



PAUL O. KOTO

Fourth Biennial Report
OF THE
Veterinary Surgeon
OF THE
State of Iowa
TO THE
Governor of Iowa
FOR THE
Period Ending June 30, 1903.

DES MOINES:
BERNARD MURPHY, STATE PRINTER,
1904.

LETTER OF TRANSMITTAL

To His Excellency, Hon. A. B. CUMMINS, Governor of Iowa:

In compliance with the provisions of the statute, I have the honor to present this, the fourth biennial report of the State Veterinary Surgeon of Iowa, for the term ending June 30, 1903.

Respectfully,

PAUL O. KOTO.

REPORT.

I have the honor to present this, the fourth biennial report of the State Veterinary Surgeon of Iowa, containing a statement of the expenses of this department during the period ending June 30, 1903.

Under the appointment and commission of your Excellency, I assumed the duties of this office April 28, 1902, hence this report covers a period of nine months during which this department was under the administration of my able and efficient predecessor, Dr. J. I. Gibson, to whom I am under obligation for many courtesies and much valuable information at the beginning of my official term.

I appreciate the many courtesies the members of your office have shown me, materially assisting me to carry on the work of this office more conveniently and also am greatly indebted to Dr. D. E. Salmon for valuable assistance rendered. The State Chemist, State Bacteriologist and Secretary of the State Board of Health have greatly aided me and I am also under obligation to my assistants and the members of the profession for their hearty co-operation and able service rendered. I fully appreciate the fact that the press has great influence on the public mind and often assists us materially. The public fully understands that up-to-date veterinarians are of great benefit to human life as sanitarians, preventing the spread of contagious diseases from animal to man.

One difficulty this department has to contend with is the matter of correspondence and keeping of the records. The work of this department has increased so much within recent years that this has been carried on properly only by the aid of clerical help. The last season has been one that might reasonably have been expected to cause an unusual amount of disease among the live stock of this State. The excessive rains during this period

and early frost left the grass and vegetation in an unripened condition which certainly favored such conclusion. But it is gratifying to know that the condition of live stock has at no time caused general alarm or great financial loss only in a few instances.

In reporting the work done for this period, we have grouped the same under the heads of various diseases so as to summarize the active work of this department in as concise a manner as possible.

DISEASES ENCOUNTERED.

During the period mentioned in this report our department has received approximately one hundred and seventy official calls, including the calls from the Bureau of Animal Industry, and upon investigation have found the following diseases: Actinomycosis, Abortion, Black Leg, Catarrhal Pneumonia, Encephalitis, Ergotism, Glanders, Gastro Enteritis Infective, Hog Cholera, Influenza, Mange, Vermineous Bronchitis, Purpura Hæmorrhagica, Pneumonia Lobular, Rabies, Suppurative Lymphingitis, Specific Ophthalmia, Scabies in cattle and sheep, Thrush in cattle and Trichinosis, and Tuberculosis.

Of the above diseases Glanders and Farcy predominated and were found to exist in the following counties: Adair, Black Hawk, Butler, Cass, Chickasaw, Crawford, Dickinson, Fremont, Grundy, Iowa, Linn, Mills, Page, Polk, Plymouth, Pottawattamie, Pocahontas, Sioux, Tama, Washington, Webster, Worth, Woodbury. In nearly all instances the owners would voluntarily consent to destroy the animals diseased. Occasionally they would manifest some degree of dissatisfaction when informed that they would receive no reimbursement from the State, but when appealed to their best judgment, would admit an animal diseased with glanders was of no value, and could readily see the State should not be held responsible for his misfortune and pay for something of no value.

Those unaccustomed to this insidious disease do not realize the danger of contagion of a mild case, and are oftentimes inclined to doubt the transmissibility of the disease. It has, however, been demonstrated that an animal suffering from the disease in a seemingly mild form can convey it to a healthy animal and often outlive the animal thus inoculated.

The period of incubation varies according to conditions and the constitution of the patient. In some instances it may prove

fatal in a short time and in others it may assume itself into a chronic form and the animal live for years, continuing to spread this terrible and fatal disease to animal and man. For the benefit of those not familiar, we produce two cuts, both typical cases. Cut No. 1 shows two horses well advanced in the disease. These horses with two others were destroyed in the Great Western stock yards at Fort Dodge while in transit during the month of May, 1902. The history of the case is unreliable, but from the information obtained the animals hailed from the Wisconsin pineries. The owner claimed he had worked them a short time on a railroad grade before shipping to Fort Dodge. This will tend to show that a great many cases are imported into our State by that class of people moving from place to place and scattering the seed of infection wherever they go.

Cut No. 2 represents an animal owned by a well-to-do farmer in Worth county. During the month of March, 1903, I received a call to investigate a supposed case of glanders and upon my arrival found a typical case in a bay gelding about six years old. The animal was in a deplorable condition, greatly emaciated, with ulcers and pustules over the different parts of the body, varying in size from a hazelnut to that of a walnut, with a thick flow of pus from these ulcers as well as the nasal cavities. The owner readily consented to destroy the animal and disinfect the premises. It being too late in the day this was postponed until the following morning. I predicted we might be spared the task of destroying the animal and we were gratified the next morning to find that our patient had ceased to breathe. The animal had previously been isolated and kept in a cheap barn away from the other buildings and the owner preferred to burn the shed and all, realizing it was practically impossible to disinfect the dilapidated old building and so this was done. This animal had previous to the time of isolation been in the same yards and barns with the other horses on the premises. Three other animals which showed slight symptoms were isolated and placed in quarantine and the premises thoroughly disinfected. I visited the place in thirty days and found the disease had advanced to a considerable extent, so promised to call again some time later, but before the time was up the owner became convinced that it was useless to continue this source of danger to the balance of the animals and promptly destroyed the three animals diseased and cleaned up the prem-

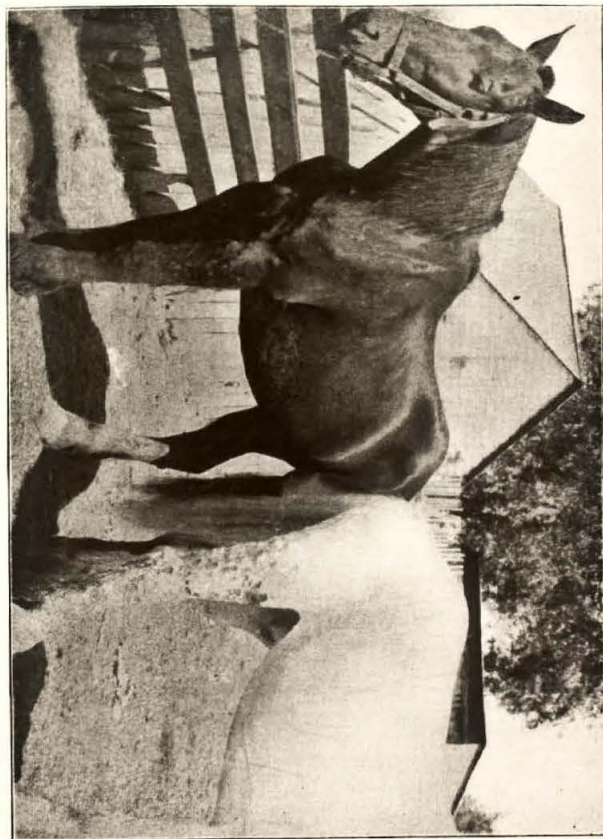
ises. Since then no further evidence of the disease has manifested itself. Upon further inquiry into the history of the case I learned that a neighbor had lost a horse with similar symptoms some eight or ten months previous. The first symptoms of the disease were not considered of much consequence but it developed so rapidly that death resulted in a short time and upon the advice of a veterinarian the premises were disinfected and whitewashed, thus preventing any further spread of the disease among his own horses. The pre-existing cause was no doubt due to the fact that a railroad grade had recently been constructed in that vicinity, which demonstrates the necessity of keeping a distance and watching the condition of animals employed in construction of railroads and other work where numbers of horses and mules are kept in close proximity.

The following excellent paper compiled by Dr. Hal C. Simpson, Assistant State Veterinary Surgeon of Denison, Iowa, will certainly be highly instructive both from a theoretical and practical standpoint. The doctor had a thrilling experience in the handling and transporting of American horses to South Africa during the English-Boer war, he having been in charge of several cargoes of horses to that country, where outbreaks of glanders were quite frequent, and rigid measures were adopted to stamp out the disease.

GLANDERS.

Glanders is one of the oldest diseases affecting horses, mules and asses of which we have any history. It was mentioned by Aristotle in his early writings. The earliest notice of this disease in which glanders and farcy are regarded as essentially one disease is probably that by Apsyrus, a veterinary officer in the army of Constantine the Great, in the fourth century. This also shows that the ancients appreciated the value of an army veterinarian. In early writings it was called malleus, humidus, farcimosus, and described under several forms. Its contagiousness was recognized by a Greek veterinarian, Veyetius Renatus. About the same time he recognized the contagious properties of the discharges and recommended that sick animals should be separated from the healthy. In the middle ages German law considered it a disease setting aside a sale. In early times it was considered as identical with tuberculosis, diphtheria and pyaemia. Its contagiousness was known positively from about the seventeenth century, and in the veterinary writings of that time the following remarks have been found: "Its transmission was brought about by the air." "It is identical with syphilis of man." "Directions for the disinfection of stables: Advisability of slaughtering all glandered horses and isolation of suspected animals."

Toward the end of the seventeenth century and the beginning of the eighteenth century numerous experiments in Germany, France and England



No. 1.—GLANDERS.—Above horses were destroyed as described in this report.

demonstrated the transmissibility of glanders, also its inoculability. The discharges were particularly virulent, while the blood did not give as positive results. In 1837 Rayer recognized the transmissibility of glanders as a distinct disease to man. About the middle of the last century it was thought that strangles underwent a change within the animal and became glanders.

The bacteriological researches upon glanders began about 1868. A fungus was found which was considered as identical with that found in syphilitic lesions in man. Christut and Kiener first identified the true bacillus of glanders, and in 1882 it was cultivated in liquid mediums, and the fifth and eleventh cultures produced glanders in guinea pigs and donkeys.

The bacillus is cultivated in the coagulated serum of the horse or sheep or neutralized broth of the horse, ox or chicken and upon potatoes. Warm weather favors its growth. Temperatures below 65 F., 20 C. or higher than 113 F. 45 C. hinders its development or destroys it. It resists putrefaction from fourteen to twenty-four days, and in water it remains virulent from fifteen to twenty days. In moist matter it does not live longer than four months, and this is believed to be the maximum duration or virulence of the infectious matter.

The statement of the reappearance of glanders by the action of virulent matters which have been preserved in stables from which the disease has disappeared for several years is erroneous. It is indeed almost certain that the disease is only kept latent in animals where it passes unobserved for a long time. In a stable where it existed for three years an old horse was ordered killed which showed but a slight mucous discharge and no enlarged glands. This was done only because his neighbors in the stable became afflicted with glanders. At the autopsy the lungs were filled with nodules, some of which were of long standing. Since then no other cases of glanders have developed.

Glanders is found frequently in the most insidious forms, and we recognize that it can exist without being apparent, that is it may affect a horse for a long period without showing any symptoms that will allow even the most experienced veterinarian to make a diagnosis. An old gray mare belonging to a tavern keeper was preserved for family use with good care and light work for a period of eight years, during which time other horses in the tavern stable were from time to time affected with glanders without any apparent cause. The mare, whose only trouble was an apparent attack of heaves, was sold to a huckster who placed her hard at work. Want of feed, overwork and exposure rapidly developed a case of acute glanders, from which the animal died, and on autopsy were found the lesions of acute pneumonic or glanders grafted on chronic lesions, consisting of old tubercles, which had undoubtedly existed for years.

In a recent case a horse was examined for soundness and passed as sound. A few months later the horse was treated for skin eruption from which it recovered. A year after it was out of condition, hidebound, with a slight cough and a slight eruption of the skin, which was attributed to clipping and the rubbing of the harness, but which had nothing suspicious in its character. The horse was placed on tonics and put on regular light driving. In six weeks it developed bronchitis without having been especially exposed, and in two days this trouble was followed by lobular pneumonia and the breaking of an abscess in the right lung. Farcy buds developed on the surface of the body and the animal died. The autopsy showed

the existence of a number of old tubercles in the lungs which must have existed previous to the purchase more than a year before.

Amongst the carriers of infection may be named public watering troughs, feed stables, feed yards, mangers, railway cars, stockyards, harnesses, curry combs, brushes, water buckets, sponges, or clothing of grooms. It is not believed that glanders is contagious that is breathed in. Experiments of making a healthy horse breathe the expired air of a known glandered horse through a tube for several hours have not resulted in an infection. This can be accounted for by the fact that in the well horses the nasal mucous membrane had not even a scratch on it and they were not breathing hard enough to carry the bacilli deep into the lungs. In nearly all cases it is the mate or the horse in the next stall, where the horses are changed from stall to stall, or a healthy horse is put to work to the same wagon or farm implement and the healthy horse licks the tongue or neck-yoke, or else the healthy horse licks the nose of the one discharging, and accidentally carries the infection to his mouth on which there is a slight abrasion, and the glander bacilli lodges there and is taken up by the blood and carried to the parts most favorable for its development. Even if the discharge has not the characteristic discharge of glanders it can, and very often does carry the glander bacilli, even when the discharge is only apparently mucus.

INFECTION.

In a great many cases the bacilli penetrate through the respiratory organs; when in suspension in the air they reach first the nasal mucus membrane. Their introduction into the depth of the respiratory apparatus is favored by certain circumstances: when, for instance, the animals sniff at one another when the respiration is accelerated and deep, after the influence of unusual exertions. They may be carried directly into the lungs with the inspired air, and there produce broncho-pneumonic centers. Pulmonary glanders may be primary just as well as nasal glanders. In a large number of cases the lungs alone are affected, or it is upon them we may observe the oldest lesions.

The skin constitutes another mode of entrance for the pathogenic element. Cutaneous glanders, considered formerly as a peculiar form of the disease, is called farcy. Primary glanderous disease of the skin is only produced through wounds; farcy is thus generally secondary, caused by emboli at the time of general infection. It is very rare for the bacillus of glanders to traverse the digestive mucus membrane in horses, mules, or asses, but carnivorous animals, especially in zoological gardens, animal shows and circuses, frequently develop the disease from having eaten parts of diseased horses. The generalization of the glanderous process takes place regularly through the lymphatic system and by the circulation the bacilli are carried into all the organs.

INCUBATION.

Like all specific infectious diseases, glanders has a period of incubation, but in glanders this period is extremely variable. When resulting from direct inoculation it is usually only a few days, and animals thus treated have been known to show symptoms in thirty hours. When following the normal mode of propagation, that of infection, mediate or immediate, it is some-

what longer ere the diagnostic symptoms are developed. In these cases an interval of several weeks, and even months, is said occasionally to elapse between the reception of the morbid agent and the appearance of characteristic symptoms. During this latent period of the disease certain conditions, if brought to bear on the animal so circumstanced, seem to have a power of hastening the development of diagnostic symptoms. Long continued or rapidly performed work, and other adverse conditions, such as placing the animals in unhealthy stables, exposure to cold or dampness, have all been noted for operating in this manner.

Mules and asses seem to be more susceptible to glanders than horses, and the disease develops much more rapidly in them after infection takes place.

It may be said that glanders exists in two forms, chronic and acute, and these two forms vary a great deal in intensity.

CHRONIC GLANDERS.

Symptoms. In a great many cases the disease presents itself in such a mild form that the general health is scarcely affected. At the first there will be a discharge from one or both nostrils, generally only one and usually the left, the quantity of which is variable and may entirely disappear at times. This discharge resembles that of chronic catarrh, that is, of a mucus consistency looking somewhat like glue. Soon this discharge begins to change its aspect and becomes yellowish gray or yellowish green. Quite frequently it shows a reddish tinge due to rupture of small blood veins or even enlarged capillaries. Gradually it becomes thicker, viscid and mingled with purulent matter, rather green in color and inclined to adhere around the margin of the nostril, where it dries and accumulates, causing the nasal opening of the affected side to appear smaller or more contracted than in health. Or else it is expelled from the nostrils by sneezing in large or small pasty masses. With such a discharge as just described a careful examination will in all probability find on the mucus membrane of the nostrils small nodules or tubercles, which are sometimes perceptible to touch, although for fear of infection it is not advisable to explore too far or too much. These as a rule do not last long but are followed by chancres or ulcers more or less deep with denuded, thickened edges and a lardaceous bottom which may become cicatrized, leaving after them fibrous islands of variable form.

The swelling of the lymphatic glands in the intermaxillary space is another important symptom. In the beginning the gland is diffuse, slightly doughy and sensitive. This swelling is of a remitting nature, often varying in size in a short period. It is bosselated on its surface and adherent to the base of the tongue or to the lower jaw bone. In some subjects it is adherent to the skin. When the discharge is unilateral the swelled glands are on the same side, usually the left.

The swelling whether of one or both glands is more marked as increasing the bulk of the gland antero posteriorly than across the space. General nutrition suffers in proportion as the affection progresses. It becomes more and more imperfect and the animal becomes poor and is easily tired out. Sometimes violent exertions are followed by bleeding from the nostrils, more or less severe. Frequently there is irregular febrile reaction rarely exceeding 103° F. which may be remittent or intermittent, and intensity of which

is proportioned to the number of ulcerations and the extent of the catarrhal discharges. Sometimes there is a discharge of light colored urine. This was formerly regarded as a prominent symptom.

The hair becomes dull, dry and bristly, adhering to the skin and frequently when of a long standing case, a remarkable friability of the bones, which is notably marked by numerous fractures of the ribs. The animal has a chronic cough and sometimes symptoms of asthma. When the disease is of long standing there is often swelling of the legs, underside of the body and in the entire horse and swelling of the testicles. The above described symptoms are of chronic glanders of the horse. It is yet certain that many cases occur where some of these, if not all, are absent, and yet we know from many sources that such are undoubtedly deeply affected with the specific poison and capable of infecting other horses. The duration of chronic glanders is very lengthy. It may reach seven years.

ACUTE GLANDERS.

Symptoms: Acute glanders is rare in the horse, about 10 per cent. It is on the contrary the ordinary form in the donkey, mule, jenny or ass. Sometimes it appears from the onset, in other instances it follows the chronic form when this becomes generalized by other affections. It presents the characteristic of a septic infectious disease with rapid evolution, producing an ulcerous destruction of the respiratory mucous membrane and abscesses in the skin, lungs and other organs.

The disease begins with chills, rigors and the pulse is increased in frequency, quick, soft and of little volume. The respirations become frequent and the temperature rapidly rises and remains high, even 107° F. or 42° C. We observe muco-purulent, bloody nasal discharges. The nasal mucous membrane is overrun with nodules and chancres which rapidly become confluent and undergo a true purulent destruction. These nodules or tubercles vary a great deal in size. They are rendered very visible by having a yellowish white center. This center is surrounded by a grayish zone, which again is encircled by a red zone. In a few days after their first appearance these nodules soften and break. This results in this production of the characteristic chancrous sore or ulcer, which is marked by irregular excavated edges and bottom, which are inclined to become covered with vascular granulations. These ulcers are not disposed to heal, and by the removal of the sound tissue between several small sores, one large rodent ulcer is produced.

These alterations in the nasal mucous membrane may be developed in a very short time, two or three days. The throat becomes swollen, which results in laborious, rattling, wheezing and moaning respiration, which is obstructed by the discharge drying around the swollen nostril. The flanks heave and the appearance is often that of a horse suffering from pneumonia, and the inability to swallow food, from which rapid emaciation follows. The head and particularly the nose and mouth become swollen, the eyes are weak and discharge almost constantly. These symptoms are often added to those of farcy which is not necessarily confined to the head, but more often extends to the legs and other parts of the body on which in the course of the swollen lymphatics, nodules develop themselves, which after a while soften, break and discharge their purulent matter. We find also an abund-

the vapor has been well distributed and had a sufficiently long contact with the walls. About two ounces of sulphur for every hundred cubic feet of air space will be sufficient, and the gas permitted to remain in contact with the walls for twelve hours.

Chlorine gas generated from treating black oxide of manganese with hydrochloric acid is also an efficient disinfectant of the gaseous form. And see that in all processes of disinfection thoroughness and certainty in the destruction of the virus or infecting agent are most surely obtained by varying the disinfecting agents employed rather than by employing an extra amount of any one.

H. C. SIMPSON.

INFECTIOUS OR CONTAGIOUS ABORTION.

This is a disease that has caused considerable anxiety and expense among breeders and stock owners in more ways than one. It is a contagion that is far more serious and causes more pecuniary loss than some of the diseases which are dealt with by prompt and radical measures.

Abortion among cattle until recently was not considered contagious but our best authorities do not now disagree on that point, but the perplexing question arises how to prevent the spread of this disease. Many innocent purchasers have bought one or more infected animals spreading the disease among the entire herd before being aware of its existence causing great loss in many instances. Quite frequently the previous owner would disclaim any knowledge of the disease having existed among his herd and this positive denial would be as strong in proportion as he thought his business might be injured were the facts to become known. The following article compiled by Dr. Anton Kaderabek may be helpful to those who will give it a careful perusal.

CONTAGIOUS ABORTION IN CATTLE.

Abortion is the premature expulsion of the product of conception before it is viable out of the womb. There are different causes that produce abortion, but I shall confine myself to the contagious abortion. The cause of this can be usually ascertained by carefully inquiring into the history of the outbreak. When a herd has been continually healthy up to the date of the introduction of a cow brought from a herd where abortion has been prevailing and when following her arrival one after another of the original herd abort without any apparent cause in the way of change of feed, water, barns, stalls or general management, the evidence of the introduction of

contagion by the cow in question is very circumstantial and forcible. If pregnant cows standing next to the new cow abort, the argument for contagion is still further corroborated. If the trouble continues in the herd year after year, attacking fresh animals some months after their purchase, the case becomes still stronger. Or if a cow from a healthy herd is sent to a bull that has been allowed to serve an aborting cow, or to buy a bull from a herd where abortion has taken place and the cows of the previously sound herd begin to abort, these occurrences are manifestly the result of contagion. A newly purchased cow aborts and is disposed of in consequence and another cow is placed in the same stall and in due time aborts also, and others follow in succession, especially those that stood next to or near the stall in question, points to an introduced infection. An indefinite number of other cases might be recalled, each varying from the last, but all agreeing in this, that the evidence of infection stand out prominently and unmistakably. The infecting material may have been carried by the tail, tongue, soiled stalls, gutter, rubbing against a post, fence or other object, yet the fact of contagion can be demonstrated with reasonable certainty. These conclusions have been repeatedly affirmed by actual experimental transmission.

Galtier found that when the infecting vaginal mucus of the aborting cow was transferred to the same passage of a healthy pregnant one, abortion took place in the latter. He succeeded in conveying the disease in this way from the cow to the sow, ewe, goat and rabbit and found that the growth in the body of the rodent intensified its virulence, so that it could then be successfully inoculated on the mare, bitch and cat.

Bang subjected two cows from healthy herds and three months pregnant to repeated injections of the products of the culture of his abortion bacillus in serum glycerine bouillon. Three injections were made April 14th, May 23d and June 14th and on June 24th one cow aborted. The other sickened and when killed was found to carry a dead foetus. Pure cultures of the abortion bacillus were found in the foetal membranes and liquids of both animals.

Tobiassen quotes the case of a cow from an aborting herd, which calved a fortnight before the regular time. The calf was at once sent to another farm where no abortion had occurred and placed in the same building with the pregnant cows, all of which later aborted. The outbreak thus started lasted for several years.

J. R. Jansen reports that a cow brought from an infected herd for fattening purposes, proved to be pregnant and finally aborted and that twenty-four of the pregnant cows on the same farm aborted the same year.

Franck attributed the disease to *Leptothrix Vaginalis*, but subsequent observations failed to substantiate this. The Scottish Abortion Commission isolated five different bacteria from the abortion membranes, but failed to identify any one of these, as by itself capable of causing the disease. Nocard found in the fibrino-purulent matter between the chorion and womb, in aborting animals, a micrococcus occurring singly or in chains and a short, delicate bacillus isolated or in pairs. The cow as a rule acquires immunity after one or two abortions caused by the microbe with which we are at present most familiar. There are exceptions to this rule, due to special nervousness and excitability of given cows, which tend to an indefinite repeti-

tion of the abortion under the stimulation of pregnancy, of the continued presence of the microbe, or of some local disease of the ovary, womb or peritoneum. Yet statistics show that this only applies to a small portion of cows, and these the most nervous.

The difficulty of reaching a conclusion on this point depends on the fact that stock owners very commonly dispose of aborting cows, and as the newly exposed cows are usually attacked sooner or later, it is too confidently assumed that the old cows also would have continued to abort had they been retained. Many years ago, however, observant New York dairy-men had noticed that the same cow rarely aborted over three years in succession, and in the great majority of cases not over two. Another owner of a large herd said as a rule with him a cow did not abort a second time. The cow that no longer aborts is not, therefore, a safe member of a herd. As an individual animal she has become resistant to the pathogenic influences of the germ, she is immune to it to the extent that she no longer aborts, but her system and generative passages have acquired no such active bactericidal power over the microbe as to lead to its speedy destruction. The genital passages once colonized continue to be a field of growth of the bacillus long after its power to cause abortion in that particular animal. In short it is the rule that the immunized animal can with safety to itself carry a germ that readily infects its non-immunized fellows. In one case of infectious abortion this is one of the most dangerous elements, as the apparently healthy recovered cow receives no attention in the way of separation and disinfection, but is allowed to spread the infection through the bull in common with other cows and by being transferred into new and healthy herds.

Symptoms. Contagious abortion sometimes takes the form of sterility, the animal failing to conceive. If conception takes place, the abortion usually takes place after the foetus has attained a considerable development, in cows from the third to the seventh month.

Oftentimes the premonitory symptoms are entirely unobserved. Usually there may be detected some heat and enlargement of the mammae with a decrease in the milk yielded. Still more striking is a muco-purulent discharge from the vulva, opaque, white or yellow, while that which appears in oestrus is perfectly clear, transparent mucus. The discharge may be densely white or reddish and may be accompanied by some swelling of the vulva and redness of its mucosa, which is dull, rough and granular or even the seat of a papillary eruption. The membranes are often retained and become very offensive. In other cases a muco-purulent discharge persists for a length of time, insuring sterility so long as it lasts and causing ill health and emaciation.

Therapeutics are useless in contagious abortion as the disease usually runs its course before any danger is suspected. If premonitory symptoms are observed, the abortion may sometimes be warded off by putting the animal in a quiet place and seeking to obviate labor pains by opiates and ounce doses of *viburnum perunifolium*.

The treatment is prevention and protection.

First. The protection of a sound herd against the infection.

Second. The extinction of infection in a herd already diseased.

This requires the greatest possible care because the infected animal usually presents the appearance of perfect health and there is no ready means

of testing the presence or absence of the bacillus. In purchasing a cow in a public market, the new owner may find her affected with the bacillus and a serious danger to his whole herd. To protect the latter he must learn that the herd from which she came has had no abortion for several years before and that the offspring for the different years are present in numbers corresponding to the dams. In the absence of this a certificate and guarantee against infection of other animals by the one purchased may be well demanded of the seller. A certificate from the veterinarians attending the herd furnishing the animal may also be sought in evidence of the absence of abortion from the locality. Imported animals should be safely guarded in the same way but even greater care lest the microbial sources of new types of abortion should be brought into the country. A guarantee of this kind might well be demanded by the Federal government in the case of all the breeding animals imported. In case of failure to secure the most perfect guarantee with the purchased animal, it would be worth the purchaser's while to separate it from his valuable herd until it has been proven to be entirely free from infection. If bought for a sire it should be subjected to a course of disinfection, and if for a dam and unimpregnated, antiseptic irrigations be made daily for a week and the external part, hip and tail be daily washed with antiseptics. If the newly acquired animal is pregnant keep her by herself until parturition and even if this takes place at the full term, irrigate the womb daily for a week with a disinfectant, delay having her served for a month and subject the sire of the herd to thorough disinfection. It may be that she still carries the germ but has become tolerant of it.

EXTINCTION OF CONTAGIOUS ABORTION.

In the first place we must have two separate stables, one for the healthy and one for those known to be affected and the suspicious ones. The cow that shows symptoms of abortion or that has aborted, should at once be removed to the quarantine stable and her stall, gutter and drain leading from it should be thoroughly disinfected and the whole stable whitewashed. The aborted foetus and membrane should be burned at once or boiled and then buried. The manure and bedding should also be burned. The manure from the quarantined stable should be put on one pile in a separate lot so that the stock cannot get to it. Saturate it with a 6 to 100 solution of sulphate of copper. All the cattle in both stables should have the external generative organs, the hips and the whole length of the tail washed once or twice a day with an antiseptic solution of carbolic acid or creolin 2 or 3 to 100. It is a good practice to keep a separate sire for the aborting and quarantined animals. All cows in an aborting herd or from one where aborting animals have been removed within a year, should after delivery, be treated with an antiseptic for one week as previously recommended. This will guard against the danger from animals that carry the germ, but have become so tolerant of it that they themselves no longer abort. New born animals brought in from other herds should be sponged all over with some disinfectant before being added to the herd. In case of breeding animals going to pasture, separate fields should be furnished, one for the healthy and one for the aborting ones. Breeding ewes, goats and sows should be excluded from all pastures occupied by suspected herds or those under treatment. It is important to reserve the herd sire for the exclusive use of the home herd.

ANTON KADERABEK.

RABIES.

During this period there has been an unusual number of outbreaks of this disease, having investigated no less than seventeen official calls and the majority of cases were in the spring and summer of 1902. This disease has decreased about 50 per cent during the last season. From information obtained an estimate of one hundred head of cattle died or lost their lives from this disease, besides the loss that was not reported to this department.

The similar diagnostic symptoms found in other diseases often gives an opportunity for doubting rabies sometimes, therefore it becomes necessary to obtain a true history of the outbreak and a thorough examination of the premises and surroundings before rendering a definite opinion.

The disease was found to exist in the following counties: Calhoun, Crawford, Davis, Floyd, Franklin, Greene, Hancock, Hardin, Mills, Madison, Page, Poweshiek, Shelby, Union, Warren, Wright, Worth and Wayne. In a number of cases no animals were found diseased, the owner stating he had lost several head from symptoms resembling rabies. In such cases where no other circumstantial evidence could be obtained we could not positively pronounce it rabies.

Perhaps the most serious outbreak visited by myself was in Cerro Gordo and Worth counties, where a rabid dog had traveled a distance of no less than seventy-five miles attacking everything in its way, biting a number of cattle, horses and swine and causing great excitement in the neighborhood. The dog was finally shot in the neighborhood of Wheelerwood, Cerro Gordo county, but unfortunately not until he had bitten a girl about twelve years of age. She was at once sent to Chicago and took the Pasteur treatment. I visited the place shortly after the girl returned home and she was apparently healthy, showing slight symptoms of nervous excitement and trembling of the arm and hand injured. Up to the present time she has shown no symptoms of the disease and it is safe to presume that she is past all danger of developing it. Numerous ugly scars were now the evidence of the lacerations produced by the animal. The girl made the statement that when the dog approached her she was standing near a well, the animal coming directly towards her. Thinking the dog friendly she placed

out her hand and it immediately bit her hand and arm, tearing the clothing. The dog then started off to a neighbor's a mile distant where he was shot. The loss sustained during this outbreak was confined mostly to cattle, a few sheep and swine and a couple of horses.

Similar outbreaks may be cited in various parts of the State. In attempting to eradicate the spread of this disease, many obstacles are met with. When once started it is of such rapid development that quite frequently before we reach the seat of the outbreak, large numbers have been exposed and death eventually follows. When an animal is suffering this disease in an advanced stage, we advise the destruction of the same.

In some instances this department has been called upon to pay for stock lost in this manner, on the theory that the dog was the primary cause. No such expenditure has been made, as no stock has been destroyed without the consent of the owner. It is my opinion, that if there are any damages to be paid in a case of this kind, it should be borne by the county where the loss occurs; or if the State should pay for stock destroyed by this department, a special appropriation should be provided for that purpose. With the constant increase of live stock in this State and the additional increase of work in this department, the present appropriation of \$5,000 per annum is not sufficient to meet the actual expense of conducting the investigations. The State of Minnesota appropriates \$19,000 annually, and some of the states pay more.

The following paper, written by Dr. D. E. Baughman, Assistant State Veterinarian, of Fort Dodge, Iowa, will prove of special interest, owing to the fact that he was himself bitten by a rabid dog:

RABIES.

There perhaps has never been a time when it was more important than at the present for the veterinary profession to have a clear appreciation of the subject of rabies in animals and man. There was a time in the period of the profession's existence when there was excuse for differences of opinion in regard to this disease. It was a time when we depended solely upon clinical observation of accidental cases, and when the conclusions were founded upon imperfect evidence. But that time is past. Today we have a science resting upon an experimental basis. Facts and conclusions have been established just as vigorously and positively as in other departments of medical science.

As members of a learned profession it is our duty to know what has been accomplished by scientific investigators of rabies, and particularly is this

duty incumbent upon those who attempt to teach other members of the profession or the laity the facts in the case. We have reached a point where the intelligent and scientific knowledge of the veterinary profession are liable to be unjustly questioned because of a few mistakes of misguided individuals who persist in reiterating beliefs which were never held by a majority of the profession and were discarded and disproved years ago. It appears simply astounding to the writer that there are educated men, much less physicians and veterinarians, who still doubt the contagiousness of this disease, which was known and described in ancient times, and for a century has been the subject of experimental investigation by very able men who have occupied their minds with pathological questions. Nevertheless it is a fact that the sanitarian of today who tries to control rabies meets the same kind of argument which was used to embarrass his profession centuries ago. These arguments are occasionally opposed by some members of humane societies which oppose all conclusions based upon experiments with animals, and while they are doing a great work for domesticated animals they often cast discredit upon science, and by so doing they perpetuate this terrible disease, of which dogs and cats are the principal victims.

Aristotle described rabies 400 B. C. and indicated its transmissibility in these terms: "Dogs suffer from hydrophobia which provokes them to a state of madness; all animals bitten by dogs affected become rabid in the end." From that time to the present we have clear accounts of the disease existing through every age and provoking horror and fear in many countries. It was always said to be caused by the bite of an animal, which animal was generally alleged to be rabid. It was almost universally described as fatal in man and animal.

Aristotle admitted that the disease was fatal to dogs and every other creature which they bite, except man. This early mistake in regard to immunity of man has been handed across the centuries and is still repeated on every hand by those who oppose measures for the prevention of the disease. Therefore it may be freely admitted that there have probably been many in all ages who have doubted the existence of the disease both in mankind and in animal, that numerous articles and books have been written to prove that the disease called "rabies" is not contagious, and that the supposed rabies of man is "lyssophobia," a nervous disorder brought on by fear and excitement.

The medical profession as a whole, however, always recognized the existence of such a disease as rabies in man and the veterinary profession has from its foundation recognized its existence and the contagiousness of the disease. Its schools from the earliest to the latest have constantly taught this doctrine and the present text-books are all unanimous on the subject.

The doubts raised from time to time concerning rabies and its characteristics have been met with scientific experiments. Zinka, in 1804, announced that he had inoculated a dog, a rabbit and a cock with saliva from a rabid dog, taking the saliva with a brush from the animal soon after its death and spreading it over superficial wounds of the inoculated animals. The dog was inoculated on an anterior limb and showed prodromic symptoms on the eighth day and was rabid on the ninth. The rabbit was rabid on the fourteenth day and the cock on the eleventh day. This experiment early in the eighteenth century proved that the disease of the dog, called rabies, was

communicable by inoculation to the dog, the rabbit, and the fowl. It proved it to be a specific disease and that the virus existed in the saliva.

Reiferschild, in 1813, records an experiment in which several dogs were inoculated, part with fluid and part with dry saliva from a rabid dog. These became affected with rabies after eight to ten days.

Berndt, in 1822, inoculated four wethers with saliva from the mouth of an ox which had died of rabies. All of these sheep contracted the disease, the period of incubation being from twenty-two to thirty-one days.

In Hertwig's experiments he produced rabies by inoculation in 37 per cent of cases. Renault produced it in 67 per cent. Haubner gives an average of 40 per cent of cases in rabies which were contracted through bites. Bollinger states that in man infection occurs in from eight per cent to forty-seven per cent of bites. Pasteur says the proportion varies from 16 per cent to 80 per cent. When cauterization is not performed it reaches 83 per cent. Bouley found that 90 per cent suffered after bites on the face; 63 per cent after bites on the hands; 24 per cent after bites on the arms; 77 per cent after bites on the legs and 63 per cent after bites on the body. The susceptibility of sheep is known to be slightest, as the teeth of the biting animal are likely to be cleaned by the wool. Much, however, depends upon the stage of the disease and the abundance and virulence of the virus in the saliva, as well as upon the susceptibility of the subject. Some animals are insusceptible, either naturally or by reason of their having been previously subjected to the action of the virus. Yet, under a full virulent dose nearly all succumb. The theory that rabies kills more animals in the summer than in winter has been weakened by statistics. Burrell has shown, according to the record of cases of rabies in his infirmary from 1859 to 1872, that they were not more frequent in summer than in winter. Three hundred and fourteen cases of rabies of the dog observed at the Alfort school during the years of 1887 to 1890 are divided as follows: January, February and March 130 cases; April, May and June sixty cases; July, August, September fifty cases; October, November and December forty-seven cases. Bouley records a greater number of cases in December, January and February than in any other three months of the year. The real explanation of the greater prevalence in the spring and summer is found in the fact that bitches rut in the spring and a number of the candidates for their favors bite each other fatally. This is aggravated by the fact that the generative instincts are stimulated in the early stages of rabies. This further explains the predominance of rabies in males. The irritable rabid dog antagonizes his male competitors and respects the female object of their common desire. There is of course only one cause of the disease, namely, inoculation from an animal suffering from the disease, although excitement will hasten the eruption in the inoculated animal.

It may be assumed that the virulent principle which causes the disease is an organic germ, but so far all attempts to isolate and cultivate it in pure culture have resulted in failure and the microbe cannot yet be certainly identified.

Rabies agrees with all other germ diseases, in that it develops only after inoculation, in that one attack usually fortifies the system against the second, and that in Australia, Tasmania, New Zealand, St. Helena, South Africa and West Africa, from which mad dogs are excluded, it has never

appeared, while in Buenos Ayres, Hong Kong, and Malta, where they have been allowed freedom, it has become prevalent. What has never occurred in the past need never occur in the future. Cases in which infection is denied because the dog was shut up will be explained by a more thorough investigation. Rabid dogs will leap high fences to reach supposed enemies, and rabid rats and other vermin enter through small holes.

Rabies, like most microbial diseases, is at first confined to the region of the bite and the tissues alone are infected. When fully developed the infection is resident in the blood and all vascular tissues, yet the usual source of infection is through the bronchial mucus and the saliva, both of which are especially virulent and are naturally imparted by the teeth. This virulence is not confined to carnivora, but has been experimentally demonstrated in omnivora and herbivora. Various causes of infection from man to man are on record. Drying of saliva or blood, apart from heat or putrefaction, does not destroy its virulence. The knives fouled on rabid animals have been used for successful inoculation months and years later. Among other methods of infection besides the bite may be named the licking of sores by a dog in the early stages of rabies and the occupation of kennels or stalls that have previously harbored rabid animals. Rabies has been known to attack a second pack of hounds after the first pack had been killed out because of the disease. In one case a man was affected by using his teeth to untie a knot in a rope that had been used to tie a mad dog. Infection in man has been caused by a bite from a dog that had been previously fighting a rabid dog, and again from a scratch of a cat that had been licking its claws. In some cases of incipient rabies in dogs, the saliva has been virulent before any outward symptoms were shown. Hence, all dogs, however sound in appearance, should be objects of suspicion in an infected district.

The anatomical alterations found in autopsies upon rabid animals are neither constant nor specific. Rabies are especially characterized by the absence of important organic lesions. There is emaciation, mucus about the eyes, mouth, nostrils and prepuce; staring coat; venous congestion; the tongue has a dirty brown fur; in the dog, foreign bodies, such as straw, hair, pieces of wood, and clothing may be found in the mouth and pharynx; The stomach is congested and contracted; it contains little or no food, but a mixture of foreign bodies and indigestible substances which are highly characteristic of the disease. Wortly Axe, in a total of two hundred autopsies has found in one hundred and eighty cases or 90 per cent absence of food and the presence of indigestible foreign bodies in the stomach. For him this latter fact is the most important, from a diagnostic standpoint. Post-mortem diagnosis can be established with certainty only by inoculation; but when at the autopsy of a dog which has manifested aggressive tendencies during the past period of life, or which has bitten animals or people, we recognize the ordinary symptoms of rabies, especially the presence of foreign bodies in the stomach, we must, without hesitation, affirm the case to be rabies, and proceed accordingly.

Babes described changes in the nerve cells, with cloudiness of protoplasm. These have been especially noticed in connection with the motor centers in the medulla oblongata, but also in the gray matter of the cerebrum. The nerve trunks, too, may be the seat of congestion, and the fibers undergo a granular degeneration.

The lesions to be especially relied on in the dog are the congestion of the fauces and throat; the congested, infiltrated or ulcerated state of the stomach; of absence of food; the presence of foreign bodies; some congestion of the small intestines; empty or nearly empty bladder; mucus or muco-purulent secretion oozing from various openings; congestion of superficial veins; congestion of the brain and meninges. These with the history of the cases are usually sufficient to identify the disease. It should be added, however, that in the paralytic or lethargic form in the dog there may be an entire absence of foreign bodies in the stomach.

Of the numerous cases in the dog that I have met with in my practice in the last two years, most of them were of the paralytic form. About fifteen per cent of cases have been of the furious form. Ten of the animals were either known to have been bitten or had been exposed to rabid dogs. The remainder were not exposed to the disease to the knowledge of the owners, yet it is possible that they were, not having been confined and having had access to the street at will. The period of incubation varies greatly. In inoculating with potent virus or street virus upon the brain, it is about six days. In other parts of the body it varies from sixteen to two hundred and forty days, with an average of twenty-five days.

Rabies appears under two clinical forms, which are designated by the expression of furious rabies and mute rabies. Formerly these two forms were considered two distinct diseases, but this view has been abandoned long ago. According to Pasteur furious rabies occurs when the brain is invaded by the rabid virus, and mute when it meets the spinal cord first. His claim is that we may produce the former experimentally by directly depositing the virus of the surface of the brain, the latter by injecting it into subcutaneous connective tissues. I rather doubt the correction of this assertion, as I am inclined to think that only a very small per cent of dogs are bitten on the face compared to the number bitten on other parts of the body. While in man the per cent of bites on the face is very small, the majority of cases of rabies in men are of the furious form. By depositing the virus directly on the brain it produces a disease within a very short period of incubation, which possibly accounts for the activity of the symptoms excited by this form of inoculation.

The prevention of rabies can be accomplished in cities and towns only by passing ordinances and compelling owners to muzzle their dogs when the outbreak occurs in the community. The animal should wear an efficient muzzle, as rabies is propagated in nature only by biting. Such a regulation, if strictly enforced, would stop the transmission of the disease and soon lead to its disappearance.

As the disease is just as prevalent in winter as in summer, the dogs should be muzzled the year round, until the disease has made its entire disappearance. However, this is at once opposed by a class of citizens holding it to be cruel and unnecessary. Some muzzles are unquestionably cruel, but a properly made muzzle is not, nor does it greatly inconvenience the dog after he has become accustomed to it. A certain kind of muzzle should be prescribed by the authorities. It should be one which covers the mouth with a wire cage so as to prevent biting, but which does not interfere with the movements of the mouth and the ingestion of liquids. There are many who claim that the dogs do not wear the muzzle at home and that when they

develop rabies and escape it is always when they are not muzzled. Admitting this argument to be true, nevertheless it is a fact that if all dogs were required to be muzzled when in public, the appearance of a dog without a muzzle would attract attention, leading persons to avoid it and causing its early seizure by the authorities. Children might be taught to fear unmuzzled dogs and to keep at a distance. The results which have been attained by muzzles justify the enforcement of a muzzling ordinance whenever there is an outbreak. In Berlin, where a rigorous muzzle law was enforced, the disease was entirely eradicated. Also in Great Britain the muzzle has been adopted with great success.

The treatment of the bite should receive first attention. If possible the wound should be cauterized by actual cautery. If not, chloride of zinc, bichloride of mercury, caustic potash, silver nitrate, or sulphate of copper or iron should be used. Care should be taken to apply it to all recesses of the wound. If mineral acids or other liquid caustics are employed, they may be delivered into the minute recesses through a pipette or a plug of cotton wound around a stick, or with a syringe. A delay for several hours or days is not warrant for omitting cauterization, for in man it has always a good moral effect in preventing lysophobia and it is possible that the poison may remain for some time in the region of the sore.

Senn's advice is to exercise the adjacent tissues. This may be followed, but not to the exclusion of a thorough disinfection. When a person has been bitten by a dog with symptoms of rabies, the dog should not be killed, but should be chained in a place where it will have no chance to harm any one. There it should be kept until the disease has had a chance to thoroughly develop. If it dies from rabies and the bite has not had the necessary treatment, the bitten person should at once take the famous Pasteur treatment. The Pasteur Institute at Chicago has been established eleven years in which time 1,262 patients have been treated. Of these only seven have died, making a death rate of less than one-half of a per cent. As a remedial agent, the Pasteur treatment is unquestionable effective as is shown by the great per cent of cures obtained.

D. E. BAUGHMAN.

TUBERCULOSIS.

The fact that tuberculosis prevails to an alarming extent among domestic animals in this State cannot be denied. During this period our department had been called on to investigate outbreaks of this disease in the following counties: Allamakee, Adair, Chickasaw, Cerro Gordo, Crawford, Fayette, Greene, Guthrie, Kossuth, Polk, Pocahontas, Sac, Winnebago and Worth.

In a number of instances we found typical cases of tuberculosis. In some cases tuberculin tests were made at the owner's

request. Where the most suspicious ones were tested and a large per cent were found diseased then the owner was advised to dispose of same. No test has been conducted by our department without the voluntary consent of the owner. The various unpleasant features of this work can readily be understood when a large per cent tested react and the owner is informed that the State does not provide the necessary funds to reimburse the owner for the loss incurred. (This lack of funds is explained in another part of this report.)

Whenever an animal is found badly emaciated and in an advanced stage of the disease, it is advisable to destroy the animal at once, but when large herds are tested and a large per cent react and are otherwise in a comparatively healthy condition, then it is advisable to dispose of the infected animals to the nearest packing house for immediate slaughter, subject to federal inspection. Thus the owner will receive its full value in its present condition.

Out of a herd examined belonging to a county poor farm, twenty-three out of sixty head reacted. These animals were killed under the direct supervision of a government inspector, and a large per cent were found wholly unfit for other purposes than the manufacture of fertilizers. The net proceeds brought about \$325.00, which was very satisfactory to all parties concerned. A number of similar instances can be enumerated.

Complaint often reaches us where breeders of high bred cattle have bought a high-priced animal for breeding purposes in an apparently healthy condition, but shortly after showing symptoms of the disease. Later on the animal died from tuberculosis, and the disease had afterwards appeared among other members of the herd.

The practice of some unscrupulous owners to knowingly sell diseased animals should be punishable by law.

Tuberculosis is continually increasing and spreading in every country with the exception of those where active repressive measures are resorted to. Why not learn by observing the errors of others and make a beginning to eradicate this terrible disease? The task of repression would have been comparatively easy a quarter of a century ago. Now it is staggering in its immensity and will require the combined effort of stock owners and the various sanitary boards to check this plague.

The effect of the disease upon milk products is endangered.

The public should be protected from this dangerous source of infection by requiring all dairy herds to be inspected. Many states and some cities in our own State have adopted this method. Among some of the cities that have recently passed ordinances regulating the sale of milk and cream are Fort Dodge and Oelwein, requiring all persons selling milk or cream within the city limits to furnish satisfactory evidence that the cows from which said milk and cream are furnished are free from tuberculosis and other diseases. I hope the time is not far distant when every city will adopt similar methods.

For the benefit of the reader we ask you to read the following able article, written by Dr. W. B. Niles, Experiment Veterinarian of the Bureau of Animal Industry.

TUBERCULOSIS IN IOWA HERDS. IS IT ON THE INCREASE? WHAT SHOULD BE DONE TO PREVENT IT?

Having had an active part in the early investigations of tuberculosis in cattle in this State by the Experiment Station, the writer has noted with much interest all that has since been done toward freeing our herds from the dread disease. The work started by the station has been supplemented by good work on the part of the State veterinary service, by the co-operation of the State veterinary profession and the owners of many herds, by leading editorials from time to time in some of the agricultural papers, etc., but still the progress made toward lessening the number of cases occurring in cattle and hogs cannot be considered satisfactory. During the past year we have heard so little about the trouble that one not familiar with the subject might think that the disease has ceased to be an important factor in the live stock industry. Unfortunately, however, such is not the case. A glance at the meat inspection record at the large and small packing houses shows that tuberculosis of swine, at least, is on the increase. As the disease in the hog is usually contracted by feeding infected milk or the carcasses of cattle that have died from the effects of the disease, it is reasonable to suppose that the trouble is also on the increase in the cattle.

The number of cattle and hogs condemned at the abattoirs for being tuberculous is much greater than is commonly supposed and the aggregate loss is very great. The writer recalls having on one afternoon condemned seventeen large hogs for tuberculosis in one of the large packing houses. Very seldom did a day pass without the disease being detected in one or more animals. The swine raiser should not flatter himself with the thought that as the disease is only detected after the animal has been sold to the packer that he himself is not the loser for a certain per cent of loss is expected and the price gauged accordingly. If no diseased animals were sent to market this loss would not enter into consideration.

The investigations of the Experiment Station showed that the disease in this State prevails most extensively in the dairy herds and breeding herds. As a source of danger to the public health, the dairy is by far the most important, but as a disseminator of the disease among other herds, the breeding herd is

the most dangerous. In the early investigations referred to before, a number of instances were brought to light where the disease had been introduced into the herd by the purchase of a bull from an infected breeding herd. An examination of one farm herd containing a number of full blood shorthorn cattle recently purchased, showed that the diseased animals had been obtained from three different breeding herds. The appearance of the disease in our thoroughbred herds is by no means a thing of recent date. Long before the discovery of the tuberculin test the disease had become so prevalent in some herds that they had been closed out. The sale of infected animals from these herds did much to scatter the disease over the State. The opinion of the writer is that our herds of pure bred cattle have done more in the past toward spreading tuberculosis among Iowa cattle than all other factors combined. This may seem to be a pretty severe indictment but the evidence at hand fully warrants the statement.

While some of the infected herds were closed out and ceased to exist as a source of supply for breeding animals and others were freed from the disease by means of the tuberculin test, yet others still exist in which the disease has gained more or less of a foothold and from which the trouble is no doubt being carried, perhaps unbeknown by the owners, but nevertheless surely to other herds and farms. No herd, however, can become as prolific a source of disease as did some of the bad herds in the past, as the disease is better understood, more quickly recognized and the ailing animals are weeded out to a greater extent than formerly.

Were the disease a rapidly fatal one like anthrax or pleuro-pneumonia, or did it quickly spread through the herd like foot and mouth disease, active steps would long ago have been taken to stamp it out. Instead, however, it usually occurs in a chronic form, is insidious in its attack, and months or even years may elapse before serious symptoms are shown or death takes place. As the affected animal may for a long time appear well and pass any examination except the tuberculin test, it is easy to understand how in the past new centers of infection were started by the diseased breeding herds. For example, the breeder, after weeding out all animals showing any indication of disease, sold, as he supposed, healthy animals for breeding purposes. Instead of being entirely healthy, however, many of them had incipient tuberculosis which later developed and was communicated to the herd in which they were placed. The time between the purchase and the plain development of the disease in the purchased animal was often so long that the source of trouble was not suspected. It is in this way that the disease has been carried from one herd to another and any one who started a new herd and obtained the foundation stock from several sources was very liable to secure one or more tuberculous cattle in the lot which later infected others in the stock.

Could all breeding herds be freed from tuberculosis and kept so, it would go far toward solving the tuberculosis question. That this can be done there is no longer any room for doubt. The results obtained by means of the tuberculin test in the hands of veterinarians and stock-men show unquestionably that the diseased herd *can be freed from disease and kept so if the owner so desires and will observe the necessary care.* That our herds of full-blooded cattle have not been freed from disease is largely due to the opposition of those who, for various reasons, have all along refused to consider

the disease a serious one or to recognize the necessity for or the value of the tuberculin test as an aid in detecting the disease in its early stages. Private interests often conflict with what is for the public good, but aside from any relation which the question may have with the public health, and considering it from an economical standpoint alone, for the benefit of both the breeder and cattle-buying public, the herd should be freed from tuberculosis. It is certainly not true economy to breed tuberculosis in the herd and thus take the risk of an occasional loss of an animal and of infecting the swine on the farm, to say nothing of the danger to attendants. That the man who desires to buy full-blooded cattle should be able to buy them free from the disease in question no one will deny, but at present few breeders will warrant their cattle to pass the tuberculin test, and to my knowledge not a single breeder advertises cattle free from the disease. Consequently the one desiring to start a thoroughbred herd of cattle knows not where to buy and is finally forced to take the risk and buy without knowing whether he is getting tuberculosis along with his animal or not. In this respect the one who buys abroad now has the advantage as all purchases are tested with tuberculin by a Government inspector before being shipped to the United States. In this connection it should be noted that many cattle are rejected and that some of the most noted herds in Great Britain have been found tuberculous. If there is any well-founded reason why the breeder should not free his herd from disease and advertise to sell only healthy cattle, the writer has never found it mentioned. With the aid of the tuberculin test and the services of a competent veterinarian, I repeat there is no question but what a perfectly healthy herd can be secured.

In freeing a tuberculous herd from the disease one of the important questions to consider is the disposition of the reacting animals, that is those shown by the test to have the disease in its various stages. If the reacting cattle are badly diseased they should be at once destroyed. The destruction of all the reacting animals offers the quickest and least troublesome way of eradicating the disease. If this be followed by a thorough disinfection of the premises, the most badly diseased herd can be freed from the pestilence. In case the diseased cattle are only slightly affected they may be sold subject to inspection and something realized from them. In case the reacting animals are of great value as breeding animals, what is known as the "Bang Method" has been recommended. This is a troublesome but comparatively inexpensive method of freeing the herd from disease. While it has been successfully employed in Denmark and put into practice by a noted Canadian breeder, it is practicable only where the utmost care is observed and all the details most diligently carried out as long as an infected animal remains on the place. In the application of this method, the various steps should be made under the directions of a skilled veterinarian.

The fact must not be lost sight of, that the most important thing is to free the herd from the disease. The disposition of the diseased animals is of secondary importance. They must in some way be gotten rid of and the more quickly the healthy part of the herd can be freed from all danger of infection by them, the sooner will the disease be eradicated.

Once freed from the disease the herd is in little danger of becoming reinfected unless diseased animals are introduced. The argument sometimes advanced that it would be useless to eradicate the disease because the herd

would become infected from tuberculous people has little weight, for in the first place it is not necessary for a herd to be cared for by a tuberculous person, and second, while the disease in man can be communicated to cattle, many experiments have shown that human tuberculosis is not the common source of the disease in cattle.

No breeder should be led to believe that the herd can be so kept that the disease will not spread if once introduced, for such is not the case. No matter how good the ventilation, and how well fed, etc., once the disease is introduced it will spread and in time involve a considerable percent of cattle exposed. The investigations of the writer on behalf of the station showed that the disease would spread when introduced, even in herds where the cattle were never stabled. Of course stabling in poorly ventilated barns is an important factor, but it is by no means an essential one. The only way to keep the herd free is to prevent the introduction of the germs of the disease as in hog cholera, glanders and other contagious diseases. This is the *essential* thing, but one often overlooked in dealing with all contagious affections.

The editor of *Wallaces' Farmer* once said in an article entitled, "A Practical Way to Get Rid of Tuberculosis," "if we had a herd of cattle in which we suspected there were tuberculous animals, we would employ the best veterinarian we knew and have him test the herd." The writer will go the well-known editor "one better" and say that if he had a herd of cattle gotten together from various sources we *would suspect* that it contained one or more cases of the disease and would test it with tuberculin, and if the disease was found present, would at once take steps to eradicate it.

We believe with the editor of the article referred to, that the breeders have much to gain and nothing to lose by establishing the fact that they are breeding cattle only and not cattle and tuberculosis combined. It is to be hoped that in the near future that at least the most progressive owners of our thoroughbred herds will follow the example so well set by Senator Edwards of Canada and a few others and free their herds from the disease.

W. B. NILES.

FEDERAL MEAT INSPECTION.

For the benefit of those unfamiliar with the methods of federal meat inspection, we publish a very interesting article written by Dr. J. W. Griffith, Assistant State Veterinarian of Cedar Rapids, Iowa.

FEDERAL MEAT INSPECTION.

Federal meat inspection as conducted at the present time has been made possible by an enactment of congress, approved March 3, 1891, entitled, "An act to provide for the inspection of live cattle, hogs and the carcasses and products thereof, which are the subject of interstate commerce and for other purposes, and the various amendments thereto," which have since been approved by the President.

For fear of being misunderstood, let us say that the inspection of horse flesh is carried on in separate abattoirs and the products are in no way connected with the animal products usually used for food in this country, but it is intended to facilitate the exportation of these products to countries using them. No statistics to my knowledge are available on this point. The examination of live horses for exportation has also been provided for the same as cattle. The above enactments provide that the Secretary of the Department of Agriculture shall have authority to make rules and regulations and appoint officers to carry out the provisions of the law as was natural. This work has been assigned to one of the two large bureaus of this department, namely, the Bureau of Animal Industry.

This bureau had its origin in the enactment of congress approved May 29, 1884, over fifteen years ago, entitled, "An act for the establishment of a Bureau of Animal Industry to prevent the exportation of diseased cattle and to provide means for the suppression or extermination of pleuropneumonia and other contagious diseases among domestic animals." Please note the language, "To prevent the exportation," etc.

The above act was conferred upon the then Commissioner of Agriculture (for such was his title at that time), its chief not as yet being a member of the President's Cabinet.

The immediate cause of the Bureau of Animal Industry was the urgent need by the Federal Government of official information concerning the nature and prevalence of animal diseases, and the means required to control and eradicate them, and also the necessity of having an executive agency to put into effect the measures necessary to stop the spread of the disease, and to prevent the importation of contagion into the country as well as to conduct the original investigation through which further knowledge might be obtained. Our export cattle and sheep had then recently been refused admission to Great Britain, and condemned to slaughter on the dock where landed, because of alleged contagious diseases in this country dangerous to live stock. Our pork had been prohibited entrance into most of the continental countries of Europe, because it was alleged to be affected with trichinæ and therefore dangerous to the lives and health of the consumer. Hog cholera was raging more or less all over this country, and it was an open secret that many diseased animals were being slaughtered and much diseased meat was being sold, not only in this country but in our foreign markets as well, where a more or less rigid system of inspection for their home products was being enforced.

Laws and systems of inspections were in operation in some countries a good many years before meat inspection was thought of in this country, but it is also a fact that widespread animal plagues were in existence there long before they were here, and some of those plagues we American veterinarians know nothing about, except from literature on the subject, they never having obtained a foothold in this country and are not likely to now that we have quite an effective quarantine system in force.

In the latter 80's the demand of foreign governments began to take form in the exclusion of our animals and animal products from their shores, and our exporters were having no end of trouble by the restrictions placed upon the trade by these demands.

The rules of inspection are: "All animals found on either ante-mortem or post-mortem examination to be affected as follows are to be condemned

and the carcasses thereof treated as indicated in section 7: hog cholera, swine plague, charbon or anthrax, rabies, malignant epizootic, catarrh, pyaemia, and septicaemia, mange or scab in advanced stages, advanced stages of actinomycosis or lumpy jaw, inflammation of the lungs, the intestines of the peritoneum, Texas fever, extensive or generalized tuberculosis; animals in an advanced stage of pregnancy or which have recently given birth to young; any disease or injury causing elevation of temperature or affecting the system of the animal to a degree which would make the flesh unfit for human food; any organ or part of a carcass which is badly bruised or affected by tuberculosis, actinomycosis, cancer, abscess, suppurating sore, or tapeworm cysts must be condemned; animals too young and immature to produce wholesome meat; animals too emaciated and anæmic to produce wholesome meat; distemper, glanders, and farcy and other malignant disorders, acute inflammatory lameness and extensive fistula."

Total numbers of post-mortem inspections for fiscal year ending June 30, 1898, 31,116,833. Out of this number 59,336 were condemned. The following countries require microscopical examination of pork for trichinæ: Germany, France, Denmark and Austria. There were 2,227,740 hog carcasses microscopically examined last fiscal year; 41,597, or 1.87 per cent, contained living trichinæ, class C, and 25,913, or a little over one per cent, were thrown out for having suspicious traces of trichinæ cysts, or trichinæ-like bodies, class B. The exports of this pork to the above named countries requiring this inspection was 108,928,195 pounds. The benefits to our stock-raisers derived from this branch of the inspection is wholly indirect, as not a pound of this meat is stamped or certified to as such, except what goes direct to those countries demanding such inspection. The cost of this inspection per head last season, exclusive of microscopic inspection, based on the number of ante-mortem inspections was eighty-eight one hundredths of a cent. This covers the cost of the ante-mortem inspection and the million packages of meat and branding or tagging over twenty-five million quarters, carcasses or parts of carcasses of meat; the issuing of some forty thousand export certificates and other incidentals. The cost of the microscopic inspections was 8.9 cents per carcass, or a little less than one fifth of a cent per pound of the product exported to countries requiring this inspection.

This work along with the inspection of animals for export, the supervision of the movement of southern cattle, and the inspection of animals imported, has been done to prevent the spread of disease among the animals in the United States, to protect consumers from diseased meats, to secure the arrival of our animals and animal products in foreign countries in good condition, and to maintain the reputation of these products at home and abroad.

And while this bureau is operated at a cost of some three quarters of a million dollars per year, it saves at a conservative estimate, many times its cost in the prevention and spread of disease among animals, besides giving the consumer a chance to be reasonably sure of eating healthy meat, and while it does at times entail considerable pecuniary loss upon the unfortunate owners of diseased animals which could otherwise be marketed, they along with the other producers share in the profits which come from an increased consumption and larger market for these products on account of the elimination of those detrimental to public health. J. W. GRIFFITH.

VERMINOUS BRONCHITIS.

Our attention has been called to "Verminous Bronchitis," which has existed in many communities, especially the southern portion of the State. Feeling that this malady warrants a more specific description, an article by Dr. J. J. Repp, professor at the Experiment Station, Ames, Iowa, will prove interesting and beneficial to our readers.

LUNG WORM DISEASE—VERMINOUS BRONCHITIS—VERMINOUS PNEUMONIA—VERMINOUS BRONCHO-PNEUMONIA.

Of the various names applied to this affection the term broncho-pneumonia is the best, for the process consists in an inflammation of both the lung substance and the bronchi, or tubes, which convey the air to the lungs. It is as the name indicates, due to worms which invade the air passages.

ANIMALS AFFECTED.

Of the domestic animals which are subject to this trouble may be mentioned cattle, sheep, goats, swine, cats and very rarely horses. It should be borne in mind that it is usually the young animals that are afflicted with this disease. While it affects the young of various species there is seldom any manifestation of the presence of worms in the adult members of the species, these latter apparently being able to resist the encroachments of the worms while the former are unable to ward off the attacks of the parasites.

CAUSE OF THE DISEASE.

Verminous broncho-pneumonia is caused, as the name indicates, by worms which get into the air tubes and the lungs. These are of the class known as thread worms and are, as a rule, about as thick as pack thread and from two to four inches long, although one common variety in sheep is only three fourths of an inch to one and a half inches long. These worms are smooth and white as viewed by the unaided eye. There are five varieties of worms which infest the air passages of domestic animals commonly in Iowa. These may be classified as follows:

1. For Cattle:
 - (a) *Strongylus micurus*.
 - (b) *Strongylus pulmonaris*.
2. For Sheep and Goats:
 - (a) *Strongylus filaria*.
 - (b) *Strongylus rufescens*.
3. For Swine:
 - (a) *Strongylus paradoxus*.

The other lung worms and the other domestic animals may be left out of consideration so far as Iowa is concerned.

In a herd of animals in which the disease has once obtained a foothold it is quite probable that the worms may spread from one animal to another through the young worms or eggs being coughed up by an affected animal and swallowed with the food or drink or inspired in the air by a healthy animal. It is known that the eggs and young worms, when expelled by an affected animal, find lodgment in the water ponds or upon moist vegetation and live there for a long time. Later if these eggs or young worms are taken into the healthy animal in the food or drink, this animal will become infected with the disease. It is likely that most animals are infected in this way. It is well known that wet, rainy seasons are favorable to the development of the disease. During the wet summers of 1902 and 1903 the disease was extremely prevalent. This is doubtless due to the fact that in such a season almost every acre of ground affords some spot sufficiently wet to furnish a good harboring place for the eggs and young worms. It is not improbable that every year a few animals in a herd of cattle, sheep or swine are affected with lungworm disease, but that the disease does not spread because the lack of excessive moisture is not favorable to the propagation of the young worms, and as a consequence the conditions for transmission of the disease are not good. When a wet season comes and conditions of transmission are good the disease becomes very prevalent.

PREVALENCE AND ECONOMIC IMPORTANCE.

During the last two years, beginning with the very wet and rainy summer of 1902, lungworm diseases have been very common in Iowa, especially amongst calves and pigs. That attention has not been called to the trouble more in sheep and goats may be due chiefly to the comparatively small numbers of these animals in this State.

The loss sustained by farmers on account of these worms has been very great, certainly hundreds of thousands of dollars. Not so frequently has the loss been due to the death of the animal, for the death rate in an affected herd is not very great, but has been due rather to the interference with the growth and thrift of the animal which rendered it unprofitable for feeding purposes. It is not uncommon to find a calf from six to ten months old a victim of this disease but little larger than a good thrifty four-weeks-old calf. At times the disease is extremely prevalent in a given community. I have known several hundreds of calves to be affected within a radius of a few miles.

Symptoms. The symptoms in all the various species of animals are in a general way the same, so, for the purpose of this article, it is not necessary to describe them separately.

The first thing noticed, perhaps, is a general appearance of unthriftiness, although the appetite is not diminished. It is rather increased if there is any change. Cough is an early symptom and is present throughout the disease, growing worse and worse as the condition advances in severity. In the latter stages the cough is extremely violent and comes on in spasms. The animal sometimes becomes almost suffocated and often falls to the ground in one of these fits of coughing. The breathing is at all times difficult, the animal breathing rapidly and with a considerable noise, but it is especially so when aggravated by a fit of coughing. In one of these coughing spells the animal stands with its nose extended, its legs spread out, its

mouth open, tongue protruded and saliva running from the corners of the mouth. The eyes bulge and the mucus membranes are bluish in color.

It should be mentioned that lungworm disease is at its worst during the last half of the year. The infestations by the worms occur during the latter part of the spring and beginning of summer. By early autumn the disease is well advanced and, as a rule, by the opening of the new year the affected animals have either died or are on the road to recovery.

CHANGES IN TISSUES.

Only a few words on this point will be needed here. The carcass will be found much emaciated, the coat or wool will be rough and tangled. On opening the chest the lungs will be found to show irregular, fleshlike, solid areas, and on cutting open the windpipe and air tubes, worms will be seen; often in amazing numbers. In one calf I have obtained a double handful of worms, they being so numerous as to almost completely block up the passages. In some cases, especially the sheep, although the worms may be in very large numbers, they will be in the smaller tubes and in the lung tissues, and thus will be found with greater difficulty. The other organs and tissues will not show any changes appreciable to the ordinary observer.

Prevention. What has been said as to the cause indicates what is to be done in preventing the disease. Especially in wet seasons the young animals should be kept as much as possible upon high, well-drained ground. It is very bad to give them access to low, wet ground or ponds. They should be given good, clean food, and above all, should have pure well or spring water to drink from tanks or troughs which are clean. If any animals become affected they should be separated from the healthy ones.

The vitality of the animals should be kept up by the best of food and care. It is usually debilitated animals that fall easy victims to the disease.

Treatment. This is difficult at best and not very promising. It should be emphasized that prevention is the important thing. In the first place when animals are found to be affected they should be put in new quarters where they are not likely to receive further infestation by worms. They should receive the most nutritious food and water and should be well sheltered against inclement weather. All this is done to keep up the vitality and thus enable the animals to successfully combat the devitalizing influence of the worms.

As to medicinal treatment there is considerable difference of opinion. It may be well where practicable to administer to the animals with their food some tonic powder which can be prescribed by a veterinarian. Such drugs as iron, arsenic, nux vomica and gentian are indicated. It is probably useless to give any medicine by the mouth with the hope of directly influencing the worms in the lungs. For this purpose injections are often made into the windpipe or inhalations of medicated vapors are given. Good results are reported by some veterinarians from the injection into the windpipe of the following mixture:

Oil of turpentine.....	2 drams.
Carbolic acid.....	10 minims.
Chloroform.....	½ dram.
or	
Carbolic acid.....	10 minims.
Chloroform.....	½ dram.
Olive oil.....	1 dram.

This treatment should be given only under the direction of a veterinarian. It is scarcely applicable to swine though it might be used even in them. The formulæ given above contain an average dose but it must be regulated according to circumstances.

For inhalations the substance in most common use is sulphur. The animals should be placed in a closed building and a dish of burning sulphur placed with them. The inhalation should not be allowed to go on so long as to produce a bad effect. It may be repeated daily until the proper effect is produced.

JOHN J. REPP, V. M. D.

ADYNAMIC CATARRHAL FEVER.

Our department has discovered this disease in different forms in various parts of the State, depending largely on its accessory causes.

It sometimes assumes a complicated form, which oftentimes accounts for its differential diagnosis and results.

The following paper by Dr. D. U. Shipley, Assistant State Veterinarian, explains a very interesting case.

CATARRHAL FEVER.

On July 24, 1902, I responded to a State call forwarded by Dr. Koto and proceeded at once to Ocheyedan, Osceola county, Iowa, and visited the farm of Mr. Timmons, some two miles northwest of Ocheyedan, whose horses were said to be affected with anthrax, this diagnosis having been given a day previous by a veterinarian from Minnesota. Upon arrival I found eight head of horses on the premises, six of which presented the following symptoms: temperature ranging from 104 to 106 F., great nervous prostration, rapid, weak pulsation, accelerated respiration, edema of the extremities, loss of appetite. The temperature of the remaining two was slightly abnormal, apparently just coming down. Upon inspection of the premises I found sanitary conditions good, the water supply was from a deep well on a side hill, where contamination by surface drainage was impossible. Food consisted of good oats and new-made prairie hay. This hay was mostly upland and I was informed that the land upon which it was made had not been overflowed with the exception of a small slough and the

latter had not been mowed. Upon inquiry into the history of the case I learned that a horse had died upon the farm some six months previous, this case was attended by an empiric surgeon and I could not determine from the history Mr. Timmons could give, what might have been the cause of the death. No other ailment has affected these horses or any domestic animals on this farm until two or three days prior to our visit. While the symptoms presented were some of those of anthrax of the horse, they were also the symptoms of influenza or catarrhal fever and from the further fact that anthrax of the horse rarely occurs except in localities where it exists in an ezootic form and besides where the ox and all domestic animals may become infected. I rather doubted this outbreak being anthrax but owing to the similarity of symptoms and the positive diagnosis of a veterinarian the day previous, I concluded best to establish a quarantine and await developments. Meanwhile I prescribed treatment.

On August 1st, seven days later, I received a letter from Mr. Timmons, stating that the horses were all getting well and requesting a removal of the quarantine. Upon the following day I again visited the premises and found all of the cases well on the road to complete recovery, so removed the quarantine and left Mr. Timmons a happy man.

The fact that all these cases recovered proved they were not affected with anthrax, as the latter disease is usually fatal, with few exceptions. We therefore concluded it was influenza, and accounted for the severity of these cases from the fact that they were all work horses and had worked when coming down with the disease. Influenza had been more or less present in some form in this section of the State for the last two years. No disease yields more readily to proper treatment, and no disease is more fatal if neglected, or the affected animal exposed or improperly treated.

L. U. SHIPLEY.

FOOT AND MOUTH DISEASE.

Iowa and its adjoining states have so far escaped this worst of all calamities to the cattle interest, and it is to be hoped that it will escape for all time to come.

During the early winter of 1902 a severe outbreak of this disease appeared in the United States, but it was confined principally to the New England states. It spread rapidly for a time and but for the determined efforts of Hon. James Wilson, Secretary of Agriculture, and Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, would have continued its onward march to the Western states. The vigorous policy of this work was under the direct supervision of Doctor Salmon and his able assistants. With unlimited means, the work of eradication was pushed to completion.

During this period the public was in a state of general alarm and several times I received word of a supposed outbreak of this disease in different parts of the State. For fear of arousing any suspicion or alarm and injury to the cattle industry of the State, I made a very prompt and quiet visit to the location and upon examination found it to be a mistaken diagnosis. In some instances ulcerative stomatitis and ergotism were found, which symptoms resemble foot and mouth disease.

For a more complete and better understanding of the disease and the methods adopted by the Bureau of Animal Industry in eradicating this disease, the following article, written by Dr. G. A. Johnson, inspector of Bureau of Animal Industry, Sioux City, Iowa, will be interesting and instructive, the doctor being called to assist in the work and spent several months in the New England States and so speaks from experience.

APHTHOUS FEVER, OR FOOT AND MOUTH DISEASE.

By this term is meant a contagious disease of domestic, farm animals, especially cloven-footed animals, as cattle, sheep, goats and swine, and in wild animals such as deer, antelope, buffalo, giraffe, camels, etc. It is also sometimes seen in the horse, dog, cat and chickens, and more frequently in man.

This disease is supposed to have originated in Western Asia or South-eastern Europe, and has been known for many years in most European countries under various names as apthous disease, vesicular disease, mouth rot, mouth disease, malignant disease of the hoof, foot rot, etc.

It is now known in Germany as klauenseuche, in France as *fièvre aphteuse* and in Italy as *afra epizootica*, while in England and America it is known as apthous fever, epizootic, apthia and foot and mouth disease. It is one of the most contagious diseases that affects the lower animals, that is, it is one of the diseases most easily carried from one animal to another and from one place to another. It spreads very rapidly and easily. It may spread by a susceptible animal, one that will contract the disease by coming in contact with a diseased one, or by being stabled in a barn where diseased animals have recently been kept, or drinking or feeding out of the same trough, dishes, etc., that have been used by diseased animals, or by coming in contact with the excretions of diseased animals, and instances are on record where healthy animals have contracted the disease while passing on a road upon which animals affected with the disease had been driven some little time before. The disease is frequently carried from one place to another by people and the smaller animals, such as dogs, cats, rats, fowls, and in fact any animal going from an infected place may carry the disease to healthy animals. Railroad cars and public stock yards are very fruitful sources for spreading the disease in this country. The disease is readily conveyed from one species to another as from cattle to sheep or swine, and vice versa. It is sometimes transmitted to mankind, especially children, by

the use of milk from the diseased cows, or by getting some of the virus into wounds.

The death rate of the disease is usually quite low, ordinarily running from one to five out of every hundred affected, but in some violent outbreaks it may run up to 20 and 50 per cent in adults, and from 50 to 80 per cent in sucklings. The death rate usually represents but a small part of the actual loss caused by the disease. In the countries of continental Europe where the disease is most prevalent, it is reported to cause more actual loss than any other of the animal plagues. This loss is composed of factors among which may be mentioned loss by death; loss of milk; loss in milch cows, in that part or all of the udder is frequently destroyed; the excessive loss of flesh; this is very material, owing to extensive range of animals affected; and last but not least, of the expense and inconvenience of keeping the animals quarantined during their sickness, and the final disinfection of the premises.

PERIOD OF INCUBATION.

This is the time after which an animal has been exposed and before it presents any symptoms of a disease. This varies from three to fifteen days, but the average time is from three to five days for natural infection and from twenty-four to seventy-two hours when inoculated.

Symptoms. The early stage of this disease is manifested by more or less fever which usually disappears when the vesicular stage begins, then the loss of appetite, decrease in the flow of milk, followed by the formation of vesicles, blisters in the mouth, then on the udder and teats in females, and also in the interdigital spaces,—the soft tissues between the hoofs. This order of the appearance of the lesions may vary in different animals, or in some it may be entirely lacking, but this was the most common course and manifestations observed in this country during the outbreak of 1902 and 1903.

The vesicles usually contain a clear or slightly reddish yellow colored serum fluid, but in some cases the vesicles on the udder may contain a thin yellowish pus. After a short time these vesicles rupture and the mucus membrane in the mouth, or the skin, udder and hoof will peel off leaving a denuded, raw surface, which is very painful. When the animal is thrifty and the surroundings are good, the tendency is for these wounds to heal rapidly. The sores in the mouth usually cause more or less slivering, those of the udder and teats more or less pain and difficulty in milking, while those of the feet cause more or less lameness. Usually the first symptoms that would attract the attention of the ordinary farmer would be slivering, loss of appetite or other difficulty in eating, yet lameness may be the first indication in some cases. When slivering is present an examination of the mouth will reveal more or less denuded patches on the tongue, roof of the mouth, cheeks and gums, especially the dental pad, that portion of the upper jaw that comes in contact with the front teeth when the mouth is closed, and sometimes the lips will be affected.

In the early stages of the disease only vesicles may be seen as whitish, raised patches on the membrane. A little later may be seen vesicles just forming, ruptured vesicles and denuded surfaces, and still later denuded surfaces healing and scars of those already healed. The mouth lesions are usually accompanied by a sucking or smacking sound made with the lips.

In the early stages of the lameness the animal may hold the foot up and shake or kick it. At this time an examination of the foot will disclose more or less heat and pain, with a small amount of swelling in the interdigital space. As the disease progresses vesicles are formed that soon rupture erosions, raw surfaces that heal somewhat slowly because of the filth surrounding the foot.

When the feet are badly affected the animal will usually lay down more or less. When the udder is affected the vesicles usually form rapidly and cover considerable of the surface of the organ and the teats. The vesicles soon break and the loose skin peels off, leaving extensive erosions that are quite painful and materially interfere with milking. In severe and neglected cases vesicles may form on the membrane lining of the milk ducts in the udder and teats, producing an inflammation that frequently results in abscesses of the udder and destroys part or the whole of this organ, and sometimes produces blood poison in the animal.

In rare cases vesicles may form on other parts of the body, as the abdomen and chest. Sometimes the lesions may extend down to the throat and produce pharyngitis, inflammation of the throat, in which case there may be more or less tenderness of the parts, accompanied with some cough. Or it may extend farther down and involve the trachea and lungs, resulting in pneumonia, or to the intestines resulting in enteritis, inflammation of the intestines. This form is more frequently seen in young animals that are fed on the milk of diseased animals. Both the pneumonic and enteritic forms are usually fatal. When the mouth lesions are extensive, slivering is very profuse and usually accompanied by a profuse discharge of a light-colored, slimy mucus from the nostrils. In these cases, especially during the latter stages the breath, and discharges from the mouth are very fetid. This form is often called mouth rot. When the feet are extensively diseased or neglected the hoofs and even the bones of the toes may slough off, thus leaving the animal crippled. This form is often termed foot rot.

In a large majority of cases the lesions are not so extensive, frequently being confined to the mouth and feet and in such cases the animal usually recovers in about two weeks. Yet there is always a possibility of severe cases developing, especially in neglected cases. Damp, poorly ventilated stables, wet yards, poor feed and lack of care always tend to aggravate the disease, while dry, well ventilated barns, dry lots and good food and care always tend to lessen the severity of the disease. In sheep, goats and swine the malady is largely confined to the lesions of the feet.

In aphthous fever there is little tendency towards the formation of pus in the lesions except in the feet where it is due to a secondary infection, and in the udder where abscesses are formed.

DIFFERENTIAL DIAGNOSIS.

There are several infections that on superficial examination present more or less the symptoms of aphthous fever; among these may be mentioned burns in the mouth due to some escharotic food or drugs, as when blistering or mercurial applications have been used and the animal has been allowed to lick the parts and lesions may form in the mouth that resemble the mouth lesion of aphthous fever, but in such instances the history of the cases and

the absence of udder and foot lesions will usually serve to distinguish the disease; again, such conditions have no disposition to spread.

Ordinary foot rot or hoof ail, an infection that is usually due to lack of care of the feet, injuries and the filthy conditions in which the animals are kept, might sometimes be mistaken for aphthous fever for in this disease the animals are quite liable to lick their sore feet and the ichorous discharge of the feet often produces sores in the mouth that somewhat resemble the mouth lesions of aphthous fever, but the history of the outbreak, the conditions under which the animals are kept, failure of the disease to spread to other species, or to animals of the same species that are cleanly kept, the absence of udder lesions and of mouth lesions in those cases kept so that they cannot lick their feet, serve to differentiate the disease.

When the cattle that have been stabled are first turned out to graze in the spring, when grass is short and scarce, especially in brush pastures, they very frequently injure the mucus membrane so that the mouth will present lesions quite similar to those of mild aphthous fever. The history of the cases, the absence of foot and udder lesions, and the inability of the conditions to spread to other animals should serve to distinguish the cases.

Ulcerative stomatitis, a disease that affects nearly, if not all domestic animals, caused by some derangement of the digestive system, usually as a result of poor and improper feeding, presents a condition in the mouth that somewhat resembles the mouth lesions of aphthous fever, although a greater or less number of animals that are kept under the same conditions are likely to be affected. The disease has no tendency to spread to animals kept under more favorable conditions. Again the udder and foot lesions are usually absent in this disease. These facts should be sufficient to differentiate the two diseases.

Another disease that has been quite prevalent in this country, especially in sections of Iowa and Illinois, that clinically presents many of the symptoms of and has often been diagnosed aphthous fever is some form of mycotic stomatitis, caused by the animal eating food that is contaminated with some fungi or mould. In this disease there is more or less soreness of the mouth and feet, but the vesicular stage is usually lacking or not pronounced, especially on the udder and feet. Again the disease is usually confined to cattle and does not spread to other species of animals, nor to cattle that are kept under different conditions. These facts should serve to distinguish it from aphthous fever. While upon a superficial examination the symptoms of the above disease may often present a close similarity to those of aphthous fever, a minute examination will usually demonstrate that the lesions differ more or less in the following points: In aphthous fever the lesions are usually very superficial, extending only through the mucus membrane or skin, which is sloughed away leaving a denuded surface that tends to heal rapidly without the formation of much pus, except in the feet, while the lesions of the above disease are more prone to extend through the membrane or skin and down into the deeper tissues and are accompanied with the formation of considerable pus. Again as mentioned above, the udder lesions usually well marked in aphthous fever are seldom present in the other disorders. And finally the very active contagion of aphthous fever among all cloven-footed animals whether they are kept under similar or different conditions is the same, while the other diseases are usually confined to animals of the same specie that are

kept under similar conditions and rarely extend to animals kept under different conditions or to other species.

The contagious nature of aphthous fever can usually be demonstrated by collecting some of the saliva of diseased animals on the hand or a cloth and rubbing it upon the gums or feet of a healthy animal. If the disease is aphthous fever, the animal thus inoculated should show symptoms of the disease in from twenty-four to seventy-two hours. Another practical way would be to place a pig or sheep beside a diseased cow or vice versa.

Treatment: The treatment of aphthous fever should always be directed towards preventing its spreading. In those countries where the disease is native or prevalent and extends over an extensive territory with a large number of animals affected, it may be advisable to attempt to treat the animals and endeavor to cure as many and as rapidly as possible. But in a country where the disease is foreign, as in the United States, and has not secured an extensive footing, it is not advisable to treat the disease with a view of trying to save the diseased or exposed animals, because it is almost an impossibility to prevent the spread of this disease while affected animals are kept alive. In order to prevent the disease from being carried to other places all diseased and exposed animals on the place must be closely confined, and all fowls, dogs, cats, rats, etc., in fact all animals must be kept away from the infected premises. People must also be kept away, and the attendants must not be allowed to leave the place without first having thoroughly disinfected their clothing and person. Susceptible animals coming in contact with a piece of paper blown from an infected farm near by might contract the disease. The carcasses of dead animals must be buried deep in lime or burned, then after all the animals on the place have had the disease the buildings and surroundings must be thoroughly disinfected. The remaining hay and fodder, etc., must be destroyed and the manure thoroughly disinfected. In fact all substances that could harbor the germs must be disinfected or destroyed by fire. This is absolutely necessary to success, even when no new animals are allowed about the place for a number of months, because one attack of this disease does not immune the animals against a second attack, consequently animals that have recovered from one attack are liable to contract the disease again if they are kept in premises that are not disinfected after each outbreak. And after all these precautions have been rigidly carried out there is no positive assurance that the disease has been stamped out, for it is held by good authorities that the disease may break out again in the form of a relapse in animals that have apparently recovered. Hence it must be plain to all how difficult it is to prevent the spreading of this disease when the diseased animals are allowed to live and be treated. Again it is a question if ordinary animals would be worth enough to pay for the extra expense necessary to treat them and maintain a strict quarantine, to say nothing about the danger of the disease spreading.

APHTHOUS FEVER IN THE UNITED STATES.

It has been reported that this disease has been introduced into this country on several occasions but it may be questioned if these early outbreaks were really aphthous fever. At least none of these became sufficiently extensive to attract much attention or to cause any special interference with the stock industry until the outbreak that occurred in the late fall

or early winter of 1902. At this time it was discovered that genuine apthous fever existed in eastern Massachusetts and Rhode Island and later it extended to southern New Hampshire and the southeastern corner of Vermont. Just how and when this disease was introduced into this country that resulted in this outbreak has not yet been fully determined. It was spread quite largely by diseased animals infecting the Brighton stock yards and the sale of a couple of infected herds at public auction. As soon as it was fully demonstrated that the outbreak was apthous fever, active measures were taken by the Hon. James Wilson, Secretary of Agriculture, through the Bureau of Animal Industry, with the co-operation of the State authorities to stamp out the disease. The work was under the direct supervision of Dr. D. E. Salmon, chief of the bureau, and his able assistant, Dr. S. E. Bennett, who was then in charge of the bureau work at Boston. The plan that was formulated and successfully carried out was to close the port of Boston for exporting or importing animals, also to close all stock yards in the infected states, and stop transporting stock into, out of or through the infected states, except that stock could be shipped to abattoirs having government inspection for immediate slaughter, and further to destroy all infected herds and thoroughly disinfect the premises. The federal government agreed to pay 70 per cent of the appraised value of all stock destroyed and full value for the other property destroyed in disinfecting the premises. The stock was to be appraised at its actual value when healthy. This work was carried on by a corps of faithful, conscientious employes of the bureau. So thoroughly was the work done that in no instance was the disease carried from infected premises to healthy animals, nor did any healthy animal contract the disease by being placed in the barns that had been disinfected after the diseased animals had been destroyed, and the outbreak was virtually stamped out by May 15, 1903. No new diseases were heard of from that time until the latter part of August, 1903, when a suspicious case was reported in the town of Wakefield, Mass., which upon investigation proved to be apthous fever. It was demonstrated that this outbreak was the result of some experimental work and that it had no connection whatever with the outbreak that occurred earlier in the season. Had it not been that quite a force of men were still being held at Boston to investigate suspicious cases and that the outbreak was reported as soon as suspicious symptoms developed, the disease might have spread from this center and caused more or less loss. But under the circumstances it was confined to the one herd. The bureau and especially Doctor Salmon were severely criticised for the methods adopted in dealing with the outbreak and many parties did all in their power to obstruct and retard the work. A great cry was raised because the animals in the infected herds that had not yet developed the disease were slaughtered with the diseased ones, yet the parties who made this cry did not comprehend the fact, or at least they would not admit it, that the disease would run through the herd and that cattle that were apparently healthy today might present symptoms of the disease tomorrow and so on through the entire herd. If the diseased ones were to be destroyed, why was it not better to kill the entire herd as soon as possible instead of stringing the work out for several days? Again, the place could not be disinfected while live animals remained to reinfect it, to say nothing about the danger of the disease spreading, hence it will be seen that this cry was wholly from an obstructionist point of view.

Taking into consideration the wider extent of the outbreak, the season of the year, the cold and snow and the many obstacles that had to be met with at every turn, Doctor Salmon and his worthy assistants may well feel proud of their good work and the country is to be congratulated upon having been freed from such a plague at so small a cost. While we can only surmise what the consequences would have been had the disease been carried to the stock raising regions of the country, we can be positive that the loss would have been appalling.

G. A. JOHNSON.

SWINE PLAGUE.

This disease is familiarly known as "hog cholera." During this period the disease has appeared in various parts of the State, but fortunately not to an alarming extent. Some sections of the State are today free from the disease, where a few years ago it raged with such violence that the production of pork almost ceased for a time.

The theory that it is of a spontaneous origin is, however, erroneous. There is sufficient evidence that it is due to a contagion. It comes from its own kind and produces its own kind. Its method of communication is not always obvious. The disease disappears for want of susceptible material to work upon.

Treatment along therapeutic lines is of little benefit, many of the so-called "hog cholera remedies" being valueless, a waste of money and a disappointment to the investor.

The serum therapy or immunizing treatment conducted by the different experimental stations is very satisfactory, and may result in much good.

I feel that this report would be incomplete without a few words from Dr. H. E. Talbot upon the workings of our new veterinary law. Doctor Talbot is assistant State Veterinarian and also Secretary of the Iowa State Veterinary Medical Examining Board.

THE VETERINARY LAW.

Time and space will not permit me to go into details regarding the workings of our new veterinary law, but a few words of explanation, regarding our progress since its passage and our aims for the future, may be of interest to the readers of this report.

The law was originally framed with a view to meeting all contingencies which might arise and yet the board has been confronted almost daily by conditions for which there was no precedent and which required our earnest and thoughtful consideration.

It has been our aim first, last and all the time to promote the general welfare of the veterinarians of the State and we are greatly encouraged by the hearty co-operation which we have received at their hands.

The veterinary profession of Iowa is now upon a basis which would have exceeded our fondest dreams of yesterday. We are daily receiving the general recognition and support which only the education of the public renders possible and I truly feel that the day is not far distant when the veterinary profession will be considered one of the most honorable for which our youth can be trained and that the inducements for honest effort will be such that the best intellect in the land may be enlisted in behalf of the dumb beast which suffers but complains not.

I may be considered optimistic when I predict this happy termination of the many evils which have surrounded us in the past, but the following lines from one who knew and appreciated our condition holds out scant hope for us in the spiritual world, so we would fain achieve success in this :

"THE VET."

When accounts on earth have been marked off the ledger
And we're all a-takin' chances in the sky;
When we're sort o'-blockin' up the golden stairway
'Til the angels have to crowd a-gettin' by;
I'll just bet Saint Peter'll come and tell us fellers
That he hasn't any vacant rooms to let,
That we'll have to turn aroun',
Take the elevator down,
And go live out in the stable with the "Vet".

BIENNIAL FINANCIAL STATEMENT

From June 30, 1901, to June 30, 1903.

Name.	Location.	No. Days.	Per Diem.	Expense.	Total.
H. E. Talbot	Des Moines	65	\$ 325.00	\$ 350.44	\$ 675.44
J. H. McLeod	Charles City	8	40.00	32.99	72.99
W. B. Niles	Sidney	9	45.00	24.55	69.55
J. R. Sanders	Corydon	10	50.00	36.01	86.01
F. J. Nelman	Marshalltown	6	30.00	18.08	48.08
S. H. Kingery	Oreston	10	60.00	22.36	72.36
H. C. Simpson	Denison	67	335.00	194.79	529.79
G. S. Kerr	Washington	1	5.00	2.00	7.00
D. H. Miller	Harlan	8	15.00	8.66	23.66
S. K. Hazlet	Oelwein	34	170.00	70.81	240.81
S. H. Johnston	Carroll	28	140.00	61.71	201.71
J. W. Griffith	Cedar Rapids	20	100.00	71.73	171.73
C. E. Stewart	Chariton	12	60.00	49.02	109.02
E. G. Piper	Ida Grove	8	15.00	8.44	23.44
Peter Malcom	New Hampton	7	35.00	18.73	53.73
Aug. James	Dysart	7	35.00	25.05	60.05
J. J. Repp	Ames	46	230.00	134.71	364.71
D. B. Baughman	Fort Dodge	13	65.00	57.51	122.51
W. L. Evers	Iowa Falls	21	105.00	53.74	158.74
J. D. Inger	Waverly	17	85.00	47.01	132.01
J. I. Gibson	Denison	285	1,425.00	1,178.23	2,603.23
G. A. Johnson	Sioux City	8	15.00	1.50	16.50
J. G. Parslow	Shenandoah	11	55.00	37.99	92.99
L. U. Shipley	Sheldon	14	70.00	40.19	110.19
J. E. Brown	Oskaloosa	13	65.00	42.77	107.77
W. H. Austin	Spirit Lake	9	45.00	44.75	89.75
J. W. Scott	Manchester	20	100.00	92.86	192.86
F. H. Edwards	Iowa City	4	20.00	11.35	31.35
H. T. Shipley	Sheldon	6	30.00	20.91	50.91
R. R. Hammond	LeMars	4	20.00	25.33	45.33
P. O. Koto	Forest City	323	1,640.00	1,768.36	3,408.36
Total		1,034	\$5,420.00	\$4,587.63	\$10,007.63

RULES AND REGULATIONS.

OFFICE OF THE IOWA STATE BOARD OF HEALTH,
DES MOINES, IOWA, January, 19, 1898.

Pursuant to authority vested by chapter 14, Title XII, of the Code, section 2530, the State veterinary surgeon by and with the approval of the State Board of Health and the Executive Council, does hereby make and establish the following rules and regulations for the prevention and restriction of contagious diseases among domestic animals:

RULE 1. All cattle brought within this State, from any county or parish within the United States where pleuro-pneumonia is known to exist, shall be subject to quarantine for a period of not less than sixty days.

RULE 2. No person owning or having the care or custody of any animal affected with glanders or farcy, or which there is reason to believe is affected with said disease, shall lead, drive, or permit such animal to go on or over any public grounds, uninclosed lands, street, road, public highway, lane, or alley; or permit it to drink at any public water trough, pail, or spring; or keep such diseased animal in any inclosure, in or from which such diseased animal may come in contact with, or close proximity to, any animal not affected with such disease.

RULE 3. Whenever notice is given to the trustees of a township, or to a local board of health, of animals suspected of being affected with glanders or farcy, said trustees shall immediately require such suspected animals to be isolated and kept separate and apart from all other animals until released by order of the State veterinary surgeon or some person acting by his authority.

RULE 4. An animal must be considered as "suspected" when it has stood in a stable with, or been in contact with, an animal known to have the glanders; or if placed in a stable, yard, or other inclosure where a glandered animal has been kept.

RULE 5. Whenever any animal affected with anthrax, glanders, or farcy shall die, or shall be killed, the body of such animal shall be immediately burned, or shall have kerosene poured over it and buried not less than four feet deep without removal of the hide or any part of the carcass.

(Reasons for Rule 5.—To prevent the possibility of a recurrence of these diseases from germs existing in the grave which, if not destroyed by some powerful agent, will retain their vitality for a number of years, so as to impart the disease. As they are communicable by inoculation to human beings, great precaution should be used in handling animals affected with this disease.)

RULE 6. No animal diseased with glanders or farcy shall be deemed to have any property value whatever, and no appraisal thereof will be made.

(Reason for Rule 6.—Glanders is an incurable disease, and there is no warrant for expending public money in appraising property manifestly worthless, and which can be compensated for only at "its actual value in its condition when condemned;" also to prevent the introduction of diseased animals into the State, and the inoculation of worthless ones for speculative purposes.)

RULE 7. Whenever the owner, or person having in charge any animal declared by the State veterinary surgeon or other authorized person to have the glanders, shall neglect or refuse to destroy said animal, the premises whereon such animal is kept shall be quarantined until such animal is destroyed and the premises thoroughly disinfected.

QUARANTINE.

RULE 8. The term "quarantine" shall be construed to mean the perfect isolation of all diseased or suspected animals from contact with healthy animals, as well as the exclusion of such healthy animals from the yards, stables, enclosures, or grounds wherever said suspected or diseased animals are, or have been kept.

RULE 9. 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.

RULE 10. 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-pen must be cleansed and disinfected under the supervision of the State veterinary surgeon before and during the fair.

RULE 11. 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 12. In suspected cases of bovine tuberculosis the tuberculin test shall be recognized as a valuable diagnostic.

DISINFECTION.

Among the most efficient and convenient agents for destroying disease germs are heat, solutions of creolin, carbolic acid, sulphate of iron, caustic soda, or sulphate of copper, fumes of chlorine, chloride of lime, slakedlime, lime water, whitewash, and kerosene oil.

Heat.—This is conveniently applied by means of boiling water or oil, and is especially recommended for disinfecting fabrics of all kinds, leather, or wood. Articles of iron or other metals may be purified by heating in a fire. All bedding, litter, excrement, etc., that have accumulated about animals affected with any form of contagious disease, and the carcasses, together with all blood or other fluid elements that have escaped from such carcasses and contaminated soil, should be burned, as surest means of eradicating disease.

Dirt or earth floors of stables, wherein animals affected with glanders or anthrax have been kept, should be removed to the depth of four inches and burned.

SOLUTIONS.

Creolin.—One to fifty or one hundred parts.

Carbolic acid.—Add one part of the acid to five or ten parts of water or oil.

Sulphate of iron, copper, and caustic soda.—Add as much of the substance to a given quantity of warm water as will be dissolved.

Whitewash.—For disinfecting interior walls of buildings, feed-boxes, mangers, yards, fences, etc., the application of a coating of whitewash prepared from lime in the ordinary way, so thoroughly done as to completely cover every part of the surface designed to be cleansed, is an economical method.

FUMIGANTS.

Chloride of lime.—Chloride of lime and slaked lime for disinfecting floors, yards, carcasses, and grounds where dead or diseased animals have lain, in fine powder, shall be scattered over the surface of objects to be disinfected thickly, so as to form a complete covering.

Chlorine.—To generate, take peroxide of manganese (to be obtained at any drug store), place in an earthen dish, and add one pound of hydrochloric acid (sometimes called muriatic acid) to each four ounces of the peroxide of manganese. Care should be taken not to inhale the gas.

After the floors, walls, etc., of a contaminated building have been cleansed, they should be fumigated by some of the foregoing agents. The doors should be closed and the building otherwise made as tight as possible. Fumes should then be evolved in the building for not less than half a day, and the doors kept closed not less than twenty-four hours, when air and sunlight should be freely admitted.

BURIALS.

Kerosene oil.—Carcasses buried in the earth where there is danger of infection by exhumation by other animals should, previous to burial, be thoroughly covered with quick-lime, or saturated with kerosene oil. This will tend to destroy the virus, and will prevent carnivorous animals disturbing the carcass and thereby spreading the disease.

Freezing.—It has been demonstrated repeatedly, in Iowa, that the frosts of winter thoroughly disinfect pasture lands that have been poisoned with the virus of Texas fever by herds of southern cattle during the summer months. From the first of April to the first of November the virus is likely to retain its vitality, and the strictest precaution is necessary to prevent communication of the disease to Northern cattle. The purifying effect of frost, however, cannot be relied upon for destroying the virus of any other disease than Texas fever, liable to attack live stock in Iowa.

It is for the interest of every community, on the appearance of contagious or infectious disease among animals, to adopt speedy measures to eradicate the same, and to co-operate with the State veterinary surgeon in securing such result in the shortest time possible.

J. I. GIBSON,

State Veterinary Surgeon.

Approved January 19, 1898.

J. F. KENNEDY,

Secretary State Board of Health.

J. I. GIBSON,

President State Board of Health.

L. M. SHAW,

G. L. DOBSON,

C. G. MCCARTHY,

JOHN HERRIOT,

Executive Council.

THE STATUTES.

CHAPTER 14, TITLE 12, CODE.

OF THE STATE VETERINARY SURGEON.

SECTION 2529. 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.

SEC. 2530. 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 the 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 police officer.

SEC. 2531. 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.

SEC. 2532. 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 one hundred and fifty pages of printed matter.

SEC. 2533. 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.

SEC. 2534. 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 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.

SEC. 2535. 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.

SEC. 2536. There is annually appropriated out of 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.

SEC. 2537. 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.

SEC. 2538. 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 treasury therefor.

CHAPTER II, TITLE XXIV, CODE.

DISEASED ANIMALS.

SECTION 5012. If the owner of sheep or any person having the same in charge, knowingly import or drive into this State sheep having any contagious disease; or knowingly turn out or suffer any sheep having any contagious disease to run at large upon any common, road, or uninclosed lands; or sell or dispose of any sheep, knowing the same to be so diseased; he shall be fined in any sum not less than fifty nor more than one hundred dollars.

SEC. 5013. If any person knowingly import or bring within the State any horse, mule or ass, affected by the disease known as nasal gleet, glanders, or button-farcy, or suffer the same to run at large upon any common, road, or uninclosed land, or use or tie the same in any public place, or off his own premises, or sell, trade, or offer for sale or trade any such

animal, knowing the same to be so diseased, he shall be fined not less than fifty dollars nor more than five hundred dollars, or be imprisoned not to exceed one year in the county jail, or both.

SEC. 5014. If any horse, mule, or ass, reasonably supposed to be diseased with nasal gleet, glanders, or button-farcy, be found running at large without any known owner, it shall be lawful for the finder thereof to take such animal so found, before some justice of the peace, who shall forthwith cause the same to be examined by some veterinary surgeon, or other person skilled in such diseases, and if, on examination, it is ascertained to be so diseased, it shall be lawful for such justice of the peace to order such diseased animal to be immediately destroyed and buried, and the necessary expense accruing under the provisions of this section shall be defrayed out of the county treasury.

SEC. 5015. The owner or person having charge of any swine, any of which die or are killed on account of any disease, shall, upon such fact coming to his knowledge, immediately burn the same.

SEC. 5016. No person shall sell or give away or offer for sale any swine that have died of any disease, or that have been killed on account of any disease.

SEC. 5017. No person shall convey upon or along any public highway or other public ground, or any private land except that owned or leased by him, any diseased swine, or swine that have died of, or have been killed on account of, any disease. Upon the trial for the violations of the provisions of this section, the proof that any person has hauled, or is hauling, dead swine from a neighborhood in which swine have been dying, or at the time dying, from any disease, shall be presumptive evidence of his guilt.

SEC. 5018. It shall be unlawful for any person negligently or wilfully to allow his hogs or those under his control, infested with any disease, to escape his control or run at large.

SEC. 5019. Any person violating or failing to comply with any provision of the four preceding sections shall be fined not less than five dollars nor more than one hundred dollars, or be imprisoned in the county jail not to exceed thirty days or both.

SEC. 5020. Any person driving any cattle into this State, or any agent, servant, or employe of any railroad or other corporation, who shall carry, transport or ship any cattle into this State, or any railroad company or other corporation, or persons who shall carry, ship, or deliver any cattle into this State, or the owner, controller, lessee, or agent, or employe of any stockyard, receiving into such stockyard, or in any other inclosure for the detention of cattle in transit or shipment, or reshipment, or sale, any cattle brought or shipped, in any manner into this State, which, at the time they were either driven, brought, shipped, or transported into this State, were in such condition as to infect with or communicate to other cattle pleuro-pneumonia, or splenic, or Texas fever, shall be fined not less than three hundred dollars and not more than one thousand dollars, or be imprisoned in the county jail not exceeding six months, or both.

SEC. 5021. Any person who shall be injured or damaged by any acts prohibited in the preceding section, in addition to the remedy therein provided, may recover the actual damages sustained by him, from the person,

agent, employe, or corporation therein mentioned, and neither said criminal proceeding nor said civil action shall be a bar to a conviction or to a recovery in the other.

TITLE XII, CHAPTER 3.

DISEASED SHEEP.

SECTION 2343. The board of supervisors of any county, when notified in writing by five or more sheep owners of such county, that sheep diseased, with scab or any other malignant, contagious disease, exist in such county, shall, at any regular or special meeting, appoint a suitable person as county sheep inspector, who shall take the oath of office, whose duties shall be as hereinafter prescribed, and whose term of office shall be for two years and until his successor is appointed and qualified.

SEC. 2344. It shall be the duty of the sheep inspector upon the complaint of three or more sheep owners that any sheep within his jurisdiction have the scab or any other malignant, contagious disease, to immediately inspect and report in writing the result of his inspection to the county auditor, to be filed by him for reference by the board of supervisors or any party concerned. And, if he deem it necessary in order to prevent the spread of the disease to the sheep of the other owners, he shall command the owner or agent to dip or otherwise treat such diseased sheep, and shall inspect such diseased sheep every month thereafter until such disease shall be eradicated.

SEC. 2345. It shall be the duty of the sheep inspector to dip or otherwise treat such diseased sheep should the owner or agent refuse to do so, and all costs, expenses, and charges, together with a per diem of three dollars per day, shall be charged against the owner of such sheep, and shall be a lien thereon, and may be recovered in an action.

SEC. 2346. Such compensation for the inspector shall be three dollars per day, and shall be paid by the owner of the sheep, or his agent, if the disease is found to exist. In case no disease is found to exist the complainants shall pay such fee.

SEC. 2347. Upon the arrival of any flock of sheep within the State from a distance of more than twenty miles outside the boundaries of the State, the owner or agent shall notify the inspector of the county in which such sheep are being held, and he shall inspect the flock at the expense of the owner or agent; and if the sheep are found sound shall furnish the owner or agent a certificate which shall be a passport to any part of the State; but sheep in transport on board of railroad cars, or passing through the State on such cars, shall not come within the provisions of this section. Any violation of, or failure to comply with, the provisions of this and the four preceding sections, by the owner of any sheep, shall subject him to forfeiture of not to exceed one hundred dollars which shall be a lien on such sheep, and shall be recovered in an action by the county attorney in the name and for the use of the county.

SEC. 4979. If any person throw, or cause to be thrown, any dead animal into any, river, well, spring, cistern, reservoir, stream or pond, he shall be imprisoned in the county jail not less than ten nor more than thirty days, or be fined not less than five nor more than one hundred dollars.

SEC. 4981. If any person knowingly sell any kind of diseased, corrupted, or unwholesome provisions, whether for meat or drink, without making the same fully known to the buyer, he shall be imprisoned in the county jail not more than thirty days, or be fined not exceeding one hundred dollars.

The flesh of pregnant animals must not be sold nor used for human food after the seventh month of pregnancy for cows, and the tenth week for sows.—Regulations of the State Board of Health.

CHAPTER XCIII.

PRACTICE OF VETERINARY MEDICINE, SURGERY, AND DENTISTRY.

An act to regulate the practice of veterinary medicine, surgery, and dentistry in the State of Iowa, and to provide penalties for a violation thereof. (Additional to Title XII of the Code, relating to the policy of the State.)

Be it enacted by the General Assembly of the State of Iowa:

SECTION 1. *Unlawful practice.* That it shall be unlawful for any person to practice veterinary medicine, surgery, or dentistry, in this State, who shall not have complied with the provisions of this act.

Sec. 2. *Existing practitioners—Certificates of registration.* Any person who has practiced the profession of veterinary medicine, surgery, or dentistry in this State for a period of five years immediately preceding the passage of this act may be deemed eligible to registration as an existing practitioner and receive a certificate of registration upon presentation to the secretary of the board of veterinary medical examiners, which shall be hereafter constituted, his sworn affidavit and letters of recommendation from ten reputable freeholders and stock owners in his locality, all such applications to be made on or before January 1, 1900.

SEC. 3. *Graduates.* Any person who is a graduate of a legally chartered and authorized veterinary college or veterinary department of any university or agricultural college at the time of the passage of this act, or who shall hold a diploma from such institution prior to 1901, shall be entitled to registration as an existing practitioner upon the presentation of his diploma, duly verified.

SEC. 4. *State Board of Veterinary Medical Examiners—term—vacancies.* The Governor of the State shall appoint a board of examiners within sixty days after the passage of this act; said board to be known as the State Board of Veterinary Medical Examiners. This board shall consist of three

qualified veterinarians, residents of the State, each of whom shall be a graduate of a legally chartered and authorized veterinary college or veterinary department of any university or agricultural college, and who shall be of good standing in the profession; one of these members shall be appointed for one year; one for two years; and each succeeding appointment shall be for three years. Each shall hold office until his successor is duly appointed and qualified. No member of any veterinary college or veterinary department of the State University or Agricultural College, or any person connected therewith, shall be eligible to appointment on said board. The Governor shall fill any vacancy which shall occur on the board, and may remove any member of said board for continued neglect of duty, for incompetency, unprofessional or dishonorable conduct.

SEC. 5. *Powers of board.* This board shall have power to make all needed regulations for its government and proper discharge of its duties in accordance with this act, and shall have power to administer oaths, and take testimony, concerning all matters within its jurisdiction.

SEC. 6. *Meetings.* The meetings of the examining board shall be held at least once a year, or at such times and places as it may elect. At any meeting of the board, a majority shall constitute a quorum to transact business, or to conduct examinations.

SEC. 7. *Certificate of qualification.* Said board shall receive applications for registrations, according to sections two and three of this act, and shall issue a certificate of qualification to all applicants who conform to the requirements for such registration, signed by the members of the board, provided that the certificate thus granted specifically and plainly states whether or not the one to whom it was granted is a graduate or non-graduate in veterinary medicine. Such certificate shall be conclusive as to the rights of the lawful holder of the same to practice veterinary medicine, surgery, or dentistry in this State.

SEC. 8. *Registration fee.* The fee for registration shall be five dollars (\$5), payable in advance to the secretary of the board.

SEC. 9. *Qualifications—examination—fee—license.* From and after January 1, 1901, any person not authorized to practice veterinary medicine, surgery, and dentistry in this State, and desiring to enter upon such practice, shall be a graduate of a legally chartered and recognized veterinary college or veterinary department of a university or agricultural college, and shall pass the examination required by said State Board of Veterinary Medical Examiners. The fee for such examination shall be fifteen dollars (\$15) payable in advance to the secretary of the board. The applicant shall be at least twenty-one years of age and of good moral character. Any person conforming to these requirements, and eligible to practice under section 2 hereof, shall receive a license to practice veterinary medicine, surgery, or dentistry within this State, signed by the members of the board, which license shall be recorded in the office of the recorder of the county in which said person resides, the recording fee to be paid by holder of certificate.

SEC. 10. *Register—treasurer to hold fees—bond vouchers.* The board shall keep a register of all registered practitioners in the State, setting forth such facts as the board shall see fit. All fees accruing under this act shall be held by the treasurer of the board, who shall execute good and suf-

ficient bond to said board to faithfully discharge his duties, and who shall pay out such funds only on vouchers, certified by a majority of said board.

SEC. 11. *Compensation—expenses.* Each member of said board shall be entitled to receive five dollars (\$5) per diem, also actual and necessary traveling expenses, incurred while actually engaged in the discharge of his official duties, provided such compensation and expenses do not exceed said income of fees accruing under this act.

SEC. 12. *Penalty.* Any person violating any of the provisions of this act shall be guilty of a misdemeanor and upon conviction shall be punished by a fine of not less than twenty-five dollars nor more than one hundred dollars, or by imprisonment in the county jail for a period of not more than thirty days, for each and every such offense. It shall be the duty of the county attorney of the county in which violation occurs to conduct all proceedings against violators of this act.

SEC. 13. *Exceptions.* Nothing in this act shall be construed to apply to commissioned veterinarians in the United States army or to persons who dehorn cattle, or castrate domestic animals, or to persons who gratuitously treat diseased animals.

SEC. 14. *Further penalty.* Any person who shall, without having been authorized to do so legally, append any veterinary title to his name, or shall assume or advertise any veterinary title in such manner as to convey the impression that he is a lawful practitioner of veterinary medicine or any of its branches, shall be guilty of a misdemeanor, and punished according to the provisions of section twelve (12) of this act.

SEC. 15. *Re-examination.* In case the examination of any person shall prove unsatisfactory and his name be not registered, he shall be permitted to present himself for re-examination within any period not exceeding twelve months next thereafter, and no charges shall be made for re-examination.

SEC. 16. *Board to render an account to Executive Council.* The board shall render under oath annually on January first to the Executive Council an account of all fees collected and per diem expenses paid, and pay over the balance into the State treasury.

Approved May 5, 1900.

SEC. 2538-b. *Repeal—existing practitioners—registration.* Section two (2) of chapter ninety-three (93) of the acts of the Twenty-eighth General Assembly is hereby repealed and the following enacted in lieu thereof:

Any person of good moral character who has practiced the profession of veterinary medicine, surgery and dentistry in this State for a period of five years immediately preceding the passage of the act of which this is an amendment shall be deemed eligible to registration as an existing practitioner upon presenting to the board of veterinary medical examiners, created by the act of which this is an amendment, satisfactory evidence that such person is of good moral character and that such person had actually practiced veterinary medicine, surgery and dentistry in the State of Iowa for a period of five years immediately preceding the passage of the act of which this is an amendment, application for such registration to be made before July 4, 1902. [29 G. A., ch. 170, § 1.]

SEC. 2. *Graduates.* Section three (3) of chapter ninety-three (93) of the acts of the Twenty-eighth General Assembly is hereby amended by adding

after the word "verified" at the end of the last line of said section, the following, "all applications for such registration to be made before July 4, 1902."

SEC. 3. *Revocation of certificate.* Section five (5) of chapter ninety-three (93) of the acts of the Twenty-eighth General Assembly is hereby amended by adding after the word "jurisdiction" at the end of the last line of said section the following:

"It shall also have the power to revoke any certificate issued by it when it is shown that such certificate was procured by false representation or where good cause for revocation of such certificate has arisen since the issuance thereof."

SEC. 4. *Qualifications—license.* Section nine (9) of chapter ninety-three (93) of the acts of the Twenty-eighth General Assembly is hereby amended by striking out after the words "to these requirements" in line ten, the following words in lines ten and eleven: "and eligible to practice under section two hereof."

SEC. 5. *In effect.* This act, being deemed of immediate importance, shall be in full force and effect on and after its publication in the Iowa State Register and Des Moines Leader, newspapers published in the city of Des Moines.

Approved April 4, 1902.

I hereby certify that the foregoing act was published in the Iowa State Register and Des Moines Leader, April 5, 1902.

W. B. MARTIN,
Secretary of State.