

Abortion in Cattle.

Abortion is the expulsion of progeny at any time before the completion of the full period of a normal pregnancy. Abortion is of two kinds, accidental and contagious. It is practically impossible to distinguish one sort from the other although causes differ widely.

ACCIDENTAL OR NON-CONTAGIOUS ABORTION.

Causes.—Poor condition, weakness, thin blood, and such results of poor nutrition.

2. The depletion of bodily strength by diseases, worms or excessive loss of blood.

3. Chronic diseases, such as bloat, diarrhoea, kidney troubles or indigestion.

4. Putrid drinking water, ergot on grasses, smut on grains, rust on grains and grasses.

5. Falls on smooth planks and concrete floors, icy yards, narrow doors, riding other cows, and in any other way straining muscles of hind quarters.

6. Stands with a too great slope to rear, or deep gutters in which cattle stand hind feet.

7. Excitements and presence of blood, dead carcasses, dead foetus, afterbirth and such, especially if in putrid condition.

8. Irritating poisons, powerful purgatives, lack of mineral matter in ration, or the like, which derange the digestive system and induce abortion.

Treatment.—Eliminate causes and place in quiet stall. If foetus has not died, nor water bags been presented, administer laudanum in 1 to 2 ounce doses (depending on size of cow) and repeat in three or four hours should labour pains recur. If laudanum does not give permanent results use Extract of Black Haw (*Viburnum prunifolium*), (40 grains) every three hours for one day.

In cases where the cow shows first signs of abortion, the writer has had good success in mixing 1 tablespoonful of Black Haw with meal feed morning and evening and continued for a week or longer if necessary.

CONTAGIOUS ABORTION.

Contagious abortion is the scourge of the stockman. This disease is seen where a cow continues to calve prematurely year after year with no apparent external cause, or where a large number of cows, all bred to the same bull, calve prematurely, or where cows in direct contact with a cow which has previously calved prematurely, in turn also calve prematurely. It is a germ disease and easily contracted by healthy individuals. The germ lives on the lining membrane of the womb, causes catarrhal inflammation which in turn causes expulsion of foetus.

Causes.—1. The germs contracted from bulls which have previously served diseased cows.

2. The germs contracted by rubbing rumps with infected cows, or contact with doorway, fence posts, or bedding previously rubbed by infected cows.

3. The transferring of discharge from infected individuals to healthy cows by means of hands or clothing of attendants.

4. The presence of dead foetus, afterbirth, or discharge on bedding, manure, or any place where healthy animals may come in contact with it.

Unless freshly infected cows are introduced, the disease tends to run out in a herd in the course of three or four years. It frequently happens that sterility (barrenness) follows this disease, a condition thought to be due to the acid state of the uterine contents caused by the germ.

Symptoms.—Cows may abort at any stage of pregnancy, but it usually occurs during the third or seventh month. As a rule, the symptoms are a swelling of the udder, a dirty, reddish, purulent discharge from the genitals, a decrease and change in the character of the milk, and the dead foetus which is generally expelled three days after the appearance of the discharge. Abortion early in the pregnancy is often undetected until a short time before the date of expected calving, when the stockman is quite surprised to find the animal showing signs of heat.

The important thing is to distinguish the early symptoms so that the tendency may be arrested and the calf carried full time if possible.

The cow is dull, sluggish, separate from the herd, chewing the cud languidly, frequently lying down and rising, uneasily moving the hind feet and tail; the pulse and breathing fast and muzzle dry.

Usually contagious abortions in a herd follow one another at intervals of from one to five weeks.

METHYLENE BLUE, A REMEDY FOR INFECTIOUS ABORTION.

During the past twenty years many various disinfectants have been experimented with as a cure for contagious abortion. The latest material and one which gives promise of most pronounced success to date is methylene blue. Particular attention is drawn to the fact that purchasers should not confound this material with methyl blue and in purchasing the methylene blue should obtain only the highest grade of medicinal character and not the commercial product. Probably at no experiment station has there been such complete work with this treatment as at the Vermont Agricultural Experiment Station, Burlington, Vt. Dr. F. A. Rich, of this station, who has conducted this work, carried on extensive experiments in the bacteriological laboratory and extended this to an actual trial of this material with a herd of ninety-two infected cows. The results of his experiment for the first nine months were most striking. Only one animal of the ninety-two infected aborted during the nine months, and during the same period fifty-six of these calved normally while thirty-five appeared in natural condition five months or more after being served.

Based on the success of the above mentioned experiment, a somewhat similar line of work was started on the Experimental Farm, Ottawa, in the fall of 1913. Owing to the fact that seven cows and heifers had aborted in midsummer of the same year, the test for abortion was applied to these and other individuals suspected, together with all individuals in the barns associated with such cases. As this test for abortion is a long and difficult one, it was considered advisable to treat the whole herd until complete results of the agglutination tests were discovered. Fifty-two cows of the five dairy breeds were at first treated. During the nine and a half months following the initiation of this test only one cow has calved prematurely, which in itself appears to warrant the use of methylene blue as a preventative of abortion. During the months April to July, inclusive, of the year 1914, only such cows as had previously aborted or responded to the agglutination test were fed methylene blue. Although it is too early to draw definite conclusions, yet it may be stated that four cows which aborted in 1913 have not only carried their calves the normal period, but have ceased to react to the test, while three cows and one heifer which had no apparent reason been sterile, have become with calf and are now nearing their normal period of gestation.

INTERNAL TREATMENT.

At the beginning of the test on the Central Experimental Farm the treatment outlined was the feeding once per day for the first seven days of each month, throughout the period of gestation, of methylene blue in the powdered form in one-half ounce doses mixed with ensilage. However, owing to the results of further experiments conducted by Dr. F. A. Rich, this treatment has been changed. The method of application now advocated is as follows:—Give each cow which has either aborted at her last calving or which gives any evidence or suspicion of being infected, one heaping teaspoonful or more of methylene blue once per day for five continuous weeks. We have discovered that considerable waste is involved when the powder is scattered over the roughage. In consequence it has been found advisable to put up this quantity in one-half ounce gelatine capsules. Another method which may be followed with equal economy would be the feeding of the compressed methylene blue as purchased from the Bluetts Company, Tenney Block, Madison, Wis.

How methylene blue does its work is readily understood when one considers that thirty minutes after feeding a large portion of the dose has been absorbed by the blood. Methylene blue has been found many times stronger than carbolic acid or other disinfectants in the killing of the abortion germ. This coupled with its enormous dif-

fusability throughout the animal's system would appear to give it some distinct advantages over other disinfectants. If fed in large quantities (four ounces or more) it would often color the milk and even the meat of an animal, yet without injurious effects. In the regulation half-ounce dose the effect is to color the urine slightly green and the manure slightly blue. From this it might be readily surmised that the stomach, intestines and kidneys, together with the external passages, would be thoroughly disinfected, thus preventing the spreading of the abortion germ from one individual to another. Results seem to point also to the carrying of the disinfectant through the progeny in utero and the surrounding membranes.

The size of dose has absolutely no ill effect upon the cow, the above recommended dose having been largely increased with certain individuals and the only effect noticed being the stimulating of the appetite.

EXTERNAL TREATMENT.

Coupled with the above described feeding the following precautions must be taken:—

(1) After aborting the afterbirth, the foetus and all infected bedding should be burned or deeply buried. The hind parts of the cow should be carefully sponged with a one per cent. lysol solution or ten per cent. carbolic solution.

(2) The stable should be thoroughly cleaned and disinfected, especially in the immediate vicinity of the calf pen or stall where abortion occurred. Probably the safest disinfectant is a solution of one to one thousand mercuric bichloride given in three applications two days apart. If this intermittent disinfection is impossible, double the strength of the above mentioned solution.

(3) Immediately after aborting, give an injection into the cow's uterus of a methylene solution consisting of a heaping teaspoonful of methylene blue and one ounce of salt to a gallon of boiling water, the whole cooled to about 105 degrees F.

(4) The sheath of the bull used on any cows affected with abortion should after each service be washed out with a one per cent. lysol or the above mentioned methylene blue solution.

COST OF METHYLENE BLUE.

This material in the powdered form costs \$2.75 per pound at local druggists in Ontario. Attention is again called to the compressed (Bluetts) form, which is more economical due to less waste in feeding.

BLACK HAW TO PREVENT ABORTION.

Although this treatment is by no means recommended for the killing out of the abortion germ in the cow or calf, as in the case of methylene blue, yet it has been found possible to hold off an abortion for some days, or possibly weeks, by the feeding of an internal astringent. In cases where cows show symptoms of calving before their time they have been placed in a dark and quiet stall and given one ounce doses of Black Haw (*Viburnum prunifolium*) repeated, if necessary, after three hours until the pains subside. In cases where the normal preparation for calving is premature, thus indicating abortion, one ounce doses daily for a week have in many cases been effective in bringing back to normal the vulva and the pin bones. However, it is advisable that care be taken with this treatment and that it only be used in cases of emergency.

F. S. ARCHIBALD.

Dominion Animal Husbandman.

Counsel for the Winter Feeder.

The cattle that have this fall gone into the stall or feed-lot for winter feeding vary in condition. Some are thin, while others are fit already. Those that were subjected to poor pasturage will require different treatment from those off good grazing land augmented, perhaps, by a field of rape or second-growth clover or alfalfa. This article does not aspire to discuss the technique of feeding fattening cattle. The object is to analyse the feed question and draw some deductions as to costs and probable profits which might accrue from different methods in these times of high-priced feeding stuffs.

To consider this matter together it is necessary to remember that protein such as is common in clover, alfalfa bran, oil-cake or cotton-seed meal contributes to the vigor of the body by replenishing the muscles, the supply of blood and strengthening the whole animal system. Carbohydrates and fats, for which we look to corn, wheat, roots and such, are energy and heat givers and the source of fat. Of the latter two food constituents, fat is much superior. In fact, it is practically two and one-quarter times as valuable as the carbohydrates which consist largely of starch and sugar. Then it must be further borne in mind that a relation exists between protein and the carbohydrates and fats and is known to students as the nutritive ratio. Steer feeders are not required to worry their minds so much about the relation of these foods as the dairymen are for the high-producing cow is a delicate machine that



A Nice Flock in a Fine Field.