

PRODUCTION OF ANTI-HOG-CHOLERA SERUM



Test Pigs—Those With an "X" Are Check Pigs.

By CHESTER G. STARR, Purdue Experiment Station.

The anti-hog-cholera serum used in the prevention of hog cholera is obtained from hogs that have recovered from an attack of cholera and have been rendered very strongly resistant to the disease. The modern serum laboratory is a manufactory in the full sense of the word.

Healthy hogs are purchased either at home or at some market; they are vaccinated upon arrival at the serum plant, and good care is taken of them for three weeks. At the end of that time they have fully recovered from the effects of vaccination and are what are termed immune. At the end of this time, the immune are given very large doses of very virulent hog-cholera blood. This blood is obtained in the better serum companies by buying healthy one hundred to one hundred and fifty-pound hogs, inoculating them with cholera blood alone. These virus hogs are killed as soon as they show high temperatures and visible signs of cholera. Their blood is carefully collected in bottles or jars, the fibrin filtered out and the resulting fluid is the virus used for injecting into the immune. Large quantities of virus are given each immune, a 200-pound hog receiving from one to two quarts of this very virulent blood, depending on the method used in injecting it. This dose of virus renders the immune very strongly resistant to cholera, and he is now what is termed a hyperimmune. Ten days after the injection of virus, if the hyperimmune is in good health, the first bleeding is done. Since the tail offers the only place available without danger of bleeding to death, it is selected as the place for bleeding. A small piece of the tail is cut off and the blood, flowing from the cut, is collected in bottles. After a certain quantity is collected, the amount being governed by the size of the hog, the tail is tied to prevent further bleeding, and the hog released. A week later the hog can be bled again. One week after the second bleeding, a third bleeding is done. At this time the serum from the hyperimmune is becoming less potent and the hog is rehyperimmunized by a fresh injection of virus. After the tail is clipped too short for further use, the hog is killed and all of the blood is collected. In some plants that are close by a packing house one bleeding is done. The hog is killed at the time of the first bleeding and the blood collected. The carcass is inspected and passed for food if the tissues are normal.

After the blood is collected in the bottles the fibrin is filtered out, the

jection and the number of bleedings that are obtained before rehyperimmunization. Other conditions being equal, the more virulent the virus, the more potent will be the serum. Nothing but the strongest virus possible should ever be used. Strains of virus that will produce fever and fatal sickness in seven to eight days are much preferable to those that require an incubation of eight to ten days. The usual amount of virus injected at one time, when injected into the veins of the immune, is six cubic centimeters for each pound of body weight. If less than this is used, the serum will be apt to be low in potency. The first and second bleedings are of stronger potency than the third bleeding. In practice, equal parts of first, second and third should be mixed for the proper production of serum. Not more than six cubic centimeters of blood at any one time should be bled from the hyperimmune for each pound of body weight. The method of bleeding, whether from the tail until clipped too short for further use and neck at the final bleeding or from but one bleeding at the neck as practiced by some serum companies, will not produce any difference in the potency or in the amount of foreign bacteria, provided that proper methods of sterilization are employed.

No virus should be used that is bled from hogs that show lesions of other diseases other than acute cholera. Each virus hog should be carefully examined after bleeding. The amount of bacteria, and especially the number of pathogenic bacteria, is due to the methods of sterilization used. Each hog should be carefully cleaned and disinfected, the tail or neck shaved and sterilized before bleeding, and all bottles or jars should be sterilized. All of the preparation and bottling should be done in clean quarters free from any dust, and no vessels used that are not sterile.

The potency test may be misleading through the use of pigs that are from immune mothers. These pigs may retain enough immunity that they will remain well even though the serum is low in potency. That is one of the reasons why check pigs are used, to show the natural immunity of the pigs. The pigs should also be of the same herd or litter and treated alike.

Under the provisions of the new hog cholera control law in Indiana, Purdue university is charged with the testing of all hog cholera serums and so-called cures that are sold in the state. All of the different serums exposed for sale in the state and a great many of the cures have been tested. The greater majority of the serums have been found to be potent, but no cure has been of any use in either curing or preventing hog cholera. All serums tested by Purdue university are recommended to the state veterinarian, who issues a state permit, under which each serum is sold. At any time this permit can be revoked through the serum not being up to the standard.

ALSIKE CLOVER IS GOOD COVER CROP

Well Adapted to Low, Moist Soil—Is Well-Known as Favorite Food for Bees.

Alsike clover, unlike our red clover, is well adapted to low, moist soils, also to dried up land. It should not be sown alone. Six pounds of alsike seed and ten pounds of red clover seed sown to the acre will give a large crop of excellent hay, and a larger yield than if either were sown alone.

Red clover will seldom produce a top of hay the third year, while alsike will yield good crops from three to five years if the land is in good condition and the season not too dry. The clover is well known as a honey food for bees. The honey from alsike blossoms is said to be of excellent quality. But its greatest value is for pasture. When once sown it will make a sturdy stand of hay if the season is hot and

those who have grown this clover for three years consider it a meadow grass, and fed top of hay have excellent results. Late in

FARM STOCK



HINTS FOR THE HORSE LOVER

Narrow-Chested Animals Do Not Possess Endurance of Broad-Chested Ones—Keep Things Orderly.

The horse that is "all legs" is not the one you want. Try to get those that are well set, neither too long legs nor too long bodies.

When a good horse lags don't put the whip on and make it go anyway. Stop and look into the matter. That horse is not well. If it were it would not lag. You do not like to be forced to work when you are sick. The horse is most like a man of any living animal.

It is foolish for the farmer to get the notion that he can win money on the track with his horses. It is all right to give the horses a chance to show what is in them, but don't do it for money ever.

Have the sides of your stalls well nailed to place. Horses sometimes find out that they can crowd the partitions out of place and once they get that habit they will make life miserable for you.

Some horses have a way of throwing their hay out on the floor the first thing they do after feeding. If you feed through a chute from overhead you will be free from this difficulty. If not, the best way is to build in front



Do Not Buy Narrow-Chested Horses.

of the horses a rack of round, hardwood poles an inch or two in diameter, running from the manger overhead, firmly secured at both ends.

Narrow-chested horses have not the endurance that those have with good broad chests. Don't buy a thin-breasted horse.

Study your blacksmith, as well as your horses' feet.

Some horses can't eat straw without having impaction of the bowels, and that sometimes causes death.

A ration of good wheat bran once a week is a fine change for a horse. Wet it up good and he will relish it and it will act nicely on his bowels.

Hang up your dung forks. Don't stand them against the side of the barn, where they may be run into by a horse passing that way.

It is sometimes said that you can make any horse a good walker when you break him. That is not always true. You never can make fast walkers of some horses. It is not in them and you cannot put it in unless you do it before they are born.

It is easy to hang up your harness if you once get into the habit of it. How many friends do you know that drop them on the floor?

The reason the varnish is coming off your wagon or carriage may be that you keep it in the room where horses are stabled. The chemicals from horse manure and urine will do it every time.

MOLDY FEED IS DANGEROUS

Farmers Are Losing Cattle From Eating Acorns—Take Precautions to Keep Poisons Out.

It is dangerous to give moldy or spoiled hay and other feeds to live stock, especially horses. Such feed is apt to cause sickness and even death. We have heard of instances where farmers have lost a number of valuable animals from this cause. Care should be exercised to see that all feed is in good condition. Hay put up when too damp may mold, corn and oats often harbor various kinds of fungous diseases that may be poisonous to stock, and corn silage when improperly stored may cause trouble. The food an animal eats has a marked influence upon its physical well-being. We are informed that, in Wisconsin, farmers are losing cattle from eating acorns picked up in the pastures. Young cattle are particularly affected. Sheep and hogs can eat the acorns without bad effects, and milch cows seldom die from this cause, but young calves are poisoned and little can be done for them. It is the part of wisdom to take precautions to keep feeds known to be poisonous away from animals, and to see only that which is in good condition.—Farmer's Guide

The DAIRY



GOOD FARM BUTTER MAKING

Greater Attention Should Be Given to Details Concerning Factors Affecting the Quality.

(By J. KEITHLEY.)

The following few brief instructions will prove of great assistance to farm butter makers:

Churn at a temperature that will give a firm, flaky granule in the butter. This temperature varies slightly with the season, but ranges from 53 degrees to 62 degrees F. The use of a thermometer and intelligent observation, as result of a few churnings, will enable the butter maker to determine the proper temperature at which to churn. Churn should be stopped when butter granules are large as corn kernels or peas. Time required for churning should be 25 to 30 minutes.

Use clear, pure water for washing the butter. It should not be more than three degrees colder or warmer than the buttermilk. Use amount of water equal to that of the buttermilk. In a barrel churn, reverse 12 to 15 times in washing.

Weigh the granular washed butter and salt at the rate of three-fourths ounce to one ounce per pound. Be sure the salt is well pulverized and sift it evenly over the granular butter before any of the moisture is worked out.

Work the butter sufficiently to distribute salt without injuring the grain or texture. Determine working by 1, appearance; 2, texture; 3, grittiness. Butter, when sufficiently worked, should present a firm, glossy appearance. The texture should resemble the broken end of a steel rod. There should be no grittiness due to the unevenly distributed or undissolved salt. This can be determined by taking a small piece of butter between the teeth and biting into it repeatedly; any grittiness will soon be observed. Insuffi-



Working the Butter.

cient working is generally shown by a mottled appearance in color on the cut surface. This is largely due to an uneven distribution of salt. This results in a salty condition and injures the keeping quality. The aim of butter makers should be to produce a high-grade article that is uniform week after week in flavor and composition. This can be done by careful methods in ripening, salting and working.

KEEP SALT HANDY FOR COWS

Maintains Health of Animals and Encourages Heavy Milk Flow by Promoting Digestion.

Experiments have proved the average milk cow requires about an ounce of salt per day. Heavy milkers should have more. Keeping salt where the dairy cows can reach it at all times maintains their good health and encourages a heavy milk yield by promoting thorough digestion and assimilation and having a cooling effect on the whole system of the animals, at the same time making it easier to bring butter of a superior flavor and color at churning time.

SOME GRAIN IS NECESSARY

Cow Will Get Through Winter in Excellent Condition If Given Few Ears of Corn Each Day.

The cow that is to become a mother should not be allowed to get poor and weak during the winter months. It is practically impossible to get such a cow through the rigors of winter in good condition without a grain feed. She may not need a great amount of grain, if she has plenty of forage that is nutritious, but she will need four or five ears of corn two or three times a day. Then she will get through the winter in fine shape and have good flesh and plenty of strength at calving time.

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