

possible condition. They should learn to recognize condition and quality and thus know what they have for sale and should sell strictly according to the leather-making value of their products.

R. W. FREY, *Chemist,*

R. M. DUBRUYNÉ, *Associate Hide Specialist,*
Bureau of Chemistry and Soils.

HOG-CHOLERA Serum Is Greatly Improved by Pasteurizing Process

Because of the dependence of swine raisers on the preventive serum treatment for protecting their herds against cholera, any means of improving the serum is a subject of public interest. In recent years three types of serum, resulting from different methods of manufacture, have

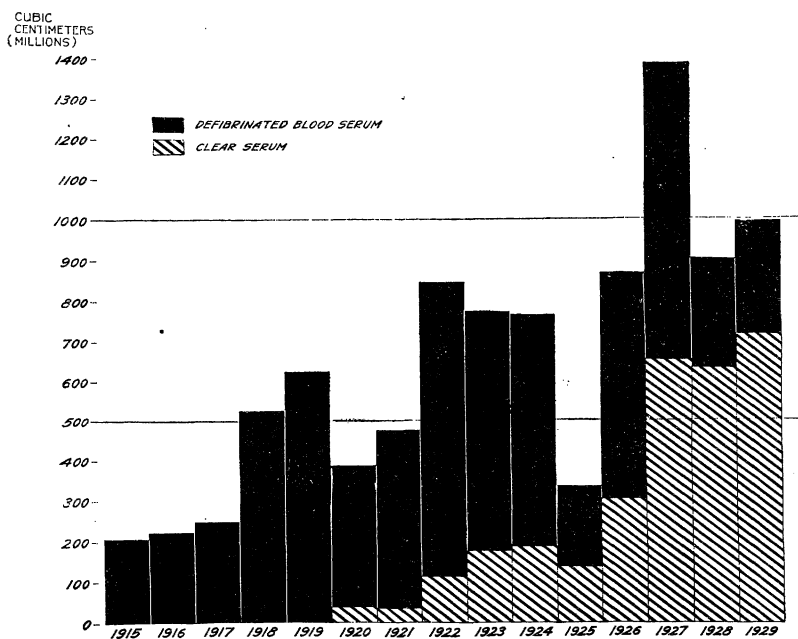


FIGURE 81.—Yearly production of defibrinated-blood and clear anti-hog-cholera serum by federally licensed establishments, 1915-1929, inclusive. Note increase in production of clear serum

been produced. Of these, a product known as clear concentrated serum has increased rapidly in popularity since it possesses several distinct advantages over types previously made, especially the original long-type known as defibrinated-blood serum.

In 1928 the production of the clear product for the first time exceeded that of the defibrinated. And last year, the preference for clear serum caused it to be made in a quantity more than three times that of the other. Since the clear product is also more concentrated the actual dosage represented is approximately four to one. Figure 81, which shows the yearly production of these types of serum, portrays both total output and the relative quantity of each.

Wider Interest in Prevention

The condition mentioned has been brought about by a combination of causes, including more general interest among farmers in protecting hogs against cholera and the requirements of the Bureau of Animal Industry, which supervises the production of all anti-hog-cholera serum authorized for interstate shipment. The bureau's requirements, besides insuring the effectiveness of the serum in protecting hogs against cholera, also safeguard the product against contamination with bacteria that may cause undesirable changes in it or unsatisfactory conditions in animals treated.

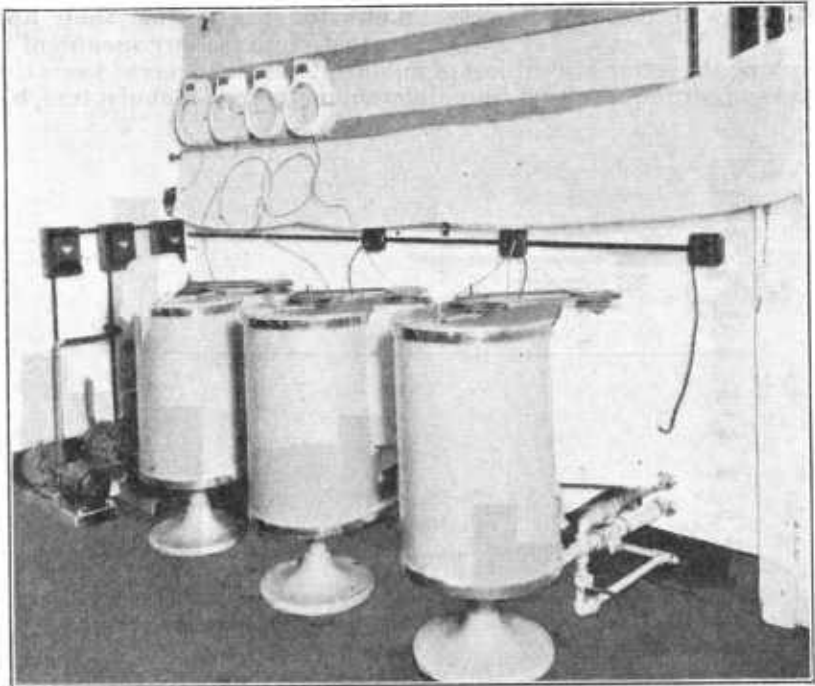


FIGURE 82.—Equipment for pasteurizing and cooling clarified anti-hog-cholera serum. Containers of serum are submerged within each unit shown. Temperatures are recorded by the clocklike devices on the wall

An important step now applied in the preparation of clear serum is efficient pasteurization, which involves heating the product to destroy any undesirable germ life that may be present. In this process the container of serum must be completely submerged in the heating fluid for a specified period. The required procedure is to heat the serum to 59° – 60° C., maintain that temperature for at least 30 minutes and then reduce the temperature to 12° in the course of 20 minutes more.

In the development of the process it was necessary to provide new equipment which was devised at the bureau's request and under its direction. Besides providing for the entire submergence of the serum container during the entire heating process, the equipment includes power-driven agitators for thoroughly mixing the product, thus insuring uniform temperatures throughout the container. The equipment

also makes use of automatic recording thermometers for registering temperatures continuously during the heating and cooling operations.

The entire procedure results in a product that is either sterile or of very low bacterial content when completed for marketing. Though designed primarily to safeguard the quality of serum and protect the swine industry, the system outlined also aids serum producers by enabling them to improve and standardize methods of production. The serum is handled in larger units than before, with less exposure to adverse influences, and with less cumbersome recording systems. The type of equipment now required for heating and cooling serum is illustrated in Figure 82.

Though all anti-hog-cholera serum produced under Federal supervision is dependable for the prevention of cholera, the clear product is considered superior in several important respects, as follows:

The concentrated product is reduced in bulk, thus enabling the purchaser to procure a given number of protective doses in smaller volume. This means that fewer containers are required for the same number of doses, compared with defibrinated-blood serum.

The clear product is absorbed somewhat more quickly after injection, making it especially suitable for use in herds exposed to the disease.

Its increased fluid character facilitates administration.

The smaller volume required for a dose and for treating a herd makes less filling of syringes necessary.

Advantage of Pasteurization

The most important advantage of clear serum is derived, however, from its pasteurization, which destroys possible sources of infection from infectious abortion, tuberculosis, and other communicable diseases. The pasteurization likewise improves the keeping qualities of the product, enabling serum producers to maintain larger reserve supplies for use in time of large demand.

It is noteworthy also that the strict Federal regulations surrounding the manufacture of the serum, together with hog-cholera virus and other veterinary biological products, have been favorably received and even welcomed by manufacturers of these products. The net result of these developments is the present high standard of purity and potency, thereby aiding materially in the suppression of hog cholera and other livestock diseases in the United States.

D. I. SKIDMORE,
*Chief, Division of Virus-Serum Control,
Bureau of Animal Industry.*

HOG Grades Shown Effectively by Use of Plaster Models

Carefully constructed plaster models are now being used as excellent substitutes for live animals in the demonstration of Government standards for grades of livestock,

and, in many respects, they are superior to animals in effectiveness.

The greatest problem in livestock standardization work is to devise effective means of transferring the concept of a standard from one mind to another without impairment or modification of the standard. The standard for a Choice grade hog, for example, includes the relationships between the length, depth, and width of body; the proportion between length of legs and size of body; between the thickness of fat