioners, there seems to have been everywhere on this continent a growing neglect on the part of medical colleges to either teach the theory or illustrate the practice of vaccination. We find