FIRST BIENNIAL REPORT

OF THE

STATE VETERINARY SURGEON

OF THE

State of Iowa,

FOLLOWING THE ELEVENTH ANNUAL REPORT, TO THE

GOVERNOR OF IOWA,

FOR THE

PERIOD ENDING JUNE 30, 1897.

BY JAMES IRVINE GIBSON, STATE VETERINARY SURGEON.

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To Francis Marion Drake, Governor of Iowa:

I have the honor to transcribe to you herewith, in accordance with law, the first biennial report of the office of the state veterinary surgeon, for the term ending June 30, 1897.

Respectfully,

J. I. GIBSON,
State Veterinary Surgeon.

REPORT.

I have the honor to submit the following report of the work accomplished by the veterinary department, from April 27, 1896, to June 30, 1897, together with expense account for the period stated. This report is not intended as a treatise on diseases of domestic animals, but rather as a review of the work done, the diseases encountered and money expended, with a few of the principal laws and rulings of the State Board of Health, and some suggestions as to what improvements may yet be effected in the veterinary sanitation of the state.

In serving the state as veterinarian, there are pleasant experiences in which the veterinarian is looked upon as a real benefactor, and many instances where he appears in the form of a destroyer, bringing upon himself the displeasure of the people whom he seeks to benefit. In a majority of cases the owner of diseased animals welcomes the veterinarian as one sent to serve his best interests, and to rescue him from the power of contagion; but occasionally he is treated as an unwelcome guest and receives curses instead of blessings, which treatment it becomes an officer to overlook, knowing that "they know not what they do." Lack of knowledge on the part of the owner often causes trouble, because he cannot see where he is to be benefited, but when it is the other fellow's horse or cow that is condemned he never fails to see the benefits to him in the protection of his animals.

The veterinarian must needs possess a virtue often lacking in the owners of diseased animals, viz: charity, and when necessary he must offer explanations, and counsel with the owner until he sees the matter in the proper light, and submits to the great principle upon which all sanitary laws are enacted: "the greatest good to the greatest number." During this period, this department has been called upon in connection with eighty

outbreaks of disease, which is an increase over the ordinary number of calls in a like period of time. But withal, we are pleased to state that there is no evidence of the spread of contagion from any of the premises involved after the cases were in the hands of the department, which success was largely contributed to by the excellent results attained from the use of a form of quarantine prepared by the attorney-general, Hon. Milton Remley, and approved by the executive council.

There is often a desire on the part of horse traders to remove a condemned animal for the purpose of obtaining some financial benefit, in place of destroying the animal. This has been overcome in every instance where the above quarantine has been officially served upon the owner, except in one case, where a horse was stolen from under lock and key, and the whereabouts of this animal still remains a mystery.

During this period, we have encountered the following diseases: Glanders and farcy; encephalitis (grass staggers); parasitic bronchitis, in young cattle; ulcerative pharyngitis, in calves; enzootic catarrh; contagious pneumonia, in horses and calves; anthrax; foot rot (non-contagious), in sheep; mange, in horses; hog cholera; scab and strongulus-falaria, in sheep.

Most of the work, however, has been in answering the calls to investigate suspected cases of glanders. Many cases of this disease are liable to be overlooked because of the latent nature of the attack, but the acute cases will almost invariably present a line of symptons that are unmistakably characteristic of the disease. In all cases where suspicion warranted it, we have resorted to the use of the Mallein test which has in many instances revealed the existence of chronic or latent glanders, when it was impossible to diagnose the case from the clinical symptoms presented. In all about sixty horses have been tested, and forty-nine condemned. It seems unnecessary to describe the test further than to state it is similar to the tuberculin test which will be described later. Glanders is readily communicated to man by inoculation; hence the peculiar dread people have of this disease; while in all the history and development of our great state, not as many human lives have succumbed to glanders as fall in one day a victim to tuberculosis.

On June 23, 1897, at Alton, Sioux county, a child died from farcy, as diagnosed by Dr. Smith of that place. The following is a letter written by Dr. Smith upon the subject, to Dr. J. F. Kennedy, secretary of the State Board of Health, the same having been placed upon the records of that office:

In the following I will give you a brief history of the glanders case, I reported to the board last spring: A. V. Age 3, female, white, American. Always been a healthy child until February, 1897. At this time she had a mild attack of croupous-pneumonia, which terminated by crisis on the seventh day. The patient had not yet entirely recovered her strength, when about March 10th she had an attack of la grippe, and on the 20th of the same month a relapse. Unfortunately no physician was called in at either time, so the diagnosis of the parents cannot be verified. According to the statement of the parents, after the last attack of la grippe, the child remained weak, perspired much, and was often feverish. About April 15th the child complained of itching on the fingers and it was seen that they were red and swollen. This became worse. Small blisters now made their appearance upon the affected area so that the general appearance was similar to an eczema. The redness extended from the back of the hand to about half way up to the wrist. Later on there appeared large blebs, which upon opening discharged a puriform fluid tinged with blood. These blebs grew more numerous, were slow in healing; those near each other would often merge to form large ulcers; at this stage the same process was taking place in the patient's mouth, affecting the buccal and labial mucous membranes, the tongue and gums. There was slight elevation of temperature each evening, with remission in the morning. There was constipation, vomiting, and probably from straining at stool, prolapsus of the rectum. About the 20th of April, eczematous condition implicated all the fingers. By the 27th of April the feet and toes were similarly affected, though the lesions were much more severe than those on her hand. The ulcers being much larger and excavated with ragged and everted edges, involving skin and subcutaneous tissue and exposing tendons and bones. At this time, the 31st of May, I saw the case for the first time, and in some respects it looked like a case of blood poisoning. There were numerous boils all over the body, most of which would come to a head and when opened would discharge a sanious ischorous pus, having a mawkish odor. The big toes were denuded on their dorsal aspect, and the tendons and bones being quite exposed, while the little toe of the left foot was grangrenous, and sloughed off entirely. Boils were forming on different parts of the foot and elsewhere, some opening, some open, and some only beginning to form. The ulceration about the fingers and hands now also became more destructive, though not so bad as that of the feet and toes. The skin of the affected area, where it was not destroyed by the ulceration, was red and swollen, and looked something like eczema of a sluggish type. The boils were liable to appear anywhere, though the extremities, back and head, seemed to be their favorite location. The inside of the mouth became one large ulcer. In places there was blackening of the tissue as though grangrene had set in. Some of the teeth fell out.

The ulceration extended to the nares, naso-pharynx, phrynx, larynx, and bronchi. Large abscesses formed in the nose and naso-phrynx, which broke and discharged a horribly fetid pus. The laryngitis became so severe that there was hoarseness for several weeks, and aphonia for one week. For awhile there was also capilliary bronchitis. The ulceration seemed to pass down into the stomach and bowels; at any rate the constipation which had existed at first later on was replaced by a diarrhœa, pulse was small, weak, and rapid, varying from 120 to 180 per minute.

Temperature was not usually very high, the fever was of a hectic type; patient was much debilitated and emaciated. During the first three weeks in which I saw the case, there seemed to be indications of improvement; the ulcers began to heal, the mouth and throat improved very much, bronchitis got better though not entirely well; diarrhœa much better and no more vomiting, fever declined and seemed to go away altogether; pulse improved in force and was slower (120). Four days before death, diarrhœa got much worse, and at the same time catarrhal pnuemonia supervened. The child died on June 24th. The treatments were various. Before I saw the case, it had been put on antiscrofulous remedies; then antisyphilitic treatment was instituted; though neither treatment did any good. During the time I treated the child, I gave strychnine, arsenic; iobide of iron, plenty of milk and brandy for the diarrhœa; I gave a powder containing bismuth subnitrate and pepsin. I cannot tell how the child became infected, for, though there were two glandered horses on the adjoining farm, it is not believed that the child could have had direct contact with them. It is more than likely that some one else carried the infection to the child.

During the term covered by this report, cases of glanders and farcy have been found in the following counties: Buena Vista, Buchanan, Cherokee, Hancock, Jasper, Kossuth, Linn, Louisa, Monona, O'Brien, Plymouth, Wright, and Woodbury. It is a fact that certain localities in this state have suffered from glanders more than others, and upon investigation we find that some time in the past a railway or highway has been graded and a number of mules and horses used in such work had been afflicted with glanders, which fact accounts for the existence of the disease in that locality. This fact simply shows that where there are a large number of horses and mules at work, on any public highway or contract, the state veterinarian should examine them from time to time, with a view to preventing the spread of disease. Mules are much more susceptible to the disease than horses. Most outbreaks are sequels to horse trades. Therefore horse trading should be prohibited by law.

TUBERCULOSIS.

This disease destroys more human lives than any other plague known. It is the same disease whether we find it afflicting man or animal. Much of our human consumption is doubtless the result of using milk from the tuberculous cows. This disease opens a theme that cannot be exhausted. The fact of its existence to some extent in Iowa suggests the question: What shall

we do and how shall we eradicate it from our herds, and by so doing protect our children and invalids who are the chief consumers of milk from the disease? First, all dairy cows should be tested with the tuberculin test, which is no doubt the best diagnostic within our reach. The cost is but a trifle and the *modus operandi* well known to many cattle dealers already. The test briefly described is as follows:

The animal to be tested should first be haltered and cared for as usual, so that the temperature may be as nearly normal as possible. The first day of the test the temperature of the animal should be taken every two hours, beginning at 8 A. M. and ending at 8 P. M. The tuberculin should be injected at 10 P. M. of the first day, by means of a hypodermic syringe, in the shoulder or neck. The second day the temperature should be taken the same as the first day, beginning at 8 A. M. and ending at 8 P. M. The result of this is that the tuberculous animal will give a fever reaction of from 2 to 5 degrees Fahrenheit, while the majority of the unaffected animals will give a lower average temperature on the day following the injection than the day preceding it. There are many things that may arise in the habits and condition of an animal to cause a rise of temperature, so that the person taking the temperature or making the test should be careful to study the animal and to know whether or not the rise may be the result of nervous excitement or sickness,, and not an indication of tuberculosis. During the term covered by this report, we have been called upon to make tests in the following counties: Boone, Buena Vista, Davis, Emmet, Fayette, Kossuth, Linn, Pottawattamie, Ringgold, Shelby, Taylor, and Tama. In all the tests made, there were sixty-four found to be tuberculous. While the percentage of diseased animals is not alarming, yet in the interest of the cattle industry, as well as of human life, all dairy and breeding herds should be tested, and the diseased animals destroyed. The test is not injurious to the animal tested, and is a sufficient guarantee that her milk is free from tubercle baccilli, if she gives no reaction to the test. The breeders of Iowa have an example along the line of the golden rule exemplified by Thos. Westrop & Sons, of Harlan, Shelby county, who are extensive breeders of Shorthorn cattle, and who upon slaughtering a heifer for home use, and finding the lungs diseased, took steps at once to have their herd tested, and all that reacted destroyed. The result is that Mr. Westrop has cleaned out of his herd all

the tuberculous animals, and further than that he offers for sale none but tested animals, which is a great protection to the buyer. Mr. Westrop might have secretly sold these cattle, but he said he would not offer for sale any but sound, healthy animals. Mr. Westrop bought most of the tuberculous animals outside of the state, and had Iowa's laws regarding the importation of cattle for breeding purposes been as the laws of Montana are at present the animals bought outside of the state would have been tested with tuberculin, and proving tuberculous, as they undoubtedly were at the time of purchasing, Mr. Westrop would have been saved from a loss of about $4,000 in a few years. Then let Iowa quarantine all cattle coming into the state for dairy or breeding purposes, unless tested and accompanied with a certificate of test. This is a matter of business, and should be made a part of our statutes at the next session of the legislature.

RABIES.

Rabies is a disease which was dreaded for a long time because it was incurable and meant certain death to all who became inoculated. Judging from our observation of this disease in animals, it must be a pitiable sight to see a fellow being suffering from it. However, much of the dread of rabies in the human family has been overcome by the wonderful work of the immortal Pasteur, who, after years of experimenting, developed a vaccine treatment which has proven a sure protection to those bitten by rabid animals. On the 23d of December, 1896, the writer, in answer to an official call, visited Louisa county to investigate an outbreak of rabies, and while there was informed that the same dog that had bitten the animals had also bitten his owner, Mr. B. of Columbus Junction, who, being advised by his friends, at once went to the Pasteur institute at Chicago and took the carcass of his dog along. After a post mortem examination had been made and the dog pronounced rabid, Mr. B. was at once put under a treatment which lasted about ten days, after which he was pronounced immune from rabies for a period of years. Mr. B. returned home in time to

see the animals bitten by his dog, the same day he himself was bitten, dying with rabies of the most acute and violent form, while he was in perfect health. During the period covered by this report we have seen forty cases, which were in the following counties: Buchanan, Davis, Johnson, Louisa, Scott, Washington and Woodbury. In Washington county, the dog causing the outbreak was thought to have been bitten by a mad dog just a year prior to his becoming affected and biting the other animals. Cases have been cited in the human as breaking out years and years after being bitten, but it is a rare occurrence that a dog will become affected one year after being bitten. Most animals develop the symptoms in from fifteen to ninety days after the inoculation or bite, as the case may be. One cow was attacked by a mad steer, which tore the cow's nostril with his horn, and the saliva from his mouth being drooled about her head, the cow was thus inoculated, and later became affected. One general symptom of rabies is the exhibition of the method of warfare of the animal affected. The subacute form, or dumb rabies, may easily be mistaken for encephalitis or grass staggers, as described in one of the reports of the Bureau of Animal Industry of the United States. When the history of a mad dog accompanies the symptoms in other animals there is no difficulty in deciding the case, but when there are some symptoms of rabies only, and no history of dogs, it is not so easy to diagnose the case. In such cases a post mortem examination should be made. In Woodbury county a rabid cow charged at the wife of the owner, and so seriously frightened her as to cause nervous prostration and necessitate the calling in of the family physician. The facial expression of rabid animals is such as will terrify not only timid women, but brave men as well. One of the assistant veterinarians was once obliged to climb a tree in order to escape a rabid horse, and, fortunately for the doctor, the amount of adipose tissue he carries did not interfere with his ability as a climber. Rabies seems to occur oftenest near timber and along streams of water. Fewer worthless dogs will lessen the number of outbreaks.

ACTIMONYCOSIS.

This disease, commonly called "lumpy-jaw," does not often come under the notice of the department, as in the period covered by this report only two cases were seen; one in Plymouth county and the other in Woodbury. This affection is of importance to the cattle dealer and breeder, because fat steers, no matter how slightly affected, are sometimes rejected. No fine, healthy looking steer that has been fed for months should be condemned by casual observance in the yards, but all steers affected should be carefully inspected in the killing room. We claim that no man, professional or unprofessional, is capable of saying whether or not a certain steer should be sold or condemned and taken from the owner by simply looking through the yard fence, and the only place the inspector can deal fairly with a man, who offers a steer for sale, is in the killing room, by making a careful post mortem examination. There is a difference of opinion as to whether this disease is infectious or not. As it is a fungus, due to a germ sometimes found on vegetation, it is reasonable to suppose that the discharge from a tumor may carry the fungus, and that it may live on the grass and be taken up and eaten by other animals, and produce an inoculation. This being conceded, all animals having tumors are a source of infection and should be isolated or destroyed. It is a fact worthy of notice that on farms, where an animal has been allowed to run with others while thus affected, a number of cases often develop within a few months. In some instances we believe that veterinarians have been mistaken in diagnosing cases of tuberculous glands as actinomycotic tumors.

TEXAS FEVER.

This disease is one of the most serious affecting cattle, and were it not for the carfully arranged quarantine (placed on southern cattle) by the bureau of animal industry, the losses

would be very heavy indeed. With this report, we have had only one outbreak—at Wilton Junction, Muscatine county, which resulted in the loss of some twenty head of milch cows herded in the vicinity of the railway yards, where undoubtedly some cars had been sidetracked in which southern cattle had been shipped to Davenport for immediate slaughter. As the tick is the source of infection it would be an easy matter to disinfect the cars in which southern cattle are shipped, and the inspector should see to it that these regulations are strictly complied with in all instances where there is reasonable grounds for suspicion. This outbreak just mentioned was looked after by Dr. J. W. Griffith, assistant state veterinarian, who established rigid quarantine upon all cattle in the immediate vicinity, and by so doing prevented further spread of the disease. The cattle men of the southern states are constantly experimenting with dips in the hope of destroying the ticks and thus rendering their cattle safe to be shipped into our state as feeders to consume our corn crop, which will be of great benefit to the Iowa farmer.

PARASITIC BRONCHITIS.

This disease has been seen but once during this period in Shelby county, where a large number of young cattle were affected. The parasite (strongulus micrurus) was found in great numbers on posting a yearling steer that had almost succumbed to the disease and was considered valueless. In this animal the parasites were found in the bronchial tubes and the small intestines; also in the pericardial sack. The pastures were very low, and had several pools of stagnant water which formed the necessary intermediate host for the development of the ova. In the affected herd some milch cows were evidently affected, as evinced by the characteristic cough. This disease is not necessarily fatal, and will respond to treatment readily.

ULCERATIVE PHARYNGITIS.

(Diphtheria in calves.)

One outbreak of this disease was reported from Boone county, by Dr. W. B. Niles, assistant state veterinarian. This disease is of rare occurrence, and we have but little literature on the subject. The following article, written by Doctor Niles, upon this topic will be of interest:

Inflammation of the pharynx, commonly called sore throat, is, in the opinion of the writer, of more common occurrence in domestic animals than is usually supposed. In many cases the inflammation is not limited to the pharynx, but extends to the contiguous structures and the cause operating to produce pharyngitis in one animal may produce stomatitis or laryngitis in another. The affection may be traced to a variety of causes: The inhalation of irritating vapors, the administration of irritating medicines, the action of cold, and infection, are among the causes in most frequent operation. No class of animals are exempt. In some species the disease is more common than in others and as a rule it occurs more frequently in young animals than in adults. The symptomatology differs somewhat in different outbreaks and in different species of animals. In the main, there is more or less fever, partial loss of appetite, some tumefaction in the laryngeal region, and great tenderness of the pharnyx shown by difficulty in swallowing, and by external manipulation of that region. In the horse, food and water is returned through the nose. As a general thing the prognosis is favorable, the case making a good recovery in a few days. In some instances, however, the disease assumes a much more severe form and frequently terminates fatally.

As this brief article is mainly written for the purpose of calling attention to the infectious form, pharyngitis due to the usual causes will not be discussed further. That there is an infectious form of the disease is established by the appearance from time to time of enzootic outbreaks of pharyngitis. In the horse an epizootic sore throat attended by the formation of abscesses in the submaxillary region must, however, be looked upon as strangles. I am not aware that the germ of the infectious form of the disease have ever been isolated, and consequently whether more than one organism is concerned in these attacks is not known. It would seem to the writer that more than one cause may be in operation in the production of many attacks of sore throat; for example, bacteria normally present in the mouth and throat, and incapable of producing disease when the tissues are in the normal conditions, may when these tissues suffer a decrease in resisting power become pathogenic. In this way exposure to

cold may so lower the vitality of the mucuous membrane of the pharynx that bacteria present in the mouth may set up inflammation. In all forms of pharyngitis the disease differs much in severity. Many cases are mild, the disease changes being principally confined to the mucous membrane of the pharynx and adjoining and contiguous cavities. At other times the attacks are severe; the deep-seated structures are also involved, leading to ulceration and in some cases abscesses in the deep-seated tissues of the throat. Tumefaction in severe cases is well marked externally. In the hog, this severe form is usually termed quinsy. In this state infectious sore throat is most frequently seen in this animal. It is most frequent in fall, winter and spring, and thus it would seem that exposure to cold by drinking of ice water, sleeping in damp nests, or exposure to inclement weather must have much to do with these attacks. In mild attacks the pigs always recover, usually in from one to two weeks. In aggravated cases, there is fever, with frequent and painful breathing. The region of the throat becomes swollen and the grunt or squeal is hoarse The appetite is lost and swallowing causes great pain. As the disease advances these symptoms become intensified; breathing becomes very painful and the pig frequently sits on his haunches and breathes through the half open mouth with a wheezing sound. In these aggravated cases the animal may die from asphyxia in from one to three days.

The treatment of pharyngitis depends somewhat upon the species of animal attacked. Affected swine should be placed in dry, comfortable quarters and fed entirely upon sloppy food. Friedberger and Frohner state that an emetic at the beginning of the disease may cut short the attack. For this purpose white hellebore in doses of one-half to two grams is recommended. (This treatment has not been tried by the writer.) Drenching, owing to the difficulty in swallowing, is dangerous, and most medicine must be given in the food. In case medicine is given alone, the amount should be only sufficient to wet the mouth and pharyngeal region. Local sedatives and astringents, when given in this way to the horse give good results, and are worthy of a trial in the treatment of swine. Counter irritants, when applied to the throat, are indicated in some cases and not in others. When there is much tumefaction they should not be employed. The aggravated cases cannot be successfully treated. In mild ones, if receiving proper care, will make a good recovery without active treatment.

Between the aggravated and mild there are many cases which yield to careful treatment. Good care and good and comfortable quarters, especially during the season when the disease is most liable to occur, will prevent many of the attacks of pharyngitis. When there are indications that the disease is contagious, the well should be separated from the sick. Pharyngitis in the larger domestic animals is not so serious and is more easily treated. Soft foods must be provided, and all dry, coarse forage discarded. The mouth should be kept clean by frequent washings and a plentiful supply of fresh water should be within the reach of the patient. As in swine, care must be exercised in drenching. The use of small quantities of a solution containing belladonna and chlorate of potash gives excellent results. Tincture of iron or the use of hydrogen peroxide in the form of a spray can be used to advantage. Counter-irritants must be used cautiously. Complications should be treated according to indications. In the horse the disease usually responds quickly to judicious treatment.

Chronic cases are, however, met with, and I have seen attacks that baffled all treatment, and finally terminated fatally.

The foregoing has been written, not with a view of giving a complete discussion of the subject, but to call attention to, and awaken interest in a subject which the writer believes should receive more attention from veterinarians and stock owners.

During the past season, much complaint has been made concerning a disease of young pigs, which usually assumes the form of ulcerative stomatitis. The pharynx and larynx is sometimes involved. A brief description may be of interest here. An examination of several affected pigs sent to the experiment station for that purpose revealed what may be properly called ulcerative sore mouth. The trouble is characterized by the appearance of ulcers on the inside and outside of the lips. Both the upper and lower lip are usually involved. The most frequent seat of the ulcer is the inside of the lip near the line of union with the jaw and in front of where the two lips unite. In one case examined a whole space between the gums and the lip and from one side of the mouth to the other was occupied by the gangrenous ulcer. Usually, however, this space will show three or four distinct ulcers on each jaw. Occasionally they appear on the outside of the lips, and will then be found about the nose or in the extremity of the lower lip. These ulcers appear as circular, light colored spots, at certain stages of the disease considerably raised above the surrounding mucous membrane. The ulceration does not alone involve the superficial tissues, but extends deeply into the lip, causing marked thickening of the parts.

As the disease advances the inflamed areas (ulcers) enlarge and the amount of dead (gangrenous) tissue increases until, in some cases, pieces of dead tissue as large as beans may readily be removed by scraping the ulcer. In appearance these spots resemble, except in color, those found in the intestines in hog cholera, and they enlarge in a similar way. Both begin as small points on the surface and gradually extend over a larger area and more deeply into the parts involved. When located on the outside of the lip the appearance and force is the same, except that it does not become so much raised above the surrounding surface. When located within the mouth the teeth may become involved, but in all cases I have examined the teeth were not at first affected. As the result of the soreness and thickening of the lip, the pig has great difficulty in suckling, and may be unable eventually to suck at all. This interference with the taking of nourishment no doubt assists in causing a fatal termination of the trouble. The disease is, according to reports, usually fatal. As one writer mentioned, the pigs do not die rapidly, but linger for several days and eventually die. The most important feature of this trouble to the swine raiser is the necessary prevention and treatment. The theory that it is caused by the teeth is surely not correct. That it is due to a diseased condition of the sow, or want of care the dams receive, I do not believe will prove true. It seems to me that the location and character of the ulcers, as well as the enzootic nature of the trouble, points to infection as the cause. I believe that some infectious agent, germ or fungus enters the mouth of the pig from the sow's udder or some other source. The sow may obtain the germ from the soil, manure, or other litter with which she may come in contact. While filthy yards and pens would seem most liable

to contain such organisms, it is not unreasonable to suppose that reasonably clean quarters may contain at some time disease-producing germs. The udder of the sow is more liable than that of any other animal to come in contact with filth, and may consequently easily become contaminated. A foreign authority upon veterinary matters has described an enzootic sore mouth in lambs due to bacteria. I see no reason why pigs may not be similarly affected. Acting upon the theory that the disease is caused by some infectious agent which gets into the mouth, preventive treatment should consist of paying the strictest attention to cleanliness about pens and yards, the early separation of sows with diseased pigs from the rest and, when the disease appears, washing the udder with some good antiseptic solution. For this purpose a saturated solution of boracic acid and water may be used. The diseased pigs, if successfully treated, must be taken in hand early. As soon as the ulcers appear, by means of a small swab touch them with the solution of tincture of iron, tincture of iodine, or a 5 per cent solution of silver nitrate. In addition, the mouth should be washed out with the boracic acid solution. This treatment, if carried out early, I believe will save many cases. When the disease is well advanced no treatment will avail. When the teeth become involved it is better to extract them.

Since the above treatment was recommended I have received notice from several parties, who state that good results followed its application, and that they were able to save many pigs. A similar affection is sometimes observed in calves. Here treatment should begin early, and in the main is the same as for the pig. Recovery will depend upon the location of the ulcers and the time when treatment begins.

CATARRH.

This disease appeared once in Cass county during this period, when it assumed the form of an enzootic, apparently caused by some irritant gases or dust from low pastures that had recently been flooded. The mucous membrane of the nostrils were congested, and there was profuse weeping, also some swelling about the throat and jaws. The attack lasted about ten days, and then passed off leaving the animals apparently in perfect health. The outbreak extended over but a few farms and did not seem to extend to other farms.

ENCEPHALITIS.

(Staggers.)

This term applies to any inflammation of the brain and its coverings. But under this heading we wish to call attention to the fact that such cases occasionally occur and may be wrongly diagnosed as rabies. There is a form of stomach or grass staggers caused by eating food containing deleterious matters, such as ergot, and other fungi which may be mistaken for rabies, from the frenzy and bellowing which are symptoms of rabies. The animal often presses its head against objects and sometimes goes into convulsions and then into coma. During this period two such outbreaks came to our notice. One in Boone county and the other in Dallas. The fatality is great in such outbreaks, hence the necessity of knowing such symptoms and regulating the diet so as to check the disease and prevent unnecessary loss of property. Dr. Harbaugh, of Richmond, Va., describes this disease in the special report of "The Bureau of Animal Industry," upon diseases of cattle.

HOG CHOLERA.

This disease, though very common, and the cause of great loss to the farmers of Iowa, does not often come before this department because of the fact that no definite or specific cure has yet been discovered. The following practical article by Dr. John E. Brown, assistant veterinarian, if carefully studied, may be of benefit to the hog breeders and feeders of Iowa:

During the past year the above disease has raged defiantly in all sections of the state, and the loss occasioned thereby to the families of Iowa is greatly in excess of that produced by all other animal diseases combined. Year after year apparently the disease covers a great area, and it might seem that, unless some successful method of controlling hog cholera and

swine plague can be brought into execution the swine herds which, in time past have proven so profitable to the herdsmen of this country would, sooner or later, become extinct. Two fairly distinct forms of the disease have existed, namely, hog cholera and swine plague. They are diseases, however, with which this department has had little to do. Owners generally recognize the disease when the outbreak comes, and adopt such method of treatment as is within their own reach, which is at best in any case experimental; and only in a few cases where the nature of the disease was somewhat obscure has the state veterinary surgeon been called. So much has been said and printed concerning the cause, nature, and external manifestations of hog cholera and swine plague that the occupying of sufficient space here to repeat the same would seem to be unwarranted, but, as the external symptoms are not always sufficiently well marked to justify a positive diagnosis, a few words on post-mortem appearances may not be out of place. There will rarely be any trouble in detecting hog cholera. Upon opening the abdominal cavity one usually observes a somewhat darkened appearance of certain parts of the bowels, and there is generally some sign of inflammation of the bowels or mesentery, or both. Red or brownish red spots or splotches, varying in size from a pin point up, will be found dotted irregularly over the large bowel, through the mesentery or on the membrane lining the abdominal cavity. Upon removing the kidneys the same petechia (red spots) may be noticed dotted over its surface. These spots are usually visible through the enveloping tunic or capsule (a very delicate membranous covering of the kidneys) but if not, after a slight cut into the body of the kidney, the tunic is easily stripped off and the spots brought plainly into view. These spots may not be found in all the organs as described above in every case, but where found in any of them their significance is the same. These spots are the result of the germs forming in colonies in the minute blood vessels. The spleen will be found darker in color than it is in health, somewhat enlarged and engorded with dark blood. Often the surface presents a somewhat mottled appearance, as does also the surface of the liver. Other abnormal conditions may be present, but the above are sufficient to determine the true nature of the case. Swine plague may, under certain circumstances, be more difficult to detect. If unassociated with hog cholera the red spots will not be found on the organs in the abdominal cavity. The lungs will be found more or less inflamed and possible portions of them will be solidified, very dark red in color, and presenting much the same appearance as they would from ordinary pneumonia. In other cases they are not so badly diseased, but show a mottled or marbled appearance on the surface of red and grey. Often the grey portion appears to be raised. Such cases might be mistaken for an ordinary non-contagious pneumonia, but if a number of cases present similar symptoms and the above lesions are found on post-mortem, there will be little difficulty in arriving at a true conclusion. Moreover the two diseases generally exist in the same herd at the same time, and very often the symptoms and post-mortem lesions of both are found in the same subject. While much experimenting has been done, little or no progress has been achieved in actually discovering anything that will either cure the disease or prevent an outbreak of it; at least no successful method has had a general public demonstration. Further experiments along the line of inoculation may develop a successful method of producing immunity, but as the disease is

of a specific type, and exceedingly virulent, it would hardly seem that medicinal agents can ever be brought into practical use. Much might be done in the way of preventing a spread of this disease if proper sanitary police regulations could be enforced. Dead animals, if buried, should be placed fully three feet under ground, otherwise they should be burned. Dogs should not be permitted to run over the country and carry portions of carcasses from farm to farm. Persons should be very careful in going from a pen of diseased hogs to thoroughly cleanse and disinfect their shoes before going into the quarters of healthy ones.

The same thing holds good regarding teams, wagons, etc. Keep the hogs from the railways. Sick hogs are constantly being shipped, and by the droppings which fall from the cars the disease may be communicated to healthy animals. Railway companies should be compelled by legislation to thoroughly clean and disinfect all cars after hogs have been shipped in them. All traffic in or shipment of diseased or dead hogs should be carefully watched for by all authorities, and the state law rigidly enforced. County, and particularly state, fairs have been sources of spread of disease.

It is definitely known that hog cholera was spread from the Iowa state fair each year for a number of years prior to 1896. At that exhibition methods were put into execution by state authority that successfully prevented a further spread in that way. The state board of health, recognizing this danger, made a ruling to the effect that all hogs presented for exhibition at the Iowa state fair shall be subject to daily inspection by the state veterinary surgeon, and any animal found sick with hog cholera or swine plague shall be taken up and put into a place of quarantine. The efficiency of this movement became apparent when, on the third day of the fair, the disease made its appearance in one of the herds on exhibition. The lot numbered twenty-eight head. One sow was found sick and immediately taken up and placed in quarantine. On Monday a boar in the same lot was found ailing just before time for him to go into the show ring. Instead of going into the show ring the hog was taken to the quarantine station. On Thursday both of these were dead, and others were coming down with the disease, and promptly taken into quarantine. By the close of the fair several hogs that had remained healthy up to that time had been sold, and were only prevented from being delivered and shipped out by the attending inspector. The hogs were kept on the grounds. One by one they sickened and died until only twelve were left, and the hog cholera was prevented from being

carried to just as many herds as there were hogs from this lot sold, to say nothing of the contagion which the boar would have spread had he been permitted to go into the exhibition ring with his competitors.

ANTHRAX.

Anthrax is a disease of specific character, being caused by the introduction of the micro-organisms of the disease into the blood of the animal, generally through the mouth with the food. The germs are most plentiful in low, marshy lands or gulches, after water has been high or when it is low. The germs of anthrax are not easily destroyed and may live in the soil for a long time, hence the carcasses of all animals dying of the disease should be burned. All domestic animals are subject to this disease, and man is susceptible by inoculation, the disease in man being known as "malignant pustule." During the term covered by this report, twenty-five cases have been seen which were confined to three outbreaks in the following counties: Davis, Ringgold and Union. In all cases the parties concerned were strongly advised of the necessity of burning the dead animals, and when not convenient a barrel of fresh lime was spread over each carcass before filling the grave. This disease when once introduced into a community is liable to reappear unless the greatest of care is exercised in disposing of the dead animals and cleansing and disinfecting where the animals have been. The excretions from a diseased animal will carry the germs of the disease. The only cure or preventive for a herd where anthrax has gained a hold is vaccination, which has proven a great blessing to cattle owners in infected districts. The cost of vaccination is reasonable when considered with what it may save to the owner of a herd of cattle that has been exposed to the disease.

FOOT ROT.

(Non-contagious.)

Foot rot (non-contagious) in sheep was found to exist in one flock of 200 sheep, in Adair county, and responded to treatment prescribed by Dr. S. H. Kingery, assistant state veterinarian, of Creston. In this instance the sheep were in the habit of standing in mud at the watering-troughs, and also passed through the remains of an old stack of straw which was well rotted, and on account of rain quite wet. Sheep should be on high, dry land where they are free from all such mud and filth.

This flock was treated by walking them first, through a narrow trough sixteen feet long filled with water to wash the feet clean, and then directly through a similar trough of medicated solution. The worst cases were trimmed carefully with a knife, and bandaged after padding with medicated cotton. One treatment was sufficient in most cases. The results were very gratifying to the owner, as the flock was quite run down from being lame, many of them being too lame to graze. Old rotting stacks and manure piles are very injurious to sheep and an ideal medium for contagion and infection.

SCAB IN SHEEP.

Scab is due to a parasite (*Psoroptes communis*), which can sometimes be seen with the naked eye. Dipping is the best method of treatment and is successful when thoroughly carried out. In this state outbreaks of scab are scarce and generally exist in flock shipped in from Montana or Mexico. During this period three flocks have been affected in Van Buren county, which were imported. The restrictions on shipping are not fully observed, and the dipping resorted to once is not a sure cure. All sheep coming into the state should be carefully dipped twice, about eight days apart, and held in pens for the purpose three weeks before being allowed to mingle with other flocks on sheep farms.

Those wishing to gain valuable knowledge of diseases of sheep in Iowa can do so by reading the portion of bulletin No. 35 from the experiment station at Ames, in which Dr. W. B. Niles gives the reader the benefits of his years of special study of diseases of sheep.

STRONGULUS FILARIA.

One form of lung worm in sheep is due to the presence of the thread lung worm (strongulus filaria). This condition was reported by Dr. Brown as found in Warren county.

INSPECTION OF HOGS.

The following article which appeared in the edition of Wallaces' Farmer and Dairyman, written by John E. Brown, assistant state veterinarian, is of interest in connection with the subject of hog cholera and of swine herds:

While on duty as veterinary inspector of swine at the Iowa state fair last fall, my observations led me to believe that many of the exhibitors in the swine department were wantonly ignorant of the great danger of cholera infection to which they subjected their hogs by shipping them in stock cars not properly cleaned and disinfected.

It is unnatural that men should take such hazardous chances with their hogs if they fully comprehended the danger, and realized that it might be averted by the judicious application of a little muscular exertion, and the expenditure of a few cents in disinfection. It is true there are a few men who attempt to put up an argument to the effect that hog cholera and swine plague are not contagious (germ) diseases; and that, therefore, disinfectants are of no use. Since it is known that the blood taken from a hog that is sick with cholera or swine plague, and injected into the system of healthy hogs, regularly sets up the disease in the hogs so treated, it would seem that the proof of its infectious nature would be satisfactory to any fair minded person.

It is known that the germs will live and retain their virulence for months in the litter, dirt, or even dry dust, then gain admission into the animal system, and at once set up the original disease. During these years when hog cholera prevails to such an alarming extent, thousands of hogs are rushed off to market at the very first appearance of symptoms of disease in the herds.

Thus it is that hundreds of hogs sick with cholera are transported in stock cars over the railroads of Iowa, and the germs of disease left in the cars. Such cars then spread the contagion far and wide.

Granting then, that cholera is a contagious and infectious disease, and that the germ may live and retain its virulence in dust or dirt until taken up by other hogs, is it not at once apparent that eternal vigilance should be exerted to render all cars in which hogs are to be shipped to be perfectly free from contagion? Any stock car may be made free from this danger by proper cleaning and disinfection.

First.—Clean out all dirt and litter, sweep down the dust from the sides of the car and from the floor. Do not leave this litter where the hogs can get to it before loading, or where other hogs can get to it. Pour coal oil over it and burn it. The car having thus been made as clean as possible, is now ready to be disinfected. For this purpose there is probably nothing more effectual, conveniently applied, and economical, than the cheap, brown, crude carbolic acid. Its partial insolubility in water, especially cold water, is the only objection—offering some difficulty of application evenly of a desired strength. The solution should be used in about the proportion of one-half pint of the crude acid to two gallons of water. If it is mixed in cold water it will require constant stirring to keep thoroughly mixed, and can only be evenly and effectually applied with brooms, scrubbing thoroughly into all cracks and crevices of the floor and sides of the car. If hot water is used to mix the acid with, it may then be applied with the ordinary sprinkling pot, care being taken all the while that the acid does not separate from the water while in the sprinkler and thereby the effect of it be lost. Even where thus applied it should be well brushed into all cracks with a broom. After the floor and sides of the car are thus treated, it may reasonably be considered free from contagion. If the purified carbolic acid is used, it should be mixed as strong as one pint of acid to three gallons of water. Do not trust to covering the floor with lime or sand, or a mixture of the two. JOHN E. BROWN, V. S.,

Assistant State Veterinary Surgeon of Iowa.

INFECTIOUS PNEUMONIA.

This disease appeared at one time in Boone county, affecting calves, and once in Woodbury county, affecting horses, during this period. All animals affected with pneumonia should be isolated as a safeguard, not knowing weather or not it may be infectious.

The following able article was written by Dr. W. B. Niles, assistant state veterinarian, and we trust it will prove interesting and beneficial to all who read it:

While this disease is not so frequently observed in this state as in some others, the subject is of sufficient importance to warrant a brief discussion of the subject in this report.

For a number of years it has been recognized that pneumonia occurs as an enzootic among horses kept under certain conditions, and since the discovery of Shutz, that a small ovoid bacterium is the cause of these outbreaks the infectious nature of at least one form of pneumonia has been proven.

The bacterium of Shutz is present in large numbers in the pleural exudate, inflamed lung tissue, the nasal discharges, and in, to a certain extent, the expired air. As yet nothing definite is known of the length of time this organism may retain its vitality outside of the animal body. In the diseased lung tissue it is supposed that in some cases it remains virulent for several weeks. The inoculation of small animals with this germ produces fatal results, and the introduction of a culture of the organism into the lung tissue of a healthy horse is followed by all the symptoms of contagious pneumonia.

This form of pneumonia is most frequently seen in crowded stables, sale stables, and other places where a number of animals are kept. It is more frequent in the city than the country, and frequently attacks young, vigorous animals. I have personal knowledge of its frequent occurrence in the sale stables in the south, where it causes much loss among horses brought in from other states

It is supposed that in badly ventilated stables the infectious agent may retain its vitality for a long time, and that the sick animal may continue, for some time after apparent recovery, to be a source of infection. The respiratory apparatus offers the principal means for the entrance of the organism into the system. While the inspired air is the usual medium for conveying the virus into the system, it may no doubt in some cases enter through the digestive tract. The period of incubation is somewhat variable, but the first symptoms are supposed to be manifested about fifteen days after exposure.

Dr. W. L. Williams, in an article on this subject, in Vol. 16, of the American Veterinary Review, states that he had seen the disease appear as early as the ninth, and as late as the twentieth, day after exposure. The symptoms of this form of pneumonia do not differ materially from those shown with pneumonia due to other causes. It frequently begins with a chill, followed by a fever, the temperature reaching a high point. As the disease progresses the pulse becomes weak and the appetite almost, if not entirely, lost. In a majority of cases the inflammation extends to the pleura when symptoms of pleurisy will be added to those of pneumonia. The friction sound at first plainly heard gives way as the exudate accumulates to labored breathing, which throughout the disease is of the abdominal type.

In many cases a rusty colored discharge issues from the nostrils. In the paper referred to, Dr. Williams describes the appearance soon after beginning of the fever of a characteristic ictorous hue of the eye. This

symptom I have not noted as marked in the cases I have seen. Early symptoms of nervous depression appear, the patient becoming much prostrated within a short time after the beginning of the attack. In this respect the disease differs considerably from the common cases of pneumonia. The course of the disease varies. In some instances it runs a regular course tending to recovery in from two to three weeks. In others it is more severe, and terminates fatally in from five to fifteen days.

In some cases coming under my observation, I have observed the affection to run a progressive course. A small part of only one lung at first being involved, the inflammatory process gradually extends, eventually involving the entire lung and pleura, leading to gangrene and death. In some cases both lungs participate and become sufficiently involved to cause death.

The prognosis depends largely upon the surroundings and complications that occur. In crowded stables and where from other causes the sanitary conditions are at fault, and when occurring in animals recently brought from another climate the disease is very apt to progress to a fatal termination. Complete loss of appetite with great prostration presages death. A rusty colored discharge from the nose, if very marked, is a bad symptom, and if followed later by a very odorous one, death usually results. The loss varies much in different outbreaks. In some stables but few animals are involved and the death rate runs high. A post mortem examination reveals usually very extensive lesions. The thoracic cavity contains a large amount of purulent exudate containing clotted fibrin; the lungs show more or less extensive pneumonia with gangrene of some parts, and collapse of others. Pericarditis and endocarditis may also be present. The treatment is uncertain. I believe that recovery depends more upon the care received and the mildness of the attack than upon the administration of drugs.

The sanitary conditions surrounding the patient should be the best possible under the circumstances. The stall should be comfortable and well ventilated, and the food both nutritious and laxative, consisting of mashes, roots or green food. Except in case the temperature reaches a high point, the use of antipyretics, quinine, etc., do little good. I have never observed that the lowering of the temperature by the use of any of the above preparations arrested in the least the progress of the disease.

The usual treatment for pneumonia can be in the main carried out here. Hot fomentations or poultices to the sides no doubt in some cases assist in recovery. The use of cardiac stimulants must be resorted to early. Digitalis has been much used, and caffeine may be given hypodermically to overcome the nervous depression. The patient must be carefully watched and complications combatted as they arise. All patients should be under the care of a skilled veterinarian.

Prophylaxis is of great importance. When a diagnosis of contagious pneumonia is made the sick animal should be isolated and the building disinfected. A complete disinfection of the building together with the removal of all sick and suspected animals should lessen the number of cases.

Epizootics of infectious pneumonia in cattle have been studied by a few observers, and Dr T Smith, in the twelfth and thirteenth annual reports of the Bureau of Animal Industry, refers to this disease on account of its resemblance to contagious pleuro pneumonia, or what has been called the lung plague, a disease which does not now exist in this country. In one outbreak, called by the observer septic-pleuro pneumonia of calves, the disease was fatal in from fifteen to twenty hours, and only a few recoveries occurred. A study of the diseased organs, lungs, pleura, etc., revealed the presence of small ovoid bacteria. The inoculation of healthy calves with cultures of this germ produced death with lesions of pneumonia. A somewhat similar outbreak among calves in Jutland was studied by Dr. O. Jensen. In a herd of two hundred animals, sixteen died in from twelve to twenty-four hours after first symptoms were shown. Lesions of pleuritis pericarditis and gastro enteritis were found. Bacteria were also associated with this outbreak. The writer has not personally studied an outbreak such as described above but has had two or three herds reported with a history of contagious pneumonia. In some of these herds a number of the cattle were attacked and the principal lesions described was that of extensive pneumonia. In the lung tissue sent me from one of these outbreaks, I was able to find an organism resembling that described by Shutz in connection with contagious pneumonia of the horse. Lesions of the hardened lung tissue, when stained with methaline blue, revealed several ovoid bacteria scattered throughout the field. From the history of the outbreak and the appearance of the lung tissue, it would seem that this germ may have been the causative agent in the production of the disease.

In the two herds reported the disease ran rather a lingering course in the herd. It extended over a period of several weeks, ending fatally in most cases. As a result of what I have learned from various sources concerning pneumonia of calves, I am lead to believe that a fatal form of what should be denominated infectious pneumonia of calves, occasionally occurs in this state.

Recognizing infection as the existing cause, our efforts should be directed towards preventing a spread of disease in the herd. The sick animals should be isolated and the premises disinfected, or preferably those unaffected may be placed in new quarters. The sanitary conditions should be looked into and made the best possible. Pure and nutritious food will aid the sick in recovery. The medicinal treatment is the same as for common pneumonia.

PREVENTION OF TUBERCULOSIS.

Since there is no disease of domestic animals to-day which has such direct bearing upon human life as tuberculosis, it consequently should receive our most serious attention; yet as the cattle breeders and dairymen seem to impugn the motives of the veterinarian who writes upon the subject and charges him with executing a scheme to test cattle for pecuniary purposes, the writer has said but little, in this report, of what might be referred to at great length of this the worst of all diseases.

The following article by Dr. J. M. Emmert, president of the State Board of Health, who cannot have other than a motive to sustain the best interests of the people, and preserve the health of those who use milk, the children and the invalid, who sustain life, almost, by the use of milk.

Every cattle breeder and dairyman should read this article carefully, and when having finished let him decide if he will be a party to such daily destruction of human life. When will you, my reader dairyman, be willing to test your cows in order to be sure that you are not selling milk carrying tubercle bacilli, which will be the means of destroying the lives you seek to nourish, and you, my reader cattle breeder, when will you test all your bulls and heifers in order to be sure that the ambitious farmer who pays you from a hundred to a thousand dollars per head for thoroughbreds to improve his herd, is not being poisoned by this disease? It is time one and all should unite the world over in a combined warfare on this universal plague —tuberculosis. The Jews, as a people, are almost entirely free from tuberculosis, and the solution to any observer should be easy. For centuries the Jews have maintained a rigid meat inspection, and have also made it a fixed custom to sterilize milk before using, by boiling. Put the customs of these people together with the fact above stated—that they are almost entirely free from consumption (tuberculosis), and may we not learn a valuable lesson? Look at the Swedish movement; on this, the twenty-fifth anniversary of their ruler, assuming that the most important matter for their consideration as a nation who are dying the world over with tuberculosis, is the eradication from their herds of tuberculosis, they have contributed throughout Sweden, and even in this country, to a fund for the stamping out of this disease in their cattle herds, which are more susceptible than ours on account of being more closely housed most of the year. Shall we not see the interests of the public health as readily as other nations and states of our great union? Hoping the Twenty-seventh General Assembly will see the necessity of enacting laws for the clearing of our dairy and breeding herds of this disease and stopping of all dairy and breeding cattle coming into our state until tested and accompanied by certificate of test, I leave the matter by calling your attention to the paper written by Dr. Emmert, which is full of information and should benefit all who read it:

Can tuberculosis be prevented? is one of the most important questions of the day. Sanitarians, physicians are not alone interested in this question, but it is of vital interest to every father and mother, brother and sister. When we remember that the "Great White Plague" is the cause of every seventh death; that in the state of Iowa nine persons die of tuberculosis every day, 3,000 every year; that the United States contribute every year 150,000, and the world 5,000,000, I say, when these facts confront us, it is no wonder that the people are asking, what can be done to prevent this disease? All infectious and contagious diseases are preventable to a certain extent, and among the list there is none that has received so much patient scientific study and investigation as that of tuberculosis, and to-day there is no disease in the infectious and contagious list that we so thoroughly understand the natural history of the germ causing the disease, its modes of growth, products of growth, its climatic distribution, and modes of infection. Notwithstanding the accumulated knowledge upon the subject and our thorough understanding of the disease, we have made but little advance toward preventing or stamping out the disease. Our boasted knowledge of the cause of the disease is but of little use to humanity if we do not use it in applying preventive measures. The disease can be prevented to such an extent that many lives may be saved by obeying certain hygienic and sanitary laws, thereby rendering persons less susceptible to the disease and removing the cause, which consists in destroying the pathogenic germs. Hereditary transmission is now looked upon as very doubtful, if not impossible. But there is inherited a condition that predisposes the person to the disease, a condition that makes the system a suitable culture by inviting the disease and making it dangerous for the person to breathe air but slightly contaminated with the poison, and for even a few minutes. This class of persons can do much in avoiding the disease and live long and healthy lives by giving special attention to personal hygiene. The most important factor in preventing the disease in predisposed persons is that of fresh air and sunlight. God has given man no better disinfectant and disease distroyer than these two elements. The person should live in fresh air and sunshine as much as possible. Dr. Thuadu, of Baltimore, in a paper before the American Climatical association, very truthfully says: "All means which tend to increase the vitality of the body's cells, have been found to be precisely those which are most effectual in combating tuberculosis; one by one, specific methods of treatment which for a season enjoyed popularity, have fallen into disuse, and hygienic, climatic, and feeding—in other words a favorable environment, have alone given results which have stood the test of time. The home should be high and dry. No damp cellars, no leaky sewer pipes or cess pools, or manure piles should be tolerated; the sleeping room should be well ventilated and living rooms the same. All indulgence in alcoholic liquors, tobacco, over-eating, worry, anxiety, and mental strain should be avoided. All these lower the vitality, and consequently the personal existence.

The methods of infection are almost entirely confined to two sources: from tuberculous animals to man, and from one human being to another. There are two principal channels by which the germs get into the system —the lungs and the stomach. Although direct inoculation by way of denuded surfaces may and often does take place, as in operation and post-mortem

wounds, it has been abundantly proven that eating uncooked or partially cooked tuberculous meat, and drinking milk containing the tuberculous bacilli, will produce tuberculosis in the human being. To avoid the danger of infection from meat and milk, there should be a most rigid system of inspection of all cattle for food and milk supply in each county. This should apply not only to the larger towns and cities, but to the villages as well, with supervision over all farm stock. Literature should be distributed among the dairymen and farmers, instructing them how to feed and house and care for their cattle to prevent tuberculosis; they should also be instructed how to use the tuberculin test and how to treat all suspected animals. In by far the largest number of cases, tuberculosis has been caused by the disease in some other human being. If we ever succeed in preventing tuberculosis, it will have to be along the line of personal and legal control of those already infected. This may not necessarily mean strict quarantine, but it does mean an abridgment of personal liberties, a medical or legal supervision of action, with entire control of all excretion from lungs and bowels. Every case of pulmonary tuberculosis is a walking culture bed, sowing seed broadcast. He is a wholesale dealer in his particular line of living germs; he is a living example of the parable of the sower: "A sower went forth to sow his seed, and as he sowed, some fell by the wayside, and others fell under the ground, and it sprang forth and bore fruit a hundred fold." Unfortunately for the human family, many fall on good ground, and keep up the fearful mortality stated in the beginning of this paper. There is no longer any doubt as to the correctness of Koch's theory. The germ has been isolated and injected into animals, producing the disease, demonstrating that the bacillus is the cause of the disease. But of as much if not more interest to us is the fact that the sputa of a pulmonary tuberculous patient is loaded with these germs, and that this sputa fed to animals, or injected into them, will produce the disease. It has also been proven by scientific investigation and demonstrated that these germs will maintain their vitality for months in a dry state, floating in the air, to be carried into the lungs of the unsuspected victim. Some authors go so far as to say that 90 per cent of cases are produced by inhaled germs, thrown off in the sputa of an infected person. If these statements are true, and I believe they are, how necessary it is to prevent the spitting by tuberculous persons upon the streets, in stores, hotels, depots, railway cars, in fact, anywhere and everywhere except a receiving vessel containing a strong antiseptic, or in cloths or other material that can be burned at once. The promiscuous spitting of tuberculous matter is not only spreading the disease throughout the inhabited globe, but is making a pest-house out of some of the most healthy parts of the country, but unfortunately used for health resorts for these patients. The Denver Medical Times says: "It was some time ago intimated in an eastern paper that the streets and walks of Denver were covered with the sputa of consumptives. The statement was not far from the truth. Unless very rigid measures for the prevention of consumption in Colorado are adopted and put into force, Colorado will become a pest hole."

The Pacific Medical Journal, recognizing the danger, insists upon stringent measures being adopted to stop expectoration upon and about public

places. The inhabitants of Los Angeles have become aroused to the danger of indiscriminate mingling of consumptives with healthy persons, and the board of health of that city has passed an ordinance against expectorating upon the streets and in public places. San Francisco has passed the same kind of an ordinance which, so far, has been impracticable. While the people are not ready to indorse and give their moral enforcement to the important street quarantine law, a law can be drawn so as to have the endorsement of the best people in every community. Such a law should require placarding the premises to warn the predisposed from entering, to require the sputa to be received in cloths and upon paper and immediately burned. The first law of nature, self-preservation, would demand at least this much. The patient should not be allowed to attend large gatherings, especially in large rooms containing children. They should be allowed to travel the streets, walks and road-ways only when they carry receiving vessels for the sputa, and a fine should be attached for expectorating, except in this vessel, while absent from the house. The eminent sanitarian, Henry B. Baker, secretary of the Michigan state board of health, advises small pieces of cloth, each large enough to receive one sputum, and parafined paper envelopes or wrappers in which the cloth as soon as once used may be put and securely enclosed, and with its envelope burned at the first opportunity. Dr. George Casmet of the Berlin hygienic institute, with the dust from the walls of rooms inhabited by tuberculous persons, and not contaminated directly with the sputum, has, upon the same being mixed with sterilized bouillon, and then injected into the peritoneal cavity of guinea pigs, produced tuberculosis. Twenty-one hospital wards were examined in the same way, and the dust from fifteen of them produced tuberculosis. This admonishes us that thorough disinfection in all buildings, rooms and wards where persons have died of tuberculosis should be had, and that all sick rooms should be ventilated as thoroughly and as often as possible, as well as occasionally washing down of the walls with a disinfectant, and then whitewashed, which also should contain some disinfectant not injurious when inhaled.

There is another sower that has attracted some attention and will more in the future; that is the railway coach, and especially the elegant Pullman cars; they are veritable "whited sepulchers" which indeed appear beautiful outwardly, but within are full of dead men's bones, and of all uncleanness. With all its magnificent settings, rich tapestries, and beautiful velvet curtains, it is a modern death-trap of the worst kind. Think of being closed up in a room forty feet long, and ten feet wide containing probably forty persons, among them two or three consumptives, without any ventilation, except when the doors are opened and then only for a moment; filled with hangings and velvet covered seats, that had accommodated probably a hundred tuberculous and other diseased persons, with only an occasional dusting which only brought out the germs that had hidden in the dead recesses of the velvet folds, ashamed to look a poor mortal in the eye because he had no chance for his life. But this will be corrected in the future. The votaries of sanitary science, and those who love their fellow-men, like Abou Ben Adam, will rise up and demand that a sanitary car be built that will reduce the dangers of disease to a minimum. The law should demand that every trunk-line running through trains should carry a hospital car, not only for the protection of the well,

but for the comfort of the sick. The closets upon the cars should be so arranged that the dejecta could be received into a strong disinfectant before being thrown to the ground. It has been proven that these dejecta, both urine and fecal matter, contain millions of germs, and these germs are now being dropped all over this country, to be dried and scattered to the four winds of Heaven. I have in a very brief and disconnected manner pointed out a few of the important measures for arresting tuberculosis, and firmly believe that if they, as well as others, could be enacted into laws, the mortality from tuberculosis in the future would decline in a direct ratio to the enforcement of said laws.

THE LAWS CONCERNING THE VETERINARY DISEASES.

CHAPTER 14.

OF STATE VETERINARY SURGEON.

SECTION 2529. *Appointment—qualification.* The state veterinary surgeon shall be appointed by the governor, subject to removal by him for cause, who shall hold office for three years. He shall be a graduate of some regularly established veterinary college, skilled in that science, and shall be by virtue of his office a member of the state board of health. (20 G. A., ch. 189, § 1.)

SEC. 2530. *Powers—regulations.* He shall have supervision of all contagious and infectious diseases among domestic animals in, or being driven or transported through the state, and is empowered to establish quarantine against animals thus diseased, or that have been exposed to others thus diseased, whether within or without the state, and, with concurrence of the state board of health, may make such rules and regulations as he may regard necessary for the prevention and suppression, and against the spread of said disease or diseases, which rules and regulations, the executive council concurring, shall be published and enforced, and in the performance of his duties he may call for the assistance of any peace officer. (Same, § 2.)

SEC. 2531. *Penalty for interfering with.* Any person who wilfully hinders, obstructs or resists said veterinary surgeon, his assistants, or any peace officer acting under him or them, when engaged in the duties or exercising the powers herein conferred, or violates any quarantine established by him or them, shall be guilty of a misdemeanor. (Same, § 3.)

SEC. 2532. *Report.* Said surgeon shall biennially make a full and detailed report of his doings since his last report to the governor, including his compensation and expenses, which report shall not exceed 150 pages of printed matter. (32 G. A., ch. 82, § 39; 20 G. A., ch. 189, § 4.)

SEC. 2533. *Duties—deputies.* Whenever a majority of any board of supervisors or township trustees, or any city or town council, whether in session or not, shall in writing notify the governor of the prevalence of, or probable danger from, any of said diseases, he shall notify the veterinary surgeon, who shall at once repair to the place designated in said notice and take such action as the exigencies may demand, and the governor may, in case of emergency, appoint a substitute or assistants with like qualifications, and with equal powers and compensation. (20 G. A., ch. 189, § 5.)

SEC. 2534. *Destruction of stock—compensation—appeal.* Whenever in the opinion of the state veterinary surgeon the public safety demands the destruction of any stock, the same may be destroyed upon the written order of such surgeon, with the consent of the owner, or upon approval of the governor, and by virtue of such order such surgeon, his deputy or assistant, or any peace officer, may destroy such diseased stock, and the owner thereof shall be entitled to receive its actual value in its condition when condemned, to be ascertained and fixed by the state veterinary surgeon and the nearest justice of the peace, who, if unable to agree, shall call upon the nearest or other justice of the peace upon whom they agree as umpire, and their judgment shall be final when the value of the stock, if not diseased, would not exceed twenty-five dollars; but in all other cases either party shall have the right of appeal to the district court, but such appeal shall not delay the destruction of the diseased animals. The veterinary surgeon shall at once file with the governor his written report thereof, who shall, if found correct, indorse his finding thereon, whereupon the auditor of state shall issue his warrant therefor upon the treasurer of state, who shall pay the same out of any moneys at his disposal under the provisions of this act, but no compensation shall be allowed for stock destroyed while in transit through or across the state, and the word "stock" as herein used, shall be held to mean cattle, horses, mules and asses. (Same, § 6.)

A certificate given by a deputy veterinary surgeon to the owner of a horse showing him to be affected with glanders, held not admissible as evidence that he was so affected at the time of his purchase, more than a year previous to the giving of such certificate. *Welch v. Norton*, 73–731.

SEC. 2535. *Co-operation with United States.* The governor, with the veterinary surgeon, may co-operate with the government of the United States for the objects of this chapter, and the governor may accept and receipt for any moneys receivable by the state under the provisions of any act of congress which may at any time be in force upon this subject, and pay the same into the state treasury to be used according to the act of congress and the provisions of this chapter as nearly as may be. (Same, § 7.)

SEC. 2536. *Appropriation.* There is annually appropriated out of any moneys, not otherwise appropriated, the sum of three thousand dollars, or so much thereof as may be necessary, for the uses and purposes herein set forth. (Same, § 8.)

SEC. 2537. *Compensation of assistants.* Any person, except the veterinary surgeon, called upon under the provisions of this chapter, shall be allowed and receive two dollars per day while actually employed. (Same, § 9.)

SEC. 2536. *Compensation of veterinary surgeon.* When engaged in the discharge of his duties, the veterinary surgeon shall receive the sum of five dollars per day and his actual expenses, the claim therefor to be itemized, verified, accompanied with written vouchers, and filed with the state auditor, who shall allow the same and draw his warrant upon the treasurer therefor. (Same, § 1.)

The following rules and regulations were adopted by the State Board of Health during this period:

DISEASES OF DOMESTIC ANIMALS.

Doctor Gibson, of the Committee on Diseases of Domestic Animals, presented the following report, which was adopted:

MR. PRESIDENT—Your committee recommend the following:

That all the laws pertaining to the prevention and restriction of contagious diseases of domestic animals be printed in pamphlet form, which shall include:

First.—The laws relative to the shipment of southern cattle into or through this state.

Second.—The laws relative to the dealing in or shipment of diseased hogs within the state.

Third.—The laws relative to glanders and the disposition to be made of animals thus affected.

Fourth.—That a ruling of the board be made relative to the disposition of piggy sows rejected by the United States inspectors at the various stock yards within the state.

Fifth.—That the board, directed by the attorney-general, prepare legal quarantine blanks to be used by the state veterinary surgeon and his assistants whenever such quarantine is indicated, in order to prevent the spread of contagious diseases among domestic animals or the transmission of such diseases to the human family.

Sixth.—That the pamphlet contain all of chapter one hundred and eighty-nine of the laws of 1884.

Seventh.—That as there is no evidence of the existence of glanders at Van Meter the matter be passed over.

Eighth.—That the pamphlet contain the laws relative to rabies, and the fact that no damage can be collected from the state or county for the animals lost by said disease.

(Signed) J. I. GIBSON,
WALTON BANCROFT,
E. H. CARTER.

INSPECTION OF HOGS.

Dr. Gibson presented the following recommendation, which was referred to the committee:

All hogs presented for the Iowa state fair and Sioux City fair shall be subject to examination by the state veterinary surgeon before entering the fair grounds, and to daily inspection during the exhibition. Should any animal be found diseased with hog cholera or swine plague, it must be immediately removed to a place of quarantine. The show-pens must be cleansed and disinfected under the supervision of the state veterinary surgeon before and during the fair.

VIVISECTION.

The committee to whom was referred the communication of Dr. Walter Wyman, surgeon-general U. S. A., and a copy of a bill before congress relating to the practice of vivisection in the laboratories of the Bureau of Animal Industry, submitted the following report, which was adopted:

Your committee having under consideration the proposed legislation by the United States congress, restricting very materially in the District of Columbia the experiments upon animals by the Bureau of Animal Industry on the ground that vivisection, as practiced, is a needless cruelty to animals, beg leave to submit the following report: Inasmuch as your committee believe it necessary to continue all lines of scientific investigation and do not believe the scientists engaged in such experiments are guilty of unnecessary cruelty to the animals experimented upon, but are, instead, benefactors not only to the animal kingdom but to humanity as well, therefore we report in favor of humanity and vivisection, and recommend that this board instruct its secretary to inform the chairman of the senate committee that the state board of health of Iowa is emphatically opposed to the pending bill (Senate bill 1553), and entirely in favor of vivisection as carried on at present.

(Signed) J. I. GIBSON,
E. A. GUILBERT,
R. E. CONNIFF.

HOG CHOLERA.

The Committee on Infectious Diseases of Animals submitted the following, which was adopted:

WHEREAS, The legislature, at the request of his excellency, Francis M. Drake, governor of Iowa, has recently passed a bill requiring state and county officials to co-operate with the department of agriculture at Washington, D. C., in the experiment of the federal government to control and stamp out hog cholera, be it

Resolved, That we, the members of the Iowa State Board of Health, are in sympathy with the movement, and ask the local boards to join in co-operating with the department of agriculture in this special attack

upon the fell destroyer of our swine industry; and that we recognize and appreciate the deep interest shown in this movement by the Hon. James Wilson, in the financial welfare of our swine breeders and feeders.

(Signed) J. I. GIBSON,
R. E. CONNIFF,
E. A. GUILBERT.

From pamphlet "Regulations for the Prevention and Restriction of Contagious Diseases among Domestic Animals" issued by the State Board of Health and executive council of the state of Iowa:

So-called "piggy" or pregnant sows and rejected cattle found in railway or packing house stock yards must not be sold nor delivered to farmers, but held subject to such quarantine as may be deemed necessary to prevent the communication of any contagious disease.

(Signed) J. I. GIBSON,
State Veterinary Surgeon

May 20, 1896.

RULE 10. In suspected cases of glanders and farcy, when the symptoms do not warrant the state veterinarian in condemning the animal, the Mallein test shall be recognized as a valuable diagnostic.

RULE 11. In suspected cases of bovine tuberculosis the tuberculin test shall be recognized as a valuable diagnostic.

Statement of per diem and expenses of state veterinary surgeon and assistant, from April 27, 1895, to June 30, 1897:

NAME.	No days' service.	PER DIEM.	EXPENSE.	TOTAL.
M. Stalker	173	$ 865 00	$ 482 09	$ 1,347 09
John McBirney	53	265 00	289 82	554 82
E. E. Sayers	21	105 00	100 66	205 66
George J. Howell	9	45 00	43 78	88 78
L. L. Lewis	16	80 00	32 69	82 69
Henry Shipley	8	40 00	15 10	55 10
S. R. Kingery	14	70 00	46 60	116 60
W. B. Niles	24	120 00	88 79	208 79
G. A. Johnson	41	205 00	118 64	323 64
S. H. Johnson	9	45 00	26 60	71 60
J. O. Simcoke	4	20 00	10 61	30 61
P. O. Kotz	3	15 00	9 70	24 70
J. W. Griffith	20	100 00	27 58	127 58
R. E. Hammond	8	40 00	16 90	56 90
John E. Brown	20	100 00	69 31	169 31
R. G. Rich	3	15 00	7 00	22 00
T. A. Bowa	1	5 00	10 14	15 14
J. I. Gibson	307	1,535 00	1,461 63	2,996 63
Total	728	$ 3,640 00	$ 2,857 13	$ 6,497 13
T. N. Geddes ($2 per day)	5	10 00	.....	10 00
Joshua Miller ($2 per day)	35	70 00	.....	70 00
Grand total	768	$ 3,720 00	$ 2,857 13	$ 6,577 13

TWENTY-THIRD ANNUAL MEETING

OF THE

IOWA IMPROVED

STOCK BREEDERS' ASSOCIATION

HELD AT

FAIRFIELD, IOWA,

DECEMBER 9 AND 10, 1896.

OFFICERS:

President—C. W. NORTON, Wilton Junction; Vice-Presidents—O. H. LYONS, Rockford; J. P. MANATREY, Fairfield; JOHN COWNIE, South Amana; RICHARD BAKER, JR., Farley; DANIEL SHEHAN, Osage; PROF. C. F. CURTISS, Ames; W. W. VAUGHN, Marion; J. R. CRAWFORD, Newton; C. C. NORTON, Corning; B. F. ELBERT, Des Moines; Secretary and Treasurer, C. MURDOCK, Waterloo.

Stenographer—Miss KEO ATKINSON, Fairfield.

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