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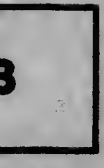

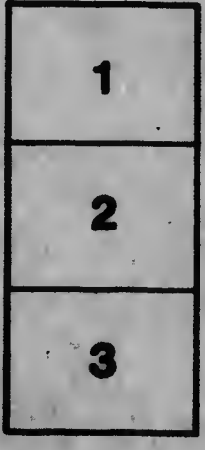

GOVERNMENT OF THE PROVINCE OF SASKATCHEWAN
DEPARTMENT OF AGRICULTURE.
LIVE STOCK BRANCH.

BLACKLEG

ITS NATURE, CAUSE AND PREVENTION.

Compiled by J. C. Smith, Live Stock Commissioner.

NAME, HISTORY AND DISTRIBUTION.

Blackleg is an infectious disease of cattle and although sheep and goats also contract the disease spontaneously, the outbreaks among these latter animals are extremely rare.

Blackleg is also known as black-quarter, quarter-ill and symptomatic anthrax.

Blackleg is known all over the civilised world and the annual losses from this scourge are enormous. It is known all over Canada from the Atlantic to the Pacific, and its ravages in some districts have caused losses as high as 20 per cent. of the young cattle. Climate, location, weather conditions and seasons seem to have little or no effect upon it.

INFLUENCE OF CLASS, BREED, SEX, AGE, CONDITION, ETC.

Blackleg is primarily a bovine disease and statistics show that no one breed of cattle is less susceptible to its attack than another.

Sex has little or no influence on the disease. It seems to attack both males and females alike, up to a certain age.

As a general rule cattle from six months to three years of age are the most commonly affected, and animals seem to exhibit the least resistance between the ages of six and eighteen months. The disease may occur, however, at practically any age, but is extremely rare after the animal has attained the age of three years. Calves under six months have also been known to contract blackleg, but the occurrence is not common.

CAUSE AND METHOD OF INFECTION.

Blackleg, as has been stated, is the product of a parasitic vegetable organism known as Bacillus Chauveii. Without the presence of this germ the disease *cannot occur*. The germ may be present in the soil, feed (grains or grasses), or water. Thus the disease may occur in the stable as well as in the field.

The blackleg bacillus usually gains entrance through abrasions in the skin and in some cases through the mucous membrane of the mouth. Any small punctured wound, seems to be the most common point of infection and correspond most closely to the only means by which the disease can be produced artificially, namely, by subcutaneous injection of the virus, either in fluid, pellet or filament form.

Owing to the fact that the blackleg bacillus develops only in the absence of oxygen, large wounds to which air gains free entrance are not regarded as a serious medium of infection.

SYMPTOMS.—The symptoms of blackleg are so characteristic that the disease is usually easy to recognise. These symptoms may be classified as (*a*) general and (*b*) local.

(*a*) *General Symptoms.*—The principal general symptoms evinced by an animal suffering from blackleg are as follows: High fever, suspension of rumination, lameness, dullness and depression accompanied by entire loss of appetite. Animal generally segregates itself and lies down; if remaining standing, shows a disinclination to move. Drinks frequently at short intervals, if water convenient, but not much at a time. The mucous membranes (skin lining nostrils, mouth, etc.) are at first a deep dark red and congested but later change in the course of from twelve to eighteen hours, to a dull, dirty gray or purplish colour.

(*b*) *Local Symptoms.*—These are characteristic and are the principal means of diagnosis. The most important feature is the development of a tumour or swelling under the skin which generally appears on the hind quarter, but is also found on the neck, shoulder or foreleg, in fact any portion of the body except below the knee and hock joints, and on the tail.

The swelling is at first small, warm and extremely tender but increases rapidly in size and may, in a few hours cover a large portion of the body. This swelling is filled with gas which is evolved by the germs in the process of multiplication. Upon being pressed it gives out a crackling sound (crepitates) and upon being tapped (percussion) a a clear resonant note results.

The tumour, in the more advanced stages, is cool to the touch and insensitive in the centre. The skin over it is dry and parchment like. These tumours or swellings usually appear before the general symptoms are noticeable. As the swelling increases in size the general symptoms become more intense. The temperature may reach 107 degrees Fahr. and the respirations may exceed 140 per minute.

In the later stages of the disease the animal is unable to rise, the extremities become cold and some little time before death the temperature falls and may become subnormal. There is trembling of the muscles which, as death appoaches, increases in violence.

With rare exceptions, the disease terminates fatally in from twelve to thirty-six hours after the first appearance of the symptoms. Animals have been known to recover, but their condition is such as to render them practically valueless.

The carcase of an animal which has died from blackleg soon becomes distended with gas. In the neighbourhood of the swelling the muscles are swollen and spongy, of a dark brown colour and seemingly pitted with still darker spots and short stripes. They have lost their elasticity and are easily torn. Sometimes a dark, frothy, blood-coloured discharge flows from the nostrils and anus. This is highly infective.

TREATMENT.—Curative treatment in a disease like blackleg, with its rapid and almost always fatal development, is practically out of the question. Numerous remedies have been tried and recommended, but in the last analysis we must conclude that *there is no satisfactory curative treatment for blackleg.*

HYGIENIC MEASURES.

Blackleg is due to the blackleg germ and *cannot occur unless the germ is present.* Bearing this in mind and also the fact that the germ is found in the soil and in coarse fodder and bedding, it will be seen that all measures which tend to decrease the spread of the infection will be of great assistance in the control of the disease.

The germ does not multiply outside the animal body, but when an animal becomes affected, the germs multiply by the million in its system and their liberation, by whatever means effected, increases the likelihood of, and opportunity for, the spread of the disease.

The following rules should be kept in mind in dealing with the disease:

1. Isolate the sick animal immediately, and when you are sure of the correctness of your diagnosis destroy it.

2. On no account make any incisions in the carcass and take every precaution to prevent this being done.

3. *Do not* skin the animal; the hide is not worth much and you run the risk of another outbreak by so doing, besides spreading the infection by means of the hide.

4. Carefully gather and burn all bedding, feed, etc., which may have been infected by the blood or serous discharge from a deceased animal.

5. If possible burn the carcass immediately, making sure it is entirely consumed. If not, bury it to a depth of at least five feet.

6. Disinfect the grave, both at the bottom, around the carcass and on the surface, by means of a liberal application of a 2 per cent. solution of creolin.

7. Disinfect any places where the animal has lain in the pasture or stable. If in the stable, disinfect walls, partitions, mangers, feed-boxes, floor and gutter by repeated applications of the same solution.

8. If the animal has to be removed some distance for burial or cremation, see that no discharge from the mouth, nostrils, anus, or from any incisions or sores in the carcass is allowed to scatter in the process of removal.

9. Any places which blood or discharge may have infected should be sprinkled freely with the creolin solution or with corrosive sublimate, 1 to 1,000 parts water.

COMMENTS ON FOREGOING RULES.

Referring to the foregoing rules it might be suggested that, where possible, the carcass be taken to a straw pile and cremated. Excessive heat is one of the most destructive agents obtainable against the blackleg germ and care should be taken that the carcass is entirely consumed.

Creolin, carbolic acid, kreso, zenoleum or any standard disinfectant is effective. In burying, care should be taken that the grave is at least five feet deep, as blackleg germs have been known to live in the soil for, and produce disease after, eleven years. These may be readily brought to the surface by gophers, badgers or other burrowing animals.

For the purpose of removal it is advisable, if the animal dies on pasture, to roll it on to a stoneboat or low wagon covered with straw. If the animal dies in the stable and has to be dragged out to a wagon or stoneboat, an abundance of straw should be spread on the floor. In either case, whatever litter is used should be immediately collected and burned.

It is generally agreed that reduction in flesh of animals tends to lessen or stop an outbreak of blackleg. For this reason, if inside, feed should be cut down.

VACCINATION.—By far the most valuable preventive measure has been definitely proven to be vaccination. The up-to-date method consists of inoculation with what is known as single vaccine or vaccine

which requires to be introduced into the animal's body once only to produce immunity for a limited period of time.

Vaccination should be performed in the spring before the animals are turned out to pasture or before they start for the more open spring and summer range.

Vaccination cannot be considered effective for a longer period than twelve months, so that, in order to insure immunity, all animals should be inoculated each spring during the period of their life when they are between six months and four years of age. *Vaccinate every spring.*

VACCINE AND OUTFIT REQUIRED.

Vaccine, prepared by the Dominion Biological Laboratory, consisting of dried or braided silk threads, each of which constitutes a dose, is in general use. This vaccine, together with a vaccinating outfit, consisting of a wooden handle and two inoculating needles, may be obtained by applying to the Dominion Health of Animals Branch, Box 616, Regina, Sask., or to the Veterinary Director General, Department of Agriculture, Ottawa, Ont. The price of the vaccine is 5 cents per dose, whilst the outfit costs 50 cents. Extra vaccinating needles, separate from the handles, cost 25 cents for two.

METHOD OF VACCINATION.

Different methods are advocated for vaccination, but the following instructions, by Dr. J. G. Rutherford in the Dominion bulletin on the subject, are worthy of careful study:

"The most convenient site for inoculation in cattle is in the loose skin either of the neck or behind the shoulder, and in sheep inside the thigh.

"Prepare the site of inoculation by clipping away the hair and washing with alcohol or boiled water.

"The needle may be dipped in alcohol before each vaccination and allowed to thoroughly dry before engaging a thread of vaccine. If disinfectants, such as carbolic acid or creolin are used on the needle, the virus of the thread will be destroyed, in consequence of which the vaccination will be of no protective value to the animal.

"The needle is placed in the holder, the ferrule is screwed down tight to securely hold the needle and the outfit is ready for use. The stopper of the vaccine container, to which the vaccine is attached by means of a spring clip, is removed from the vial and reversed. The fine hook of the needle is passed through the braiding of the silk and by a slight pressure away from the spring clip, the thread of vaccine is removed from the clip and remains on the hook of the needle. With the thread of vaccine on the hook of the needle the site of inoculation on the animal having been properly prepared, the skin is grasped with the free hand and the needle carrying the thread is forced under the skin parallel to the body of the patient. When the thread is lost from sight the needle is removed leaving the vaccine beneath the skin and the process of vaccination is complete. The outfit should be thoroughly sterilised by boiling after each day's use."

After vaccination it is advisable, if possible, to take particular care of animals. Immunity is usually established in from twelve to twenty days after inoculation.

Animals should never be castrated, dehorned or branded at the time of inoculation. The quieter the animals are kept the better.

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