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Some Animal Diseases

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BY

Drs. GLOVER, BARNES and KAUPP

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Some Animal Diseases.

BY

Drs. Glover, Barnes and Kaupp.

INTRODUCTION.

This publication is intended as a *bulletin of information* and in no sense a scientific treatise of subjects under consideration.

According to recent statistics there are something over $50,000,000 invested in livestock in the State of Colorado. There is probably no place where livestock of all kinds is generally more healthy. The loss we suffer is not so much from the ravages of any one or several contagious diseases, as it is from the aggregate loss from innumerable things, such as accidents, colics, pneumonia, poisonous plants, etc. Most of this loss is attributed to either ignorance, or carlessness and is preventable.

This constant loss of valuable animals, to the farmer and stockman must be figured as just so much taken from the profits, and in the end means success or failure of the enterprise. The most casual observation at once suggests the importance of education of the farmer and farmer boys, on the care and management of livestock, the recognition of the more common diseases, and vastly more important than all —how to prevent them.

This bulletin of information deals with a few conditions that seem to be of the most importance to stockmen of the state, just at this time. In it we hope to throw out a few hints that will be easily understood and of real practical value.

Sore Mouth Disease of Pigs and Calves.

(*Necrotic Stomatitis.*)

BY DR. GEO. H. GLOVER.

During the last fifteen months this disease has been a veritable scourge among hogs in Colorado. Calves and other species of animals have not been much affected. The name "sore mouth disease" is rather misleading because the disease is not always confined to the mouth.

Cause: The cause of this disease is a germ and nothing else can produce it, although improper food, dirty and unsanitary pens are in a way responsible (predisposing causes) for it. To grow a good crop of corn it is necessary to cultivate the crop and furnish other favorable conditions. In the same way, having the germs of disease planted, the disease is sure to develop if conditions (filth, exposure, lack of exercise, etc.) generally favorable, are existing. Experience has shown that the saying—"Anything is good enough for a hog," is a great mistake. Within the last year many examples have come under our observation where farmers taking exceptionally good care of their hogs have escaped and others in the same neighborhood have lost all the small pigs they had from this disease.

The germ of disease getting into a slight wound or sore anywhere on the body, or in the stomach, or bowels, will grow and destroy the

tissue until it has produced a deep cavity. It may be the jaw bone or end of the tongue, tips of the ears, or perhaps has involved a large area of the stomach. This is not the worst of it perhaps, for while the germs are growing, they secrete poisons (toxins) which are absorbed and poison the whole body.

Symptoms: When this disease gets among the herd the pigs from a few weeks up to a year old are seen (first one or two) to be unthrifty; on examining the mouth, there is usually found a deep sore, (not always), the back is arched, there is a loss of appetite, and within a few days the pigs are dead. Examination of the carcass after death will always reveal the presence somewhere on the body (inside or out), of deep seated angry looking ulcers.

Prevention and Treatment: To allow this disease to spread among the herd is little short of criminal.

If your hogs are healthy and your neighbors hogs have this disease, see to it that you do not purchase any animals from him and thus infect your own herd. The farmer himself may carry the infection on his boots. Clean out the pens frequently, scrub out the feed troughs, and keep them well supplied with clean bedding.

If this is too much trouble, then be prepared to take the consequences. If the hogs have the disease it can be stopped with little expense of time and labor.

How to Proceed: First; isolate the healthy from the sick animals, dip all the healthy pigs in a barrel of the following solution: potassium permanganate 1-oz. to one gallon of water. Place all of these healthy pigs that have been dipped, by themselves in clean new quarters, and dip them once a week. Second; the sick pigs may be treated by burning out any sores with lunar caustic and dipping them like the others. Usually however, it will be better to destroy them and burn the carcasses. Third; *disinfect the premises.* Rake up all the litter and burn it. Whitewash the fence posts, plough the pasture, scrub the feed troughs in boiling water, burn sulphur in closed buildings. It may be necessary to follow this proceedure a second or even a third time. Success at the start is the reward of thoroughness with which every detail of the work of isolation and disinfection is carried out.

Lip and Leg Ulceration or Necrotic Dermatitis of Sheep.

BY DR. GEO. H. GLOVER.

This is an infectious disease of sheep which has recently appeared in the West. It is caused by the same organism as *sore mouth disease of pigs.* This germ (*bacillus necrophorous*) not only affects pigs, calves and sheep but may attack any warm blooded animal. People have been affected.

Before this germ can invade the body it is necessary for the skin or mucous membrane to be broken; the germ once having gained entrance into the tissue, begins its special business of tissue destruction, in whatever part of the body it has found lodgment. This organism is no doubt the cause of many of the persistent sores on the feet and legs of horses, sometimes on the neck and shoulders. In sheep the

legs and lips are more commonly affected. There is not much inflammation surrounding the diseased area, only deep, angry looking ulcers that will not heal and gradually grow larger. This condition of the lips of sheep is not to be confused with a sore mouth condition which often appears in sheep and lasts for a few days when they have first been put on heavy feed.

In case of infectious dermatitis the feet are especially liable to become sore, between the claws or just above the hoof; the mouth will become so sore that they can not eat and very seldom do they recover without treatment.

Treatment: If the sheep be watched carefully and upon the first appearance of the disease the ulcers are cauterized deep with a stick of lunar caustic, the disease may be checked. If the disease has progressed far, the ulcers penetrating deep into the flesh and the system poisoned by the toxins of the germ, it is better to destroy them and burn the carcasses.

If the disease has made its appearance in your flock proceed to clean it up in exactly the same way as is recommended in the preceeding article on sore mouth disease of pigs.

Poisonous Weeds.

By Dr. Geo. H. Glover.

The weed has been defined as a plant out of place. We have in the arid West probably a greater variety of plants, certainly a greater variety of poisonous weeds than can be found anywhere else in the United States. The different loco weeds easily take first place from the standpoint of the disaster wrought to the livestock interests of the State. The Experiment Station is doing everything possible with its limited means to investigate the different poisonous plants on the open range, and with the view especially of trying to determine some means of lessening the heavy mortality by prevention, antidotes, etc.

LOCO WEEDS.

About four years ago the Colorado Experiment Station undertook a co-operative investigation of the loco weeds in conjunction with the U. S. Department of Agriculture.

This much has been determined, as reported by the Bureau of Plant Industry, Bulletin No. 121, part 3.

Symptoms of Loco Poisoning: "The principal symptoms are the lowered head, rough coat, slow staggering gait, movements showing lack of muscular coordination, sometimes more or less paralytic symptoms, a general diseased nervous system, and in the later stages of the disease, extreme emaciation."

Pathological Changes: "The principal pathological changes are pronounced anemia of the whole system, diseased stomach walls, and in acute cases a congested condition of the walls of the stomach, while in chronic cases there are frequently ulcers. Generally speaking, locoed cattle have ulcers in the fourth stomach. There is an excess of fluids in the various cavities of the body. This is especially noticeable in the epidural space of the spinal canal. Here the effusion is more or less

organized, presenting the appearance of a gelatinous mass, which is especially abundant in the lumbar region and about the exits of the spinal nerves. In most locoed females the ovaries are found in a diseased condition.

Cause: According to the report of Albert C. Crawford, pharmacologist, poisonous plant investigation, "It is the inorganic constituents, especially barium, which are responsible for this poisonous action, at least in the plants collected at Hugo, Colo."

Ridding the Ranges of Loco Weeds: "In regard to the possibility of killing the weeds, it was found that this could readily be done in the case of fenced pastures. This is especially feasible with Astragalus mollissimus, because it occurs in comparatively small patches. Aragallus lamberti has a wider distribution, but it is not at all impossible to destroy this weed when in pastures. There seems to be no way of ridding the ranges of these weeds, however."

Treatment: "In regard to the second phase of remedial work, it was found that locoed cattle can in most cases be cured by a course of treatment with strychnine, while locoed horses can generally be cured by a course of treatment with Fowler's solution. The animals under treatment must not be allowed to eat the loco weed and should be given not only nutritious food, but, so far as possible, food with laxative properties. To this end magnesium sulphate was administered to correct the constipation which is almost universal among locoed animals. It should be noted, too, that magnesium sulphate may serve to some extent as an antidote to the poison.

It may be added, in regard to the question of immunity, that loco poisoning comes on in a slow and cumulative manner, so that there is no possibility of animals becoming immune."

LARKSPUR.

Barring the several species of loco weed, by far the most important poison weed in the State is three or four species of larkspur. The loss to the State from this source is something like $50,000 per annum.

In almost every instance where we have been called upon to investigate the poisoning of live stock in the mountainous sections of the State it has proved to be some species of this deadly family. The entire plant is poisonous up to the time that it flowers. It then not only becomes unpalatable to most animals, but loses a large part of its poison. When in flower it can easily be distinguished from all other plants by the color and shape of the flower, which has a projection on the back side, hence the name larkspur. All the different species have this characteristic shape, the blue or white flower, and so far as we know now all the different species are poisonous.

The poisoning occurs mostly in the spring when the plant is young, and during or immediately after a snow or rain storm. Cattle and sheep are much more frequently affected than horses. The animal usually starts for water, may fall down several times, stagger to its feet and try to keep going. Letters have been received frequently from different sections of the State describing a heavy loss through poisoning and accusing an unscrupulous neighbor of having willfully placed

poison in a spring or water hole. The reason why the spring is thought to be poisoned is because there is sometimes a little misunderstanding between the neighbors, and the fact that the cattle have been found dead near the spring has naturally lead to the supposition that the neighbor was wreaking vengeance by purposely poisoning his neighbor's stock. The real reason is, of course, that the animals as soon as they become distressed will start for the nearest water hole to drink and are often found adjacent to it.

The most active poison in the plant is called *Delphinine,* and in its action is very similar to aconite, depressing the heart's action and producing great weakness, and in many cases there is extreme bloating, the same as from alfalfa. Many antidotes have been tried, but only two appear to be of real benefit. The chemical antidote, potassium permanganate, has given results that are surprisingly satisfactory. The advantage in this drug is that it changes the poison and renders it harmless before it has been absorbed into the system. It is a most valuable antidote for poisoning by several of the alkaloids. With some little inconvenience it can be carried in the saddle bags by the cow boy and be the means of saving some valuable animals. If you wish to try this, go to your drug store and have put up a number of powders each composed of 30 grains of potassium permanganate and 30 grains of aluminum sulphate. When a poisoned animal is found it should be given one of these powders (regulate dose by the size of animal) in a quart bottle full of water. The other antidote is atropia sulfate, which is to be given with a hypodermic syringe which stockmen usually use for vaccinating their calves against blackleg. This antidote is used after the poison has been absorbed into the system. The tablets can be secured at any drug store, and carried along with the hypodermic syringe and a little bottle of water, and may be used by cow men while riding the range. If the animal is badly bloated it should be punctured high up on the left side with a knife, or better with a trocar and canula. This allows the gas to escape from the paunch, and is often sufficient treatment of itself. Bleeding seems to be the general practice and while this is not generally believed in now-a-days, either in the practice upon the human or the lower animals, yet in the case of larkspur poisoning it is claimed by stockmen to give beneficial results; if so, probably by relieving the passive congestion. Melted lard given at the very start would no doubt be of some benefit by mechanically preventing the rapid absorption of the poison. Never give tobacco, aconite, or anything that will tend to depress the animal. Stimulants are indicated, such as whiskey, ammonia, camphor, etc.

Next in importance to loco and larkspur is *wild parsnip* and *Death Cama.* Copies of Bulletin No. 113, "Larkspur and Other Poisonous Plants," may be obtained on application to the Experiment Station. The leaves of the wild cherry, monkshood, sage, skunk cabbage, ergot, sorghum, kaffir corn, and the rubber plant under certain conditions, mouldy hay, potatoes, carrots, etc., all come in for their share of the annual mortality in our domesticated animals.

A knowledge of the identity of poisonous plants, and conditions

under which they are most dangerous, would of itself be a great help to the stockman.

Blackleg.

By Dr. C. L. Barnes.

Blackleg (Symptomatic Anthrax) is a disease of young cattle and is caused by a germ. Most diseases of livestock are attributable either directly or indirectly to bad care and management, but this disease invariably strikes down the calves that have received the best care and are in the best condition.

Symptoms: One of the first symptoms noticed is the sick animal remaining away from the herd, usually lying down and not chewing its cud. If the animal is forced to move it appears stiff, usually in one fore leg. If this leg and shoulder be examined closely, it will be found that the muscles are swollen and tense. This swelling gradually increases as do all of the symptoms. The peculiar crackling sound, emitted when the hand is rubbed over the tumor is caused from gas which has accumulated under the skin.

If the swelling be lanced, a dark, frothy, bloody fluid runs out which swarms with blackleg germs. Death usually occurs in from six to forty-eight hours after the first symptoms are noticed.

The Season of Greatest Loss: Blackleg occurs in all seasons of the year. Reports from 1,656 stockmen show that May and June, and September and October are the months when the greatest losses occur. It would seem that it is greatest in wet seasons, for the sole reason no doubt, that feed is better in the wet season, and this is conducive to thrift and increases the susceptibility to the disease.

Treatment: As to treatment there is none. Practically all animals contracting the disease die. Our only hope is in the prevention.

Prevention: The fact that young cattle in a thriving condition are more susceptible, has led to the general belief that anything that will deplete the condition will act as a preventive, accordingly, various means of depletion have been tried such as chasing the animals, reducing the feed and water, bleeding, physic, seton through the dewlap, etc. This sort of thing however is very discouraging to the man who has been striving to keep his cattle growing, and besides when the disease has once appeared in the herd, such measures will not check it.

Vaccination: Vaccination will positively prevent blackleg; this is proven in laboratories where animals that have been vaccinated refuse to take the disease by inoculating them with the virus of diseased animals. The reason that some have not had satisfactory results from its use is that either the vaccine is not good or has not been properly given. Again occasionally a man will wait until his calves begin to die before vaccinating, and if they continue to die, he blames the vaccine. In such cases the calves were infected before vaccination and his efforts were and always will be in vain. Those who have made a regular practice of vaccinating every spring and fall and have exercised care in the work have generally reported excellent results.

Glanders.

By Dr. C. L. Barnes.

If your horse has glanders, or if any of your animals are sick or dying with what appears to be a contagious disease, it is your privilege and duty to notify the State Veterinarian at the Capitol Building, Denver, who will visit your place without expense to you.

Glanders is one of the oldest diseases known, its contagiousness being recognized as long ago as the seventeenth century. Glanders is caused by a specfic germ (Bacillus mallei) and affects horses, asses and mules. The goat, cat and dog sometimes contract the disease from living in stables with glandered horses. Pigs may contract the disease by inoculation. Cattle and chickens are immune. The disease attacks the mucous membrane of the nose, and may extend to the windpipe and lungs. When the lymphatic glands of the surface of the body are affected, the disease is known as farcy. The germs are found in the discharges from the nose and the farcy buds. The disease is transmitted to other animals, including man, by inoculation through wounds or mucous membranes. There are also many additional ways in which animals may be affected, such as common drinking troughs, feed boxes, mangers, hitch racks, harness, and any equipment used around an infected stable.

Symptoms: Glanders may occur in the acute or chronic form, or it may attack the surface of the body in the form of farcy. The acute form of glanders begins with a chill, high fever, the mucous membrane of the nose is at first hot and dry, and soon there is a watery discharge, which later becomes bloody. Nodules and ulcers form on the mucous membrane of the nose and discharge pus. These changes in the nose may take place in two or three days. There is also an abundant diarrhea, and the urine contains a large quantity of albumen. The patients become very weak and rapidly lose flesh.

The first symptoms of chronic glanders oftentimes are not easily recognized owing to the absence of distinct symptoms in the first stages of the disease. The first noticeable sign of the disease is a watery discharge from one or both nostrils, which later on become sticky and of a yellowish-gray or yellowish-green colored pus mixed with some blood coming from ulcers on the inside of the nose, and more particularly on the partition separating the nostrils. These ulcers are generally star shaped, and they may extend so deeply into the septum as to cause perforation.

When glanders affects the skin (farcy), one of the main symptoms may be the swelling of a joint with engorgement of the limb and nodules may form along the line of the lymphatics. These nodules vary in size from a pea to a hen's egg, and have a tendency to soften and discharge pus, after which they heal rapidly. New nodules may form, following the same course as the previous ones.

Manner in which Glanders may be distinguished from Distemper: In both these diseases there is a discharge from the nose. In distemper it is usually from both nostrils, while in glanders, as a rule, it is

from one side only. In glanders there are the characteristic ulcers formed in the nose, which, after healing, leave a star shaped scar. In distemper there is a doughy swelling between the branches of the lower jaw, which is hot and painful and interferes with the swallowing and causes the horse to carry his head forward. This swelling has a tendency to soften, break and discharge pus; while in glanders the swelling along the lower jaw is painless and the swollen glands remain distinct and cord-like. Also, in testing with mallein the glandered horse has a large, painful swelling at the point of injection of the mallein, which will not occur in the animal with distemper.

Prevention: All glandered animals should be immediately destroyed and not allowed to come in contact with healthy animals through stables, common drinking troughs, harness, or any other stable equipment. All suspicious animals should be isolated and cared for independently of healthy animals, until examined by a competent veterinarian. Infected buildings should be disinfected with one to five hundred corrosive sublimate solution, and a week later the process repeated. Then in two weeks after the second disinfection all woodwork should be whitewashed. Forage and litter in infected stalls should be burned. Attendants caring for suspicious animals should exercise precaution against contracting the disease.

Glanders is practically an incurable disease, therefore it is not advisable to treat it.

In doubtful cases of glanders, the *mallein test* is given. This test should only be given by a qualified veterinarian and until it is satisfactorily determined whether a suspicious case is, or is not glanders, the animal should be kept apart from all other horses or mules. Remember that the disease is occasionally transmitted to the human and is incurable in man or beast.

Foot and Mouth Disease.

BY DR. B. F. KAUPP.

Foot and mouth disease has made its appearance in the United States twice during the past ten years. The first time in 1902, an unexpected outbreak occured in Massachusetts, Rhode Island, New Hampshire, and Vermont. By prompt action of the U. S. Department of Agriculture, Bureau of Animal Industry, this outbreak was quickly stamped out. All animals found affected were destroyed and either burned or buried deeply in the earth after first covering with lime.

Recently the disease has been discovered in a much wider district involving Maryland, Pennsylvania, New York and Michigan. By strict quarantine, the destruction of all animals found affected and by thorough disinfection it is hoped that the disease will be entirely eradicated.

It is necessary that this country be kept free from Foot and Mouth disease as otherwise an embargo will be placed upon American cattle, thus a great financial loss to the stock producing West.

In European countries where the disease has existed for a long time, the number of animals that die from this disease is only about

five percent. The greatest loss is as follows: In dairy cows the owners suffer the loss of milk from four to six weeks. Cattle lose flesh, due to high fever, and inability to eat, due to the fact that the sores and vesicles (water sacs) in the mouth make it impossible for them to eat. Owners can not dispose of the sick animals.

After the animal has been exposed to the disease for about one week it will be taken by a chill which is followed by fever. In about two or three days small vesicles (water sacs) will be noticed in the mouth, on the borders of the lips and tongue. These vesicles contain a yellowish thin fluid. The redness about the feet which is followed by the formation of vesicles like those in the mouth takes place soon after the formation of those in the mouth. Thick saliva dribbles in rope-like strings from the mouth.

Animals which have recovered from the acute attack are found to be seriously injured. Many of them will lose the hoofs from their feet. Others are chronically lame. Abscesses may form in the udders of cows giving milk. Pregnant cows may abort. Many are so injured constitutionally that they become emanciated and of no value.

In conclusion we may consider that while the loss from death due to the acute attack is perhaps only five per cent, the total loss in death, loss in milk, loss to fattening cattle, etc., will amount to perhaps close to fifty percent.

The only thing is to keep the disease out of the United States. Prompt action by the Federal Authorities who control interstate commerce, destruction of the animals, thorough disinfection, and strict quarantine are the only sane measures.

Hog Cholera.

By Dr. B. F. Kaupp.

The losses from hog cholera in the various states amounts to many millions of dollars annually. The spread of contagious diseases through the central stock yards and by cars and boats not disinfected, a condition which existed prior to the establishment of inspection by the Federal Bureau of Animal Industry, resulted in the contagious diseases existing in this country, (among them hog cholera) becoming wide spread.

The real germ of hog cholera is a microscopic organism which passes through the finest of filters, a germ which has not been discovered. We either have not discovered a suitable staining fluid or our microscopes are not powerful enough to see it. This filtrate from which all other germs have been taken out produces the disease.

The Bacillus Cholerae Suis or the secondary invader producing this disease collect in the capillaries of minute blood vessels and these rupture, cause a small red or hemorrhagic spot. Upon examination after death these small hemorrhages are found in the kidneys, over the outer surface of the bowels and inner surface of the abdomen and thorax, etc. An observation of the skin shows red patches due to small hemorrhages into it. In young hogs the spleen (melt) is

often noted to be inflamed, (splenitis), it often is three or four times its normal size. The fat is somewhat of a lemon yellow. The lymph glands (kernels) are noted to be swollen and hemorrhages in them. Pneumonia may be present. The bone is black. When the small intestines are opened ulcers are found on the inner surface.

Symptoms: In the more severe cases the animal may die in a very few hours after the first symptoms are noted.

If the disease in the individual assumes a milder type there is first seen signs of fever, chill, not caring to move, will lie apart from the balance of the herd. There will be a loss of appetite, the bowels may be normal, or constipated, or diarrhea may be present. If pneumonia is present there will be noted an increase in respiration. The eyes are congested in the earlier stages, later a watery discharge and a gummy, adhesive yellowish or whitish accumulation in the corners of the eyes. The animal may cough, is now tucked up in the flanks and has a jerky respiration commonly called "thumps."

Treatment: The first measures should be a thorough cleaning up of the houses and yards. The hog troughs should be kept thoroughly clean and disinfected. The task of thoroughly disinfecting the hog houses, yards, troughs and fences is not an easy one but the free use of a spray gun with five per cent carbolic acid, bichloride of mercury one dram to each gallon of water, or creolin one per cent will do much good in the way of disinfection.

Medicines which are given by the mouth or in the feed are of little or no value. Many so-called "hog cholera cures" are put on the market, but they are fakes pure and simple. It is an easy matter to get testimonials. Passification of the mind may do as a "placebo" but if the hogs get cholera they will need something other than talk. There is one method of producing immunity against hog cholera and that is by serum injection. For many years after the discovery of the bacillus cholerae suis the manufacture of hog cholera serum was attempted by the United States Department of Agriculture through its Bureau of Animal Industry.

This serum is made by hyperimmunizing the hog by taking a hog that has passed through the disease and injecting this pig with a quantity of virus from a hog sick with cholera and in this way producing in this hog a greater resistance, and as a result the serum from the blood of this hyperimmunized hog will produce a greater resistance against the disease in another individual and make it proof against cholera.

The Bureau of Animal Industry has been conducting extensive experiments along this line in Iowa for several years and have perfected this method of treatment. They have asked the Experiment Stations of the various States to cooperate by establishing the hog cholera experiments departments upon their farm so as to manufacture and furnish at a minimum cost all serum needed within the State. The serum perhaps costs a trifle more than those serums which can be produced by using the horse as the hog does not furnish a great deal of blood.