

satisfactory method, or reliable test, capable of determining the presence of infection in female cattle, pregnant or otherwise. Among the methods used for this purpose may be mentioned three, known respectively as the "Abortion Test," the "Agglutination Test," and the "Complement Fixation Test."

The "Abortion Test" is also known as the reaction method, and consists of the injection into the veins, or under the skin of suspected cattle, of a substance called "Abortin," which is prepared from cultures of the bacillus or germ of cattle abortion. It is used in a manner somewhat similar to that in the application of the tuberculin test. The reaction is manifested and interpreted by a rise in temperature exceeding 104 deg. F., which begins about the fourth hour after injection, and lasting usually until about the fourteenth hour. Attempts have been made to commercially extol this test. However, its reliability is doubted, as the results are not sufficiently proved to be uniform or satisfactory, as it would appear that while a rise of temperature to 104 deg. or more after the injection of Abortin may be considered as indicative of infection, on the other hand, the absence of this reaction is not considered a safe criterion as to the freedom of infection, as many infected animals apparently fail to respond to the test.

"The Agglutination" and "Complement fixation tests" are two separate serologic or blood tests of a somewhat delicate and complicated nature, which can only be properly performed in a suitably equipped laboratory and by some one skilled in the technique. For making these tests, samples of blood are taken, with proper precautions, from suspected cattle, and sent to a laboratory for examination. The results are based upon the specific action which cultures of the abortion bacillus (the germ) have upon the blood serum of the suspected animals. These tests, when properly performed, appear to be proving trustworthy for the detection of infection in cattle, both before and after the act of abortion.

#### Prevention and Treatment of the Disease

Up to the present, the most rational means of dealing with contagious abortion in cattle, is along lines of preventive control. The procedure consists in adopting measures to protect a sound herd from becoming infected and to eradicate the disease from an infected herd. The first requisite towards this end, consists in the separation and isolation of any suspected or aborting cattle from other pregnant cows and heifers. Any and all cases of abortion should be regarded, irrespective of excusable circumstances, as at least probably the contagious form, and precautions taken accordingly. As soon therefore as any animal in the stable shows signs of aborting, or that has aborted, it should at once be removed to a separate stable, and the vacated and adjacent stalls, including the floor and gutters, should be thoroughly cleaned and disinfected. All bedding, litter, and feed should be removed from the mangers and stalls and burned, as well as the aborted foetus with its membranes (the after birth).

Cows, after aborting, should have the genital passage washed out, at least once a day, with a warm antiseptic solution, such as a two-per-cent. (2%) solution of Creolin or Carbolic Acid, or a one-in-three-thousand solution of Corrosive Sublimate. All of the contact pregnant females, or those occupying stalls adjacent to the aborting animal should have their hind parts, including the tail and hips, and external genitals, washed thoroughly with an antiseptic solution.

Cattle, after aborting, should be kept isolated, preferably in a stable, for a period of at least one month, and they must not, during this period of time, be pastured in the same fields as healthy pregnant cattle and must not even be kept in pasture fields as long as discharges continue to come from the vulva, because the discharges can infect the grass and water, which, when thus contaminated may remain virulent and a possible source of infection for several months. At the end of the isolation period, before allowing such animals to mingle with the other

members of the herd, it is advisable to wash off the hind parts of the body, and disinfect the vacated stable. Cows, which have aborted, should not be bred again until a period of three months have elapsed and not even then, if they show any signs of discharges coming from the genitals.

Internal medicinal treatment, altho adopted, appears to be of little real curative benefit in contagious abortion. From time to time, certain agents, such as Extract of Black Haw, and Carbolic Acid, have been given internally and have been highly praised by some as a cure, altho in the hands of many others, capable of judging as to their merits, they were found to be of no lasting benefit and their popularity has diminished. The Carbolic Acid treatment consists in administering it daily in drachm doses (teaspoonful) or at intervals of several days thruout the period of pregnancy. After carefully conducted trials with its use, it is impossible to accord it any degree of special value. More recently, another drug, known as Methylene Blue, has come into favor as a likely cure. It is given in doses of one or two teaspoonfuls daily in the feed, for a period of five or six weeks. While no objection to the use of Methylene Blue need be taken, or its use discouraged, further reliable confirmation of its alleged curative effects are awaited. Experiments have been undertaken in the treatment of this disease by means of what are termed Bacterins (the dead germs), and also along the lines of immunizing cattle, or protecting them against contracting the disease, by injecting cultures of the Abortion Bacillus into non-pregnant females. As yet, however, sufficient reliable data has not been obtainable to warrant a pronouncement as to their real value.

Up to the present, therefore, the most approved means of dealing with contagious cattle abortion is along the advocated lines of prevention, and, in badly affected herds, to endeavor to build up a herd of sound females by removing female calves from their mothers immediately at birth and keeping them segregated thereafter.

#### RUSTS OF GRAIN

Red rust and black rust are merely different stages of the same thing. Sometimes we read reports in the newspapers that red rust is attacking the wheat or oats, or again that it is black rust, as tho they were wholly different things. That is incorrect. The rust seen on the straw or grain is the spores, or seed, of a parasitic plant that grows within the grain plant. While the grain is still growing, and before it begins to ripen, the parasitic plant puts forth red spores. These spores may infect other plants the same season, but they do not live thru the winter except in protected places. When the grain begins to ripen, the parasitic plants put forth black spores, spores that are capable of resisting cold and living thru the winter. Peculiarly enough, the black spores cannot re-infect grain, but must have another host plant on which to grow, the barberry hedge. On the barberry, a kind of spores are produced that re-infect grain. Barberry rust infection is not much of a factor in this country. Grain rusts probably travel from the south each year by the blowing of red rust spores. In the south the red rust spores live thru the winter. Dampness on the leaves of the grain, such as is caused by dew or rain, gives the right conditions for the germination of the rust spores, especially if the weather is warm. That is why warm damp weather causes rust on grain.

#### WRONG MEN IN JAIL

The Grain Growers' Guide is of the opinion that Canada's greatest need is honest politicians. With so many statesmen suffering from criminal tendencies it is difficult to understand on what principle of logic penitentiaries controlled by them are established and maintained. An opulent politician has no occasion, and should have no temptation, to defraud the people if criminal instincts are not inherent in him. Many men in jails and penitentiaries are not of a criminal type, but the victims of circumstances or of an unfavorable environment.—Canadian Co-operator.

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