

Bulletin 229

May, 1917

The Agricultural Experiment Station

OF THE

Colorado Agricultural College

BRISKET DISEASE

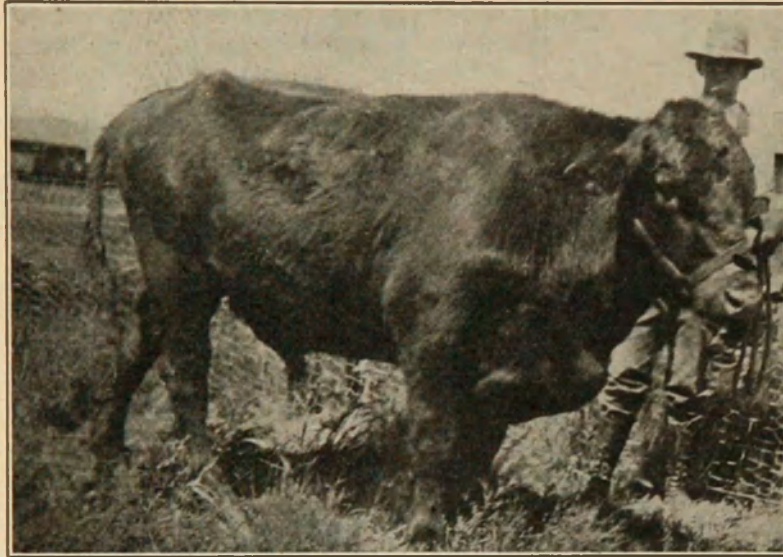
(Bulletin No. 204 revised and abbreviated)

By

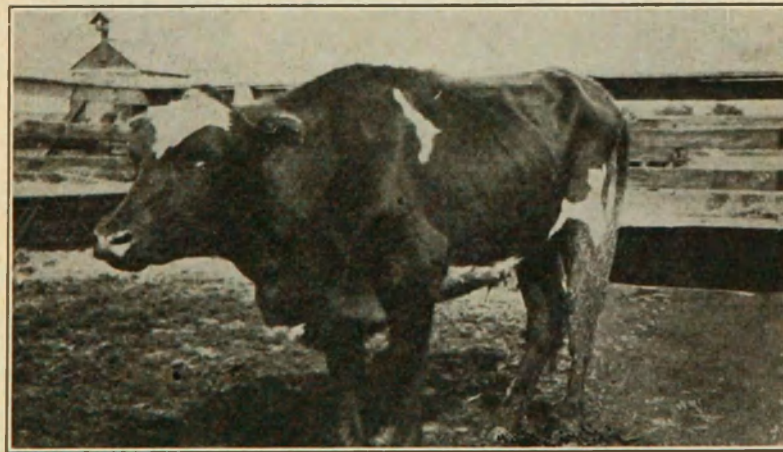
GEORGE H. GLOVER and E. NEWSOM



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This bull was raised at Golden, Colo., altitude 5,693 feet, shipped to South Park, where he was ranged between 11,000 and 12,000 feet. He developed the disease during the summer of 1914, was shipped to Denver and recovered within two weeks after arrival. No medicinal treatment was given.



A Shorthorn steer raised in Texas and sent to South Park a year previous to the development of the disease. Ranged at an altitude of between 11,000 and 12,000 feet. He was shipped to Denver, where he recovered in less than three weeks, without medicinal treatment.

BRISKET DISEASE

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SUMMARY

A disease occurs in cattle in the high altitudes of Colorado, the principal symptoms of which are swelling of the brisket and of the loose tissues under the jaw, usually diarrhoea and a moist cough, with gradual emaciation and death. It is chronic in character but is fatal in practically all cases.

On autopsy the most marked features are generalized dropsy, enlarged and hard liver and dilated heart.

It appears to be caused by an exhaustion of the heart muscle associated with a varying degree of dilatation and hypertrophy, this being brought about by failure of acclimatization at high altitudes.

Medical treatment has so far proven of little avail, but, where possible, shipping the affected animals to a lower altitude is recommended.

Preventive measures include the use of bulls that have been raised at altitudes of 8,000 feet or more, with a view to building up a hardier strain of cattle; also the curtailment of indiscriminate shipping of low altitude cattle to high altitudes.

BRIEF FACTS HERE GIVEN

Bulletin No. 204 of this Station entitled "Brisket Disease" having become exhausted, it has seemed desirable to set down briefly such facts about the disease as will be of value to the stockmen of the State. The inquiries concerning this disease continue to come to the Station and it is to answer these in a more comprehensive manner than can be done by letter that this bulletin is prepared. The Station began its work on this malady in 1913 at the special request of many stockmen who had sustained loss of animals.

HISTORY AND DISTRIBUTION

Brisket disease has been known in Colorado since 1889 and since that time has caused an annual loss of approximately 1 per cent of all cattle maintained above an altitude of 8,000 feet. It has been especially prevalent in the high mountain parks. Practically every year numerous cases are seen in North, Middle and South Parks and on the forest reserves surrounding the same. It is a frequent cause of loss on nearly

all of the forest reserves since these are usually found at high altitudes. It seems not to occur in the San Luis Valley to any extent, but is frequent on the ranges adjacent to that territory. In fact it has been seen in practically every part of the State where many cattle are maintained above an altitude of 8,000 feet.

The disease is known definitely to exist in Wyoming and New Mexico but so far has not been diagnosed in any other state or country. One report of its occurrence in Montana has not been verified. It is said by competent authority not to exist in the Alps of Switzerland.

ANIMALS AFFECTED

Cattle of all ages are susceptible, even calves as young as one month often showing well marked symptoms. In fact many calves die from the disease when the owners do not recognize the ailment.

CAUSE

It seems to have been demonstrated that the cause lies in failure of acclimatization to extreme altitudes. The malady is far more prevalent in animals that are shipped in from low altitudes. In the case of calves, those that are sired by low altitude bulls are much more susceptible. The higher the altitude the more prevalent is the disease and the shipping of affected animals to lower levels will in a majority of the cases effect a cure. All of these observations clearly indicate that the altitude is the chief factor. In order to eliminate the food as a factor the Station shipped six affected animals to Fort Collins (altitude 5,000 feet) and fed them on South Park hay after arrival. (This disease is very prevalent in South Park, altitude 9,000 to 10,000 feet.) Four of these animals recovered, while two died. Since the two which died arrived in a moribund condition, and one of them died within 24 hours after arrival, it is not believed the food could have been responsible for their death.

The disease does not appear to be contagious, since only a small percentage of animals is ordinarily affected. The work of the Station has never revealed a micro-organism that could in any way be a causative factor. Transmission experiments resulted negatively in the two instances tried.

It is the belief of those who have investigated the disease that the lack of oxygen, the exhausting labor involved in grazing over the mountains, and the severe climate, all result in over-strain of the heart in some individuals, which leads to the generalized dropsy that has been called brisket disease.

SYMPTOMS

The first evidence of the disease is a dull, listless appearance, the hair stands on end and the ears droop. The animal appears gaunt owing to failure to take the usual amount of food. There may be a slight, moist cough. A diarrhoea usually appears soon after the other symptoms, or it may even be the first symptom noted. The respiration is increased and the pulse is rapid and weak. Many calves die in this stage without showing any swelling of the brisket. In some instances the appetite remains good up to within a few days of death.

Later, there appears a swelling of the loose tissue under the jaw and a swelling of the loose tissues of the brisket. Either swelling may appear first, but gradually the two merge into each other as the whole under part of the neck becomes dropsical. In male animals, the sheath may swell considerably and the hind limbs become puffy. The fore limbs may stock in extreme cases. The swelling of the brisket may become enormous in size, extending out in front of the fore limbs as a rather firm doughy mass. There is no pain on pressure and the part is not increased in temperature. The abdomen may swell markedly in its lower portion, due to accumulation of fluid.

The respiration becomes increased, but labored only on exercise. A clear, mucous discharge comes from the eyes and nostrils. There is no fever. The heart-beats are increased, especially on slight excitement or exercise, when they may run 100 to 120 per minute. Under these circumstances the beat is tumultuous but lacks force, as evidenced by a very weak pulse. A pronounced jugular pulse is common in the later stages.

Forced exercise in this later stage will cause labored breathing, coughing, hemorrhage from the nose, and if continued, quick death. Consequently, it is difficult to drive an afflicted animal any considerable distance.

The animals become very weak, so that the slightest exertion or excitement causes them to fall. This has been noticed repeatedly when attempting to restrain them for close observation.

The usual course of the disease is from two weeks to three months, although a few animals have been known to apparently recover in the spring, only to be taken down again the following fall. We may say that most animals die within a month after symptoms are first noticed, the older cattle living longer than the younger. Death seems to be due either to suffocation or exhaustion and paralysis of the heart.

LESIONS

The carcass is usually emaciated. The subcutaneous tissues in the region of the brisket, lower side of the neck, and under the jaw are infiltrated with a clear serum. It does not flow freely when incised, but can be squeezed out. Sometimes the subcutaneous tissue of the limbs is similarly affected.

When the abdomen is opened, a considerable quantity of straw-colored fluid escapes, sometimes as much as six or eight gallons.

The liver is always much enlarged and is tough, firm and leathery. On section it has a grayish mottled appearance, the cut veins being very large. The condition of the liver is very noticeable and seems to be constant.

In the thorax a large amount of fluid is to be found, as in the abdomen. The lungs are edematous. The heart is enlarged, dilated and usually flabby.

DIFFERENTIAL DIAGNOSIS

It simulates traumatic pericarditis, but can be differentiated by the fever which usually accompanies the latter disease. On post-mortem examination the finding of pus in the pericardium would eliminate brisket disease and point to traumatism.

It could easily be mistaken for pneumonia, especially if complicated with pleurisy, in which case the brisket might be swollen. The diagnosis of these latter conditions would be based on the presence of fever in the live animal and, on autopsy, signs of inflammation in the lungs and pleura.

TREATMENT

Of twelve animals shipped to a lower altitude under the direction of the Station, ten recovered, although no other treatment was administered. It is the belief of most stockmen who have had experience that getting the animals to a lower level is sufficient to effect a cure. It appears that taking the animals from the ranges around the San Luis Valley down into the Valley proper (altitude 7,500 feet) has effected a cure in many cases. Most of the animals that have been shipped from South Park to Denver (5,280 feet) have recovered. Consequently, removal to a lower altitude is always to be recommended if feasible. The difficulty comes in getting these animals to a shipping point, as they are so weak that they can be driven only with difficulty.

Medicinal treatment has always been unsatisfactory but can be tried if the animals can be put into a warm place. Any treatment on the range is believed to be out of the question.

If the animals can be gotten to a place where they can receive daily care, then treatment should be tried as follows:

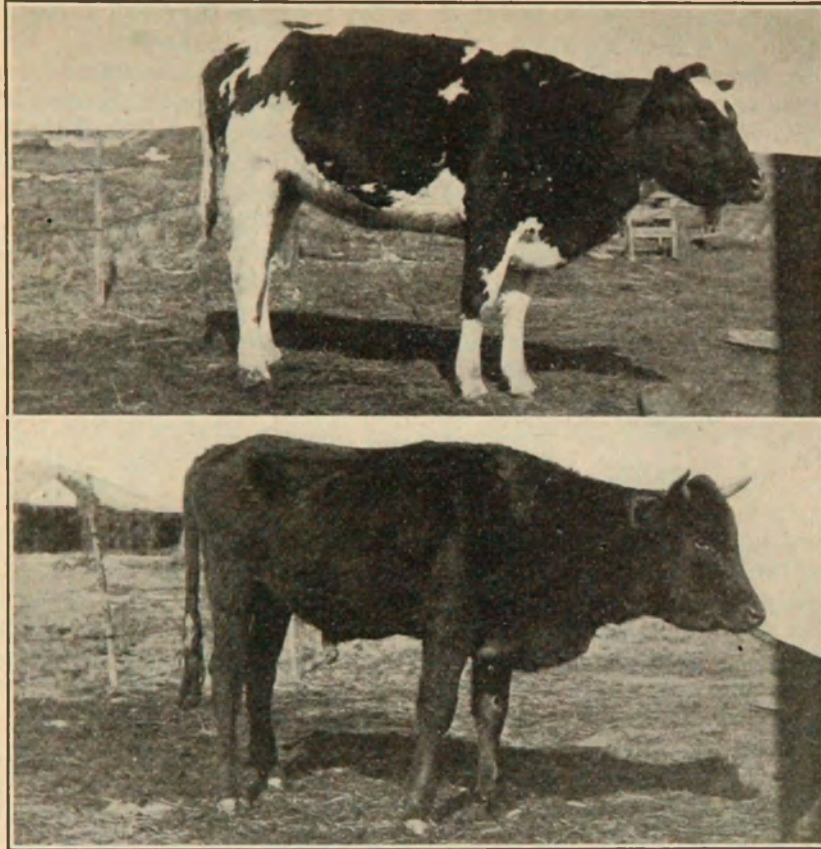
Keep them quiet, do not excite them any more than absolutely necessary. Give them plenty of water and hay, preferably alfalfa. Drench them daily with a teaspoonful of fluid extract of digitalis for adult animals and ten drops for young calves. The medicine can be put into a few ounces of water. This treatment can be kept up for two or three weeks, when it should be discontinued for a time. This suggested treatment is not given with the expectation that many animals will be saved by it, but only that it may be tried where it is impracticable to get the animals to a lower altitude. Such animals, even if they recover, should be shipped out at the first convenient opportunity.

PREVENTION

Since the disease is far more prevalent in cattle shipped in from low altitudes than in natives, it would seem only wise that importations be somewhat curtailed or, if practiced, that the animals be brought more gradually to the extreme altitudes.

Since extreme exertion on first arrival at the higher level seems to play a part, more care should be taken in the handling of the animals during the first few weeks to see that they are not subjected to long, hard drives. Realizing that these animals are usually wild, we are aware of the difficulty in complying with this suggestion.

The practice of buying pure-bred bulls from low altitudes, while praiseworthy in its intent, seems to be responsible for some of the difficulty. Not only do the bulls themselves in many instances die of the disease after some months residence under the new conditions, but their calves appear to be much more susceptible than calves sired by native bulls. In order to reduce this source of trouble it is recommended that bulls be purchased from altitudes more nearly approaching that at which they are to be used. We believe that this practice, if followed, would do much toward eliminating the disease. The idea is to breed a more vigorous animal that can stand the unusual conditions incident to a high altitude. Finally, it may become necessary to abandon some of the higher ranges, especially during cold and wet summers. Since the disease has not been seen in sheep, it may be possible to range these animals at the higher levels where the cattle do not thrive.



The two animals pictured above were from a lot of 35 that were raised near Parker, Colorado. One is a four-year-old cow, the other a two-year-old steer. They were shipped to a ranch near Fairplay, Colorado (altitude 9,500 ft.) where they were ranged with about 50 native cattle. Six of the animals raised at Parker (altitude 6,000 ft.) became ill with brisket disease, while none of the natives were affected. These animals were seen on October 17, 1915, at which time they had been sick about three weeks. On this same date a six-months-old calf of the Parker lot born at the high altitude was found to be suffering from the same disease.

