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Wisconsin Live Stock Sanitary Board.

Bulletin No. 1.

HOG CHOLERA AND SWINE PLAGUE.

AUGUST, 1901.

State Historical Society
OF WISCONSIN
MADISON - WIS.

Wisconsin Live Stock Sanitary Board

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The Live Stock Sanitary Board was organized July 1st, 1901, in pursuance with an act of the Legislature, published May 22d, 1901, and incorporated in the Laws of Wisconsin of 1901 as Chapter 440. This board is charged with the protection of the health of the stock interests of the state, with the investigation of contagious diseases of animals and all other matters relating to animal sanitation.

HOG CHOLERA AND SWINE PLAGUE.

H. L. RUSSELL.

The losses from contagious diseases of swine in this country are exceedingly heavy, amounting not infrequently to scores of millions of dollars annually. While of course there is considerable loss due to various other causes, by far the larger part is produced by the ravages of the two most common contagious diseases, known respectively as hog cholera and swine plague. These diseases present many characteristics in common, but closely controlled investigations have demonstrated their specific nature as well as the fact that they are caused by different kinds of germs.

These two swine diseases are particularly severe in the "corn belt," the state of Iowa alone suffering to the extent of $10,000,000 to $12,000,000 annually. In many of the corn states hog cholera and swine plague are present continually, but in those states in which corn is not grown so universally, they are subject to more or less fluctuation in intensity, appearing in some years in a very aggravated form and then often disappearing for several seasons. The last season (1900) witnessed a widespread distribution of these contagious diseases in Wisconsin, especially in the southern and western counties, and in view of the fact that there may be a recurrence of these troubles this year, this bulletin of information is issued by the Live Stock Sanitary Board to acquaint the farmers of the state with the nature of the maladies, the agencies concerned in their dissemination, and the way outbreaks should be handled to prevent the spread of contagion.

CAUSE.

While these diseases generally appear in the summer and fall and are in many cases associated with imperfect nutrition or

derangements of the digestive tract, due frequently to an excessive corn ration, still the exciting cause and the agent that renders each transmissible from animal to animal is a definite species of bacteria. Hog cholera is caused by the hog cholera bacillus, swine plague by another distinct though related germ, the swine plague bacillus. While these diseases cannot be produced unless the specific organism associated with each finds its way into the intestinal tract, yet, it is undoubtedly true that the course of the disease in the animal and the virulence of the outbreak is largely determined by the general condition of the animal and the surroundings in which it is placed. There is no class of animals on the farm that is usually kept under such unsanitary conditions as swine, so that this factor as well as that of impaired digestion due to improper feeding, exert a marked effect on the ability of the animal to resist disease.

It is possible for the scientific expert to distinguish between these two germs, and it has been determined that the hog-cholera organism is very much the hardier of the two. The swine-plague germ does not withstand drying, nor is it able to live in water or filth for any considerable period of time; the hog-cholera organism, on the other hand, may not only live but multiply in ponds and streams, and is capable of retaining its vitality in soils for some months at least.

SYMPTOMS.

The general symptoms of these two diseases often resemble each other especially in the slower chronic cases. They may assume either an acute or chronic form, and the virulence of the outbreak in different cases is subject to much fluctuation. The first animals to be affected in a herd are more likely to have the acute phase of the malady; those acquiring it subsequently, the chronic type, in which case the symptoms are often illy defined.

In the acute form, animals often die very quickly, sometimes before their illness has been recognized at all. The onset of the disease is generally marked with a fever, loss of appetite which is especially noticeable in acute cases, general stupor and tendency to lie together in the litter or bedding, constipation of the

bowels at first, followed by persistent and aggravated diarrhoea. At times there is also a dry, hacking cough, but this symptom is much more marked in swine plague than in hog cholera, because in this disease the lungs are more generally affected. The skin is often congested or reddened over the abdomen, inside of the thighs and fore limbs, throat and ears. These spots are sometimes quite sharply defined, and vary in color from a pink to a purplish red. If the animal lives more than a few days, scabs or sores may be produced on the skin. In the chronic cases, which may last for several weeks and even months, the animal becomes much emaciated and debilitated. Paralysis of limbs may often set in.

POST MORTEM APPEARANCES.

The differences between hog cholera and swine plague are more readily distinguishable from post mortem examinations than from symptoms of the disease in the living animal. Hence it is advisable in all cases where diagnosis of disease is not positive to make a careful post-mortem examination. Accurate diagnosis is desirable because of the fact that the condition confronting the stock owner is much more grave in hog cholera than in case of swine plague, due to the greater resisting power of this germ.

In hog cholera, owing to the numerous haemorrhages, bloody spots are to be found on the various organs, as the lymph glands, intestines, serous linings to lung and body cavities. The spleen is usually much enlarged. In the more chronic cases, ulcers of a yellowish or blackish color, the so-called "cholera buttons, are to be found, particularly in the large intestine. These can be easily recognized by splitting the gut, especially that of the blind pouch (caecum).

In swine plague, the lungs show the greatest change the tissue often appearing solid and of a grayish red color. Upon cutting the same, small yellowish cheesy-like masses may be found scattered through the tissue. The serous membranes may also be inflamed, fibrinous deposits being formed on the same, and also on the intestines. A microscopic examination of the blood

reveals the presence of the specific bacteria associated with these diseases.

MEANS BY WHICH THESE DISEASE GERMS ARE SPREAD.

As these diseases affect the intestinal canal, it follows that the dejecta or feces contain the germs capable of producing the trouble in other animals. Direct infection may of course readily occur with animals occupying pens with sick hogs, but it often happens that herds on adjoining farms likewise acquire the disease. In such cases the disease germ does not travel through the air, but is distributed by such agents as dogs, small vermin (rats and mice), birds (crows and other carrion-eating species), and often by man himself. If diseased hogs have access to water courses, pollution of streams may occur, which frequently serve to incite outbreaks on farms situated below on same stream. Persons should be extremely careful in visiting farms where cholera is present, for inadvertently one may easily carry home the virus of the disease on boots, or wagon, or any other object coming in contact with polluted soil.

Often the disease is introduced through the purchase of animals from already infected sources, or by exhibiting stock at fairs. Railroad stock cars very frequently serve to spread the disease as they may become infected through the shipment of exposed or possibly affected animals to market and then be used for transportation of hogs retained for feeding.

The disease is less liable to break out in herds that are confined in pens or small enclosures, and in times of cholera outbreaks, a rigid quarantine should be maintained against the promiscuous approach of persons or stock.

TREATMENT.

The mortality in genuine cholera outbreaks is very high, often sweeping off nearly if not quite all of the herd. Even those that are affected but survive are of little value because of their debilitated condition. With a disease making such havoc as this, remedial treatment is of little avail. Much can be done along preventive lines, but very little help can be given already infected herds except in a general hygienic way.

A great many remedies have been foisted on the market from time to time, but as a general rule these are worthless as cures for already infected herds. The disease kills by producing a poison in the body that is very active, and if the development of the disease organism has already occurred, nothing can restore the tissues destroyed. The U. S. Dept. of Agriculture and several of the State Experimental Stations have been working for some years on a serum treatment that consists in injecting into the swine, blood serum of animals rendered artificially immune to the disease. This fortifies the system against the poison produced by the disease germ. While some success has attended these investigations, it cannot be said to be placed as yet on a practical basis where it can be utilized under ordinary conditions.

It is now quite generally believed that an exclusive corn ration is detrimental in diseases of this class, and that animals should be fed daily with protein elements such as bran, middlings, or ground feed made from grain. As the diseases in question are accompanied with inflammation of the lungs and bowels, it is advisable to keep affected animals in dry quarters, and give them easily digested food. Bear in mind that the feces contain the disease virus, and consequently the pens should be sprinkled *daily* with a good disinfectant (5% solution crude carbolic acid or dry air slacked lime).

WHAT SHOULD BE DONE IN CASE OF AN OUTBREAK.

While it does not necessarily follow that all deaths of swine are due to contagious disease, still the loss of a number of animals should lead to a very careful examination (both as to symptoms while living and by post mortem examinations) to determine, if possible, the nature of the malady. In times of cholera outbreaks it is wise to consider all deaths of swine as possibly caused by contagion and act accordingly.

The first thing to be done is to remove the animals from infected quarters, separating, if possible, those that are still healthy from the already affected individuals. There is of course some danger of animals developing the disease after re-

moval, if they have already been exposed, but if such are separated when symptoms first show, little danger need be apprehended.

Stock owners should avail themselves of the opportunity to protect their own herds by private quarantine. Large trespass notices* will be forwarded free to any one making application to the Sec'y of this Board. (Address Madison, Wis.)

Afflicted animals should be cared for by one person, and no dogs or other stock allowed near the yards or pens.

As rapidly as animals die they should be disposed of in a way so as to prevent the further distribution of the disease. This should be done by burning the carcass, if possible, or burying it deeply (not less than 4 feet deep) so that dogs cannot dig it up and carry the contagion. It should be the duty of the local health officer to see that this disposal is performed in a proper manner. Infected pens and yards must be sprinkled liberally with carbolic acid solution or lime. If crude carbolic acid is used it is necessary to dissolve the tarry-looking fluid in an equal quantity of sulphuric acid, then dilute the same with water to form a four or five per cent. solution of the mixture (2 parts sulphuric acid, 2 parts crude carbolic acid, 96 parts of water). Lime is an excellent disinfectant for this germ and moreover it possesses the advantage of being cheap and readily obtainable. In view of the fact that the hog cholera bacillus can retain its vitality in the soil for a number of months, it is not wise to allow a fresh lot of hogs to occupy infected pens or yards for several months unless the disinfection process has been most thoroughly performed. Where floored pens are infected, it is often necessary to remove the board floors as the disease germ is easily harbored in the cracks and crevices. If the floor of the pen is of dirt, the removal of the upper layers of the soil and all litter and filth is necessary before the disinfection process is begun.

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*These notices, which warn all persons not to approach any pens or yards where hogs are confined, are printed in large type on heavy paper suitable for posting.