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6-1893

## Scab, Lumpy Jaw and Anthrax

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### Recommended Citation

Cormack, D.A., "Scab, Lumpy Jaw and Anthrax" (1893). *Bulletins*. Paper 36.  
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SOUTH DAKOTA  
AGRICULTURAL COLLEGE  
AND  
EXPERIMENT STATION  
BROOKINGS, S. D.

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BULLETIN NO. 36

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JUNE 1893.

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Department of Veterinary Science.

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SCAB, LUMPY JAW AND ANTHRAX.

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DUTCHER, BREED & STORGAARD, BROOKINGS.

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All letters and other mail matter for the Station should be addressed to the Experiment Station.

## **SCAB, LUMPY JAW AND ANTHRAX.**

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D. A. CORMACK.

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During the past month, we have received many inquiries for information regarding the causes and treatment of the above named diseases.

Many of these communications have been answered direct, but, in order to meet all past and future inquiries, regarding these diseases, we have decided to issue the following information for the benefit of those who are asking for the same.

There is certainly no state in the Union, where contagious and infectious diseases have done so little damage, as in South Dakota, and if stockmen and flockmasters throughout the state, would take more interest in the work of stamping out disease when it makes its first appearance, their loss would be still further reduced. It is the duty of every stock owner to assist the state board of health and their several county boards of health, in taking whatever steps may be necessary, or within their reach, for the cure of the afflicted or for the protection of the healthy, from becoming afflicted.

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### **SCAB.**

Sheep owners in Potter, Clark, Deuel, and Codington counties, are well aware that this disease exists, in their respective counties. It is but right and proper, that their fellow flockmasters in other parts of the state, should also be made aware of this disagreeable fact.

Through a loose method of purchasing sheep, that are shipped into this state from other states, by commission men and sheep traders, scab has been introduced into the above named counties. Had proper steps been taken to stamp out the



disease on its first appearance, hundreds of sheep would have been saved, in each of the counties named. If those who owned the first diseased flock were the only sufferers, the public in general, might let the matter rest right there. But through the carelessness of one or two men, inasmuch as they refuse or neglect to carry out the orders of health officers; we know of some cases where flocks have been quarantined by the county boards of health, but in a few days the owners of the diseased animals, not only sheep, but also in cases of Glanders among horses, have broken the quarantine and allowed their diseased animals to visit the pastures and stock of their neighbor, and from there to their neighbor's neighbor, till nearly all the flocks in a township have become innoculated with the disease. In such cases, the just and the unjust, suffer alike. Where it is to stop, no man can tell. If there is not a vigorous enforcement of the law, regarding scabby sheep, the flocks of some counties are apt to be exterminated. The only hope that owners of healthy flocks have, lies in the rigid enforcement of the law, against those who have diseased animals in their possession.

DISEASE.—There are three forms of scab in sheep, viz: 1<sup>st</sup> "Head Scab (*sarcoptic*), Foot Scab (*symbiotic*) and Common Scab (*psoroptic*). Each form in which the disease appears is caused by three different species of insects. "The form in which the disease appears in this state is known as common scab (*Psoroptic*) caused by the scab or itch insect 2<sup>nd</sup> "*Psoroptes communis*, Furst, var. Ovis." This insect may very often be seen by the unaided eye, in the wool near the edges of the scabs.

When we consider how suddenly they attack a healthy sheep, how rapidly they increase in numbers, and how destructive they become, when allowed to go on with their destructive work, we then see the necessity of taking early steps for their extermination.

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1, Williams' Surgery, p. 686. 2, Bu. of Animal Industry, Parasites of Sheep, p. 56.

<sup>3</sup>“The following table furnished by Gerlach will show how rapidly this parasite increases:

GENERATION.	DAYS.	FEMALES BORN.	MALES BORN.
1st,	15,	10,	5
2nd,	30,	100,	50
3rd,	45,	1,000,	500
4th,	60,	10,000,	5,000
5th,	75,	100,000,	50,000
6th,	90,	1,000,000,	500,000

**SYMPTOMS.**—The first symptom noticed is the sheep rubbing and biting themselves; after a while the wool begins to look ragged; later on patches of wool fall off from the body, in other places it is easily removed by the hand, and finally the whole fleece drops off. The sheep then is in a debilitated condition. The continual itching causes loss of rest, thus the way is opened for other diseases, and death may take place in from three to six months from the time they were first attacked by the destructive parasite. Even if there be no deaths, the very fact, that the fleece of a scabby sheep, is decreased in value, should induce sheep owners to work hard for the destruction of the parasite.

**CONTAGION:**—When infected sheep are allowed to go at large, they are continually spreading the disease by dropping tags of wool, rubbing against fences, and so on. Thus healthy sheep going over the same ground become infected. The parasite can live about the fences, or sheds, for, from two to three weeks after they leave the sheep. “Scab is one of the most dreaded diseases of sheep. For the flockmaster who has but few sheep, say fifty or a hundred, the task of treatment and eradication of the scab from the flock is no easy affair; but for him who owns from five to twenty thousand the difficulties to be met are enormously increased. Though the disease may be easily treated so far as one sheep is concerned, still the treatment would only be palliative and would not assure the flockmaster that the disease would not break out again. Treatment, therefore, of a flock in which scab has appeared must be applied to

<sup>3</sup>, Williams' Surgery, p. 687.



every individual exposed, and to the sheep pens and Corral in which they have been lodged."

TREATMENT:—This is of two kinds,—preventive and curative. The first important step to take is to remove the diseased animals, from the healthy, the whole flock should be quarantined, so that they may not transmit the disease to healthy sheep.

Dip the whole flock, whether diseased or not, as every animal that has once been exposed to the disease, is unsafe, until they have been thoroughly cleaned and disinfected, by dipping or otherwise.

The sheds, yards, and fences should be thoroughly cleaned and disinfected with a solution of boiling lye, or carbolic acid, after which give a coat of white wash to all the woodwork. Keep the diseased flock in a clean uninfected enclosure for at least one month and to be kept from other sheep 60 days, during which time they should be repeatedly, examined so that, if the first dipping should not have destroyed all the parasites the dip should be reapplied. Sheep that have died should be burned, or in some other way disposed of so that the parasites on the carcass may do no more damage.

Healthy sheep should not be allowed to enter sheds, corrals, pastures or yards, for at least, one month, after the diseased sheep have been removed from the same. From a sanitary point of view, it is a good plan to give all flocks a thorough dipping in some good sheep dip at least once a year, and let that be when the flock has been clipped, at this time, the parasites are easily reached, and the medicine will go further, than when there is a heavy fleece upon the sheep. Of the many dips that are advertized we have seen a few do good work. In Deuel County, the Thymo—Cresol sheep dip has done good work on scabby sheep. <sup>5</sup> "A very effectual dip is a preparation of Arsenic one pound Carbonate of Potash one pound to water twenty gallons." <sup>6</sup> "The chief poisons used in sheep dip are tobacco, arsenic and carbolic acid. Of these tobacco is the favorite, because its use has not been followed by the fatality that has in times past followed the use of arsenic. Carbolic acid is too expensive to be used in large quantities. The

<sup>4</sup> Bu. of animal industry report Parasites of sheep p 53

Australian or Rutherford dip, has been very successful and is as follows: Tobacco and flowers of Sulphur one pound each, to every four gallons of water, the tobacco should be steeped in a portion of the water, two or three successive times so as to extract the juice. The leaves or stems may be used; of the latter three times the weight is required, as is needed of the former; a press, or wringer is convenient to squeeze out all the liquor from them. The sulphur should be mixed with some of the tobacco water and stirred until it is of creamy consistency. These ingredients should be added to the required amount of water. During the dipping this mixture should be constantly stirred and a little fresh water added from time to time to replace that lost by evaporation. This dip, should never be used at a higher temperature than  $110^{\circ}$  Fah. nor lower than  $100^{\circ}$  Fah. if used during the summer weather and  $110^{\circ}$  to  $120^{\circ}$  Fah. in winter. The sheep should remain immersed in it from sixty to ninety seconds."

7 "Rollopps dip, a mixture sufficient for 100 sheep, is; take 20 pounds of tobacco, steep it with 66 gallons of water for half an hour, heat it to  $95^{\circ}$  Fah. and add  $2\frac{1}{2}$  pounds each of pure Carboic acid and of potash.

Here is one of the cheapest dips and it is generally effective viz: Mix an infusion of 15 pounds tobacco with  $2\frac{1}{2}$  pounds carboic acid and  $13\frac{1}{2}$  pounds of wood tar, pour it into 66 gallons water at  $125^{\circ}$  Fah., in which 3 pounds soda has been dissolved. Use it at a temperature of  $80^{\circ}$  or  $90^{\circ}$  Fah. and repeat in six or seven days."

In fact almost any of the ordinary sheep dips, will kill these parasites, but dips to be effective, should be applied immediately after shearing and reapplied in about eight days from the time of first dipping. Thus the eggs will be hatched and the second dipping will destroy all the young (new comers). It is early treatment, and especially treatment of the preventive sort, that is cheap, easy and profitable, but when this is neglected you are sure to be called on to undertake a more expensive and

5, Williams Surgery p 693.

6, Bu. Animal Industry parasites of sheep p 61.

7, Rep. of Bu. of Animal Industry parasites of sheep p 64.



unprofitable kind of treatment. We hope this will settle all further inquiries regarding the treatment of scab and other external parasitic diseases of sheep.

### LUMPY JAW.

**LUMPY JAW:—(Actinomycosis)** Though it is only recently, that we have been accustomed to the term Lumpy jaw, (*Actinomycosis*) this disease has been treated by all the old writers, under different names. <sup>8</sup>"The disease is said to be very prevalent in Germany, where it has received various popular names by Agriculturalists and dairy people, whose cattle were so frequently victims to it. In Germany the disease of the bones was known as "Ladendruck," "Ladengeschwulst," "Dicker backen," "Krebsbacken," "Bäckel," etc., etc.

When the tongue or other soft tissues in the mouth were specially involved, the terms "Holzzunge" (*Wooden tongue*), "Hohlgeschwulste," "Schlundbeulen," "Wurm," etc., were applied.

In Italy also the disease is very common, it was popularly considered to be a kind of Glanders and Farcy of cattle. Sometimes they looked upon it as Tuberculosis."

In Great Britain, the disease also exists, Prof. Williams in his work on Veterinary Surgery, speaks of the disease as follows:

<sup>9</sup>"**OSTEOID TUMORS:—**These are tumors of irregularly protuberant surface, affecting both the upper and lower jaws of horned cattle, they are generally of a slow, but sometime of a rapid growth, and when so, they possess some malignity (see Ostea—Sarcoma.)" The only treatment that can be recommended is early removal of the tumor and before it has attained any size. If it be of any magnitude no treatment should be attempted, but the animal fed for slaughter."

Prof. George Fleming of London, one of the best known Veterinary writers in the world, in his book, entitled; *A New Infectious Disease*, written a few years ago, says: <sup>10</sup>"In this

<sup>8</sup>, Flemings new Infectious disease p. 9.

<sup>9</sup>, Williams Surgery p. 421.

country, the disease undoubtedly exist, and in all probability widely and frequently; though its Pathology has not hitherto been ascertained.

As already stated, so far as the pathology of this malady is concerned, it is a new disease; as until its histological characters were discovered we were in ignorance of its nature. It has been designated as Scrofula, Tubercule, Tubercular Stomatitis, Millary Tubercule, Schirrus tongue, Glossitis, Osteosarcoma, Osteoporosis, and many other names, there is every reason to think that this disease has been included in the descriptions of these various affections."

<sup>10</sup>*Actino-Mycosis.* This malignant growth may be classified as a parasitic tumor, consisting of the development of cellular sarcomatous elements, from an irritation caused by the presence of a vegetable parasite—the actinomyces or ray fungus—a radiating or star like vegetable parasitic growth. The botanical position of this fungus is not yet determined, some pathologists going so far as to question its vegetable origin, as it differs in many respects from its congeners. In cattle, the masses or tumors seldom suppurate, and sometimes attain the size of a goose's egg, affecting the tongue, the lower and upper jaws, and it has been discovered in other parts of the alimentary tracks, the lungs, skin, etc." From this time (1884) we have been gradually getting more light on the nature of lumpy jaw, but not until within the last two years have we had very positive claims as to the successful treatment of the disease.

Prof. Flenning, like Prof. Williams, says, that the treatment of this disease belongs to the domain of surgery. The same authority, describes actinomycosis of the bones of the jaw, of the fauces, nasal chambers, larynx, stomach and intestines, udder, lungs, etc.

During the past year the Bureau of animal industry at Washington, D. C., undertook a series of experiments with this disease at the Chicago stockyards, the results of these experiments have been very encouraging to the Bureau, as the officers in charge of the experiments claim that 75 per cent. of

10, Fleming's New Infect disease p 9.

11, Williams Surgery 5th Edition 1884, P. 441.



the animals treated were cured. While the board of live stock commissioners of the state of Illinois, and their veterinary advisers, deny this large percentage of cures. In order to meet the desire of a large number of stockmen who are possessors of lumpy jaw cattle. We will give the Bureau's treatment in full. "12The medicine used in treating lumpy jaw in cattle is the iodide of potassium, the dose should never exceed ( $\frac{1}{2}$  dram.) for every hundred pounds live weight, the proper dose being from 8 to 12 grams (2 to 3 drams) according to the size of the animal and the extent of the lesion. This dose may be given daily for from 5 to 6 days, when the animal will show slight symptoms of iodism, viz: discharge of thick mucus from the nose and excretion of tears. The manure will become rather dry, but that is easily repaired by giving a dose of Glauber's salts and some bran mash.

This will restore the appetite, and two days after the last dose was given the animal will be ready for another week's treatment, and so on till a cure is effected. If these precautions are taken, no ill effect will result from the treatment, and if properly fed the animal will gain in condition uninfluenced by the medicine. There is, however, a great difference as to the individual effect of the medicine on animals, but any farmer who takes an interest in seeing his stock doing well will easily perceive when it is time for him to stop the medicine, and give the animal a rest for two or three days. The medicine is best administered dissolved in water and given by means of a long necked bottle. One dose of medicine is dissolved in one pint of water, the animal is held by the nose and the contents of the bottle emptied into the animal's mouth without fixing or securing the tongue in any way.

Where a man has several head of lumpy jawed cattle to treat, they may not be of the same size and therefore not require the same dose of the medicine. As the farmer or breeder is not usually in possession of a pair of scales sufficiently fine to weigh of such small doses as required, the most convenient way is to have the medicine, which is easily dissolved, prepared in a concentrated solution of the strength 1 to 2 (2 drams of the solution to contain 1 dram of the iodide of potassium.)



The drug must be dissolved in distilled or rain water, as otherwise a precipitate will form from the salts present in common water.

Measure out the exact dose for every animal and pour it into a long necked wine bottle half filled with common water. On ranges and similar places, where a large number of cattle are kept, the easiest way is to keep the affected cattle in a large pen, in one side of which the cattle may be driven one by one and treated. You may stop giving the medicine when the tumor is shrunken to one third its original size, as the rest of it will gradually disappear.

When the bone is affected, treatment is only advisable when the swelling does not exceed the size of a goose egg.

It now remains to decide which cases will prove of financial value for the farmers and breeders to treat. The amount of medicine used in a single case ought never to exceed one pound, equal to an expense of \$3. We suppose any steer will be worth that much."

When there is a running sore externally, we have found iodoform dusted over and into the open sore, very useful in drying up and healing the parts, but when using the iodoform externally we reduce the iodide of potash treatment internally about one third. Any stockman can try this treatment for himself and if there are any successes, or failures with the treatment it should be made known as soon as possible. We certainly have considerable faith in the iodide of potassium treatment so far as we have gone.

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### ANTHRAX.

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For several years, there has been considerable loss of cattle from this disease in different counties east of the Missouri river. While there is nothing new to advance in regard to this disease, we propose to call the attention of stock owners to a few facts regarding the best means of preventing the spread of

the disease in localities where it has previously made its appearance.

*Anthrax:* Is a generic term, it applies to a group of diseases of a contagious nature, which manifest themselves under various forms, and under different names. The disease has generally appeared among cattle in this state in the form of splenic apoplexy, and black leg. Cattle kept on low lying lands, such as river bottoms, old lake beds etc., are most subject to the disease, especially when they are kept on such pastures immediately after heavy rains. During the summer of 1891, and 1892, outbreaks of the disease appeared on the Sisseton reservation, where it generally took the form of splenic apoplexy.

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#### SYMPTOMS.

*Splenic Apoplexy:* There is a sudden loss of appetite, the affected animals stop chewing the cud, sometimes they are taken with shivering fits. The animal becomes weak and is inclined to lay down a good deal. The heart beats violently, there may be a slight flow of mucus from the mouth, a watery discharge from the eyes, and sometimes a bloody discharge from the nose. The affected animals may sometimes be so excited that it is dangerous to approach them. Death may take place in from two to twenty hours, from the time the first symptoms appeared. The symptoms of black leg is as follows: The very best animal in the herd are most liable to attack, generally two or three year olds. The animal becomes stupid and listless, there is considerable pain or pressure about the ribs and loins, the ears become pendent. Soon after you will notice the swelling of one or more limbs, most frequently the fore limbs, swellings may also appear about the loins, head, or neck. The affected animals are always unwilling to move and generally prefer to be in a recumbent position, there is generally complete loss of appetite. The swellings are cold to the touch, and when handled will sometimes make a crackling sound. The animal seems unconscious and soon passes away. After death, there is a dark bloody froth issuing from the mouth and nose, and sometimes from the anus. The above



symptoms are familiar to stock-men who have frequently seen the disease.

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TREATMENT.

Very little can be done for the animals after the disease and its symptoms have become fully developed. But much may be done in the way of preventing an outbreak, or the spread of the disease after it has made its appearance.

Great care should be taken to see that the carcasses of animals dying from the disease are buried deep under the surface of the ground, or burned to ashes. If buried, the ground over the carcasses should be fenced, so that for at least one or two years, cattle are not allowed to pasture thereon. When the disease makes its first appearance remove the herd to the high land pastures, so that they may not feed on low ground, especially after heavy rains.

The introduction of seatons in the breast, with a little fly blistering ointment is good. And to animals that seem to be affected it is a good plan to give from two to three drams of the Chlorate of Potash once daily for several days. If the bowels are not acting freely, give from one to one and a half pints of Linseed oil and one ounce of Spirits of Turpentine. Shake well together and give as one dose. Should there appear to be a serious attack of any herd by this disease it is advisable to call in some qualified Veterinarian.

This bulletin is issued, not as original matter, but for the purpose in advising stockmen in regard to the disease herein mentioned and in reply to numerous inquires from all parts of the state.