SIXTH BIENNIAL REPORT

OF THE

VETERINARY SURGEON

OF THE

STATE OF IOWA

TO THE

Governor of Iowa

FOR THE PERIOD ENDING JUNE 30, 1908.

DES MOINES
EMORY H. ENGLISH, STATE PRINTER
1909

LETTER OF TRANSMITTAL.

To His Excellency, B. F. Carroll, Governor of Iowa:

In compliance with the provisions of the statutes, I have the honor to present this, the sixth biennial report of the State Veterinary Surgeon of Iowa, for the term ending June 30, 1908.

Respectfully,

PAUL O. KOTO,

State Veterinary Surgeon.

INTRODUCTORY.

In compliance with the statutes directing the proceedings of this department, I submit herewith the Sixth Biennial Report for the period ending June 30, 1908.

While there have been no serious outbreaks of infectious diseases among live stock in Iowa the past term, the results accomplished during this period have been more than beneficial to the live stock interests, and adequate measures are in force to prevent epidemics of contagious diseases, as well as to protect the state at large from general infection through any diseased stock. This department has taken its place prominently among kindred departments of other states and within the precincts of the government Bureau of Animal Industry.

The establishment of an office at the Capitol, and attending benefits through close association with the state administration, have accomplished much towards placing the department in closer touch with the public interests.

Competent assistants, whose duties lie in seeking and maintaining the welfare of their respective districts, have worked harmoniously with the Veterinary Surgeon, and have always rendered invaluable aid in checking sudden outbreaks, such as occur within their jurisdiction.

Because Iowa has inadequate laws governing the shipment of disease-infected stock to points within our borders, there have been some serious losses sustained by stock raisers. Registered and unregistered animals bought in other states and shipped to Iowa have developed such extensive cases of tuberculosis that thousands of dollars worth of stock have been lost, to the end that public safety and protection of other stock might be conserved.

By far the most important work of the department has centered about the location and eradication of tuberculosis among cattle. The life of the Iowa hog is so short that there are rare cases where infection has extended to the human family from this source, so that all efforts to eradicate the disease have been directed toward

the cattle industry. Of the subject, tuberculosis, too much cannot be written, and it has been proven that, so far, educational measures as applied to published articles on tuberculosis, have stirred the people of our state to action, and more especially to sensible efforts towards destroying all possible avenues from whence this disease enters the human family. And it rests with this department to carry out a work which is the foundation of all subsequent efforts, namely, the destruction of tuberculous stock from whence the disease originates and is spread. It is not within our province to report full and comprehensively all work along this line as so far accomplished, but suffice to say that thousands of cattle found to be afflicted with tuberculosis have been either destroyed or placed in safe quarantine, and the spread, at least from these animals, checked, thus saving the state and stock raisers thousands of dollars. Tersely told, the intrinsic value of tuberculin tests made of Iowa cattle cannot be reckoned in facts and figures, for the reason that the ultimate end of infection is beyond human knowledge. Elsewhere in this report is found a comprehensive article upon the subject, including an exhaustive outline of its cause and effects.

The department has been obliged to respond to a large number of calls where infection from glanders and kindred diseases have started. As shown by articles upon this subject, much has been accomplished to, in a systematic way, prevent spread and subsequent losses through serious outbreaks. Another feature which developed new tendencies during this period is that of supplying stock shippers with certificates of health for stock consigned outside of the state. It is a fact that other states have rigid rules governing the importation of stock of all descriptions, and we have had to keep for ready reference the laws of each state bearing upon this point so that we have been able to properly advise all shippers who want the certificates. Several hundred such calls reach this department every year.

Through co-operation with the Bureau of Animal Industry in acting upon all cases of contagion throughout the United States this department has received and given reports of contagious diseases, including the locality of its origin. This has been a class of work of importance and has affixed the Iowa department in a creditable standing among similar departments of other states.

Aside from the regular work of the department, we have received and responded to many calls for papers to be read before various gatherings of farmers and stock men. This branch of educational

work, while not a given duty, has had our enthusiastic support, and we believe we have accomplished a new purpose, that of bringing the agricultural interests of the state in closer touch with the department, and thereby rendering every possible aid to the actual fulfillment of the object of this office.

Concluding, we wish to call attention to the small appropriation upon which we have had to operate. There has been necessary the closest economy in every branch, and while this has not interfered with the proper work, it has in a measure effected a strong barrier to the consummation of the results we had hoped to obtain. The department and its needs have grown in the same way every other utility of the state has grown, and it is hoped that the coming legislature will increase our appropriation, so that the work may be extended to better ends during the ensuing term, and that all who are desirous of the service of this department may be accommodated in an equitable way.

TUBERCULOSIS.

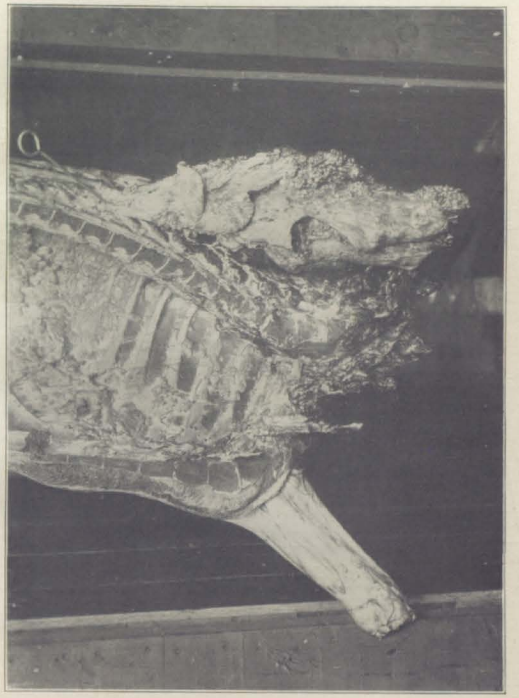
No subject emanating from medical jurisdiction is more prominently discussed today than tuberculosis. As applied to the human family much has been and is now being done to effect some relief from the widespread existence of the disease. *Tubercle Bacilli,* the germ from which the disease originates, has been found to gain its foothold among cattle, and in order to co-operate with those who are seeking to relieve sufferers, this department has likewise sought to destroy, in as far as our appropriation and means admit, the original source of the infection; that is, to determine the cattle affected and make disposition of them. In this effort we have had the hearty support of the medical fraternity, and the administration of the state, as well as that of the National Bureau of Animal Industry. A corps of assistant veterinarians and government inspectors have exerted their best efforts along this line, and perhaps no greater results have been accomplished in the history of this office than that which have taken place during the past few years.

Of tuberculosis itself much has been said and written, and the subject has taken the form of a study in a class by itself, but the future offers to this department a still more important work to be done, and that lies in the testing of all cattle; weeding out those diseased and perfecting sanitary measures to prevent its existence.

On the opposite page we reproduce a photograph of a cow from which was obtained the supply of milk for a family living near Forest City. Shortly before the picture was taken the state veterinarian was called to see this animal, and at once pronounced her condition due to an advanced stage of tuberculosis. About a year before this time a member of the family receiving the milk of this cow had died of tuberculosis. It was decided to kill this cow, and at the post mortem which was held afterward the animal was found in even worse condition than expected. In order to show the tubercular lesions, the accompanying photograph of the same cow is published also, and it may be readily seen that this is one splendid and most conclusive example of the existence of the disease, and also portrays the necessity of slaughtering such animals in order to prevent loss of human life and destruction of other stock.

No. 1. Tuberculosis Cow near Forest City.

No. 2. Tuberculosis Cow. Post Mortem.



No. 3. Tuberculosis. Post Mortem. Hopkinton.

Another case, and one which attracted unusual attention, was that of the herd of twenty-four cows belonging to T. J. Joseph, of Hopkinton. When tested with tuberculin twenty out of the twenty-four reacted to the test, and these were taken to the packing house at Cedar Rapids, where they were slaughtered. The post mortem gave evidence of tubercular lesions in each of the animals slaughtered, and we reproduce here a photograph of one of the animals after it had been subjected to post mortem. The tubercular lesions are present in such pronounced form as to indicate the wisdom of the test and subsequent slaughter of all diseased animals. Many other herds in the some locality were tested, and those reacting were disposed of in a similar manner.

The progress of Bovine Tuberculosis is ordinarily very slow, often taking years to destroy its victims. The period of incubation is indefinite, varying from a few days to months; but the germ once entering into the system of the patient, unless very robust, passes through the circulation and starts its destruction. It often happens that the organism passes into other parts of the body, thus producing the condition known as Generalized Tuberculosis, then two or more organs may be affected; such as the lungs in the plural cavity and the liver in the abdominal cavity. An animal in this condition of tuberculosis of a closed cavity like the pluræ may not be a source of infection to a herd for years, yet, from the migration of the germ of tuberculosis passing to other organs, especially the bowels, might become a prolific source of infection.

The chief industry of our state consists of live stock, and in attempting to eradicate tuberculosis we must pursue a course that will be of greatest benefit to all. The interests of the farmers, breeders and stock raisers, consumers of vast dairy products must all be considered. It is a difficult matter to determine to what an extent it exists among live stock in the State of Iowa, but it is safe to predict that the losses from this disease, directly and indirectly, amounts to millions of dollars. The financial losses being so great makes the eradication of tuberculosis from our live stock necessary, and the movement must be carried out as a matter of economy and as a protection to the public health.

According to the Iowa Year Book of Agriculture the number of milch cows in Iowa January 1, 1908, was 1,429,017, at an average price of $33, equals $47,157,561; stock cattle, 3,548,493, at an average price of $25. equals $78,712,325, making a total value of milch cows and stock cattle $125,869,886.

According to the estimate made by Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, the average loss from tuberculosis among milch cows will be 9¼ per cent, making a total value of $4,362,074; and the loss among stock cattle about 1 per cent, amounting to $787,123, making a total value of $5,149,197. The number of swine in Iowa is 8,366,520, at an average of $9 apiece, would make a total value of $75,295,680; and the loss among swine due to tuberculosis is estimated by the same author at 2 per cent, making a value of $1,505,973, making a total value of cattle and swine affected with tuberculosis in the State of Iowa $6,655,170 annually. Thus the loss from tuberculosis among live stock would practically amount to more than the loss from all other diseases combined; and it is estimated that one death in seven, of all the deaths in the human family, is caused by some form of tuberculosis. Hence the necessity of municipal and state measures.

Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, has made the following statements of the economic importance of food-producing animals:

While the saving of human life affords the highest motive for combating tuberculosis, the prevention of financial loss is alone a sufficient reason for undertaking the eradication of the disease from farm animals.

Statistics of the United States Federal meat inspection for the fiscal year ending June 30, 1908, covering 53,973,337 animals, or more than one-half of all those slaughtered for food in the country, show the following percentages of tuberculosis: Adult cattle, 0.961; calves, 0.026; hogs, 2.049; sheep and goats, 0. The proportion of tuberculosis is probably higher in animals slaughterd without inspection.

Reports of the tuberculin tests made in the 15 years from 1893 to 1908 by Federal, State and other officers with tuberculin prepared by the Bureau of Animal Industry have been carefully analyzed and tabulated. Out of the 400,000 cattle tested (mostly dairy cattle) there were 37,000 reactions or 9.25 per cent.

From these two classes of statistics, it is concluded that on an average about 10 per cent of the milch cows, 1 per cent of other cattle, and 2 per cent of the hogs in the United States are affected with tuberculosis, the average percentage for all cattle being estimated at 3.5.

The accuracy of the tuberculin test has been confirmed in a remarkable way by post-mortem examinations. Out of 23,869 reacting cattle slaughtered, lesions of tuberculosis were found in 23,585, a percentage of 98.81.

The economic loss on account of tuberculosis in food-producing animals is heavy. The loss on animals in which tuberculosis is found in the Federal meat inspection is estimated at $2,382,433 annually, and if the same conditions were applied to animals slaughtered without Federal inspection, the annual loss on all animals slaughtered for food in the United States would be increased to $4,354,855. The stock of animals on hand is also depreciated in value because of tuberculosis. Assuming that living

tuberculous milch cows are annually depreciated to the extent of one-tenth of what the loss would be if they were slaughtered, other cattle one-third, and hogs one-half, the total annual depreciation amounts to $8,046,219. The annual loss from decreases in milk production is estimated at $1,150,000, and there is also some loss from impairment of breeding qualities, etc. Taking all these items into account, the aggregate annual loss because of tuberculosis among farm animals in the United States is estimated at not less than $14,000,000.

Such heavy financial losses makes the eradication of tuberculosis from farm animals very desirable purely as an economic matter. As the disease is found principally among cattle and hogs, and as most of the infection in hogs is derived from cattle, the main effort should be directed against the disease in cattle. Among the measures proposed are the following: Live stock owners should be educated by means of official publications, the agricultural and general press, lectures at farmers' institutes, etc. Authorities should make a systematic effort to determine to what extent and in what localities the disease exists, and should apply the tuberculin test generally and systematically to cattle in sections where this seems desirable. Reacting animals should be slaughtered under competent veterinary inspection, so that the loss may be minimized by passing carcasses for food where the infection is so slight that this can safely be done; dangerous carcasses, of course, to be condemned. In the case of valuable breeding animals, where slaughter would involve great sacrifice, the Bang system may be used. A system of tagging all cows sent to market is advocated, so that when animals are found tuberculous in the meat inspection, they may be traced back to the place of origin, centers of infection located, and steps taken for eradication. As the eradication of tuberculosis is largely a public health measure, it is only reasonable that the persons whose cattle are slaughtered should be paid indemnity, at least in part. This is not only just, but is absolutely essential, if the co-operation of cattle owners is to be secured. Several states already have provisions of this character.

The benefits to follow from the eradication of tuberculosis from farm animals are so great and so obvious, that the necessary expenditures, even though they must be heavy, may be regarded as a highly profitable investment.

We see what a fearful risk is being taken by the use of the meat and milk of tuberculosis animals, even if it could be shown that such meat and milk are themselves free from the living bacillus. Such reckless consumption of the products of tuberculous animals can only be looked upon as a direct means of sealing the fate of that large proportion of the community which is already slightly attacked with tuberculosis. It is often the most thrifty and least suspected in the herd that have the disease. Oftentimes there may be a large number of animals that are affected with tuberculosis, but which appear to be sound. Those, however, in an advanced stage will show that they are affected with the disease, so that a

physical examination in advanced stages can usually be relied upon. When we take into consideration that this state of affairs exists, and that the consumers of most of the milk are invalids and children, what a responsibility rests upon us!

Much information has been obtained of Bovine Tuberculosis by the co-operation of the Municipal, State and Sanitary officers, requiring that all owners of dairy herds supplying milk to any city or town be compelled to furnish a certificate showing that all such animals have been subjected to the tuberculin test and are free from tuberculosis.

Realizing the importance of such a measure, at a meeting of the State Board in the summer of 1907, we suggested that the Board recommend that all cities and towns adopt an ordinance to that effect. A copy of the suggested ordinance and the Rules and Regulations for the Prevention and Restriction of Contagious Diseases Among Domestic Animals may be found in this report. Many cities and towns have adopted such an ordinance, with beneficial results. In many instances, in the inspection of such herds, a few animals have been found diseased and usually disposed of in the manner suggested by our department.

The method of immunization as a preventative measure, under the Von Behring method, is now being tried quite extensively in different parts of the world, and many encouraging reports are being made, and it is to be hoped that this immunizing agent will prove successful.

Another method of eradicating tuberculosis, and known as the Bang method, is to test all the animals in a herd, and isolate as completely as possible those reacting from those that do not, and which show no physical signs of the disease, and also isolating the calves from reacting cows and feeding them upon the milk of healthy cows. This method, where tried, has been voluntary on the part of the owners. However, it has not been entirely satisfactory, mostly on account of the expense of keeping separate diseased animals from those healthy; also the ever-present risk of infection to the healthy animals.

Through the efforts of this department the enactment of a law making compulsory the pasteurization of skimmed milk has been one effective means of preventing the spread of tuberculosis among patrons of Iowa creameries.

As an example of the direct results accomplished in our department, the following report is cited: One of the assistants tested

forty-three Short Horn and Jersey cattle. Of this number forty reacted—about 93 per cent. Acting upon this finding fourteen of the infected animals were immediately slaughtered at a packing house. Upon post mortem examination all revealed tubercular lesions, three were condemned and the others were placed in quarantine. The owner of this herd expects to have the remaining twenty-seven slaughtered soon, and he will also use the Bovo-vaccine method as a future preventative. One specific fact in connection with this case, and one upon which particular stress is laid, is that the owner and breeder of this stock suffered the amputation of one of his limbs because it was affected with tuberculosis. It would, therefore, be of interest to know exactly the source of inoculation; whether the method of transmission was through the owner of the stock or the reverse.

POST MORTEM TEST SHEET NO. 1.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen	Disposition		
	Cervical	Bronchial	Mediastinal			Portal	Mesenteric			Food	Lard	Offal
1	—									P		
2	—	—	—				—			P		
3	—									P		
4	—											
5	—	—	—	—						P		
6												
7	—	—	—	—						P		
8	—	—	—				—					+
9	—	—	—				—	—				+
10								—		P		
11		—	—			—		—		P		
12		—	—	—	—		—					+
13			—					—		P		
14			—				—			P		

In nine other herds tested by this same veterinarian, consisting of 276 head, 137 reacted, or about 49 per cent of the animals were found diseased. Nearly all of these animals were slaughtered, subject to Federal Inspection, and all showed tubercular lesions.

One test consisting of forty-three head was owned by the Dubuque County Poor Farm at Julien, Iowa. Having obtained a notice from the Bureau of Animal Industry, and also from the Chairman of the Board of County Poor Farm, that tuberculosis had been discovered among swine on the premises, by request I personally visited Julien, where the County Poor Farm is located, and made

an investigation. The herd, with the exception of a few, appeared to be in a healthy condition, but inasmuch as tuberculosis had been discovered among swine on the premises, the herd of forty-two cows and one bull were tested. The twenty animals reacting to the test, about 42 per cent, were slaughtered, all showing tubercular lesions. Seven were consigned to the tank, being diseased in a generalized condition. Of five of this number the following glands were affected: Bronchial, mediastinal, lungs, mesenteric and liver; in others the cervical, pluræ and portal glands were affected. The premises were disinfected and the members of the County Board expressed themselves as thoroughly satisfied and well pleased with the work.

TEST SHEET NO. 2.

DUBUQUE COUNTY FARM HERD.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen	Disposition		
	Cervical	Bronchial	Mediastinal			Portal	Mesenteric			Food	Lard	Offa
1	—	—	—	—		—	—	—		P		+
2	—	—	—	—			—			P		
3		—	—	—	—	—	—	—		P		+
4		—	—	—	—	—	—	—				+
5		—	—	—	—	—	—	—				+
6		—	—	—	—	—	—	—		P		+
7	*	*	*	*		*	*	*	*			+
8	—	—	—	—			—			P		
9	—	—	—	—			—			P		+
10	—	—	—	—			—			P		
11	—	—	—	—			—			P		

*Generalized.

In order to show the percentage of different herds affected, the following is a partial summary of tests made by a number of the assistants: Thirty-seven herds tested, consisting of 305 head, forty-one reacted, about 14 per cent; nine herds, consisting of 215 head, fifty-seven reacted, about 26 per cent; eight herds, consisting of 280 head, fifty-four reacted, making about 26 per cent; nine herds, 176 tested, twelve reacted and eight suspicious, making a percentage of about 7 per cent diseased; four tests, consisting of

sixty-three head, fifteen reacted and five were suspicious, or about 24 per cent being diseased; twenty tests, consisting of 272 head, forty-five reacted, or about 16 per cent; seven herds, eighty-one tested, thirty-eight reacted, or about 47 per cent; another test, consisting of eight herds, 148 head of cattle, of which seven reacted, making about 5 per cent. The last test, however, consisted mostly of cattle intended for export.

Another interesting test was reported to our department by a packing house in Pittsburg, Pa., stating that out of a shipment of eleven head, five were found to be diseased with tuberculosis. The shipment was traced to Halligan & Son, Moorland, Iowa. An investigation was made by our department and the dairy herd tested, consisting of fifty-eight head, out of which thirty reacted to the test, nearly 52 per cent. Nineteen of this number were immediately slaughtered at the Agar Packing Co., Des Moines, all showing tubercular lesions, six being found diseased in a generalized condition. The post mortem was conducted by the Chief in charge, and witnessed by the owner, members of the Board of Health, the State Veterinarian and three assistants. The owner expressed himself as well pleased and thoroughly satisfied, and that the tuberculin test was absolutely reliable. He further stated that he would not have known of the existence of disease among his cattle if his attention had not been called to it by our department, inasmuch as his herd appeared to be perfectly healthy.

A similar test was conducted on the farm of Hon. C. W. Stewart, of Clive, Iowa. During the early part of last spring we received notice from the Bureau stating that out of a shipment of nineteen head slaughtered at a packing house six were found diseased with tuberculosis. The Bureau also notified Mr. Stewart, and he at once called upon us and expressed a desire to have his entire herd tested. Being very desirous of eradicating the disease from his premises, and as soon as convenient the herd was tested, consisting of thirty head, ten of this number reacted to the test and all were immdiately slaughtered, all being found diseased, three in a generalized condition. Mr. Stewart has taken a very active interest in this work, and has written a very exhaustive report of the test, which was copied in some of the leading papers. He expressed himself as thoroughly convinced of the reliability of the test, and the need of legisation that would aid our department in carrying on this work, and, as a further safeguard to prevent a recurrence of the disease on his premises, he has decided to use the immunizing agent known as Von Behring's Bovo-vaccine.

The benefits derived by the stock breeders co-operating with our department may well be illustrated by the following example:

W. F. Wilcox, a prominent farmer and stock raiser near Marshalltown, requested a member of our department to visit his premises and test his herd of milch cows. Nine cows were tested and five reacted to the test. At the owner's request he was granted permission to keep the cows isolated until, as he thought, they would be better fitted for market. Some two or three months later we were surprised to learn that the owner had permitted these animals to mingle with the remainder of the herd. Complaint was filed by the local authorities, and upon investigation it was found that his swine were also affected with tuberculosis. While it is a difficult matter to detect tuberculosis among swine on foot, it was plainly visible, and a post mortem held on one of the hogs revealed generalized tuberculosis. The balance of the cattle were tested, consisting of thirty-two head, and twenty-five out of this number responded to the test, about 80 per cent, and were slaughtered by the Agar Packing Co., of Des Moines. All showed marked lesions, three being consigned to the tank.

TEST SHEET NO. 3.

MARSHALLTOWN HERD

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen		Disposition		
	Cervical	Bronchial	Medias-tinal			Portal	Mesenteric				Food	Tallow	Offal
2261													
2309	—												
2422							—						
2312													
2308		—					—						
2278			—			—	—						
31		—											
2470		—		—									
2303		—											
16	—	—											
2193		—	—				—	—					
2139		—	—										
32	—	—	—	—	—	—	—	—					—
2459		—	—	—		—		—					
29			—	—									
2481	—						—						
2365		—					—						
2110	—	—	—	—								—	
2101	—	—		—									
2107	—												
2039	—												
2344	—	—	—			—							
2332	—												
2126	—		—										
2354	—												
2456	—												

Being convinced that tuberculosis existed to a considerable extent among cattle at the various state institutions, under the supervision of the State Board of Control, we requested permission to test the dairy herds, which was granted, and we immediately began an investigation, with results as follows:

STATE HERDS.

Postoffice	No. Tested	No. Reacted	Suspicious	Healthy
Mitchellville	28	3	3	22
Clarinda	97	8	5	89
Glenwood	106	57	———	49
Davenport	36	———	———	36
Council Bluffs	31	1	———	30
Independence	176	129	6	41
Eldora	63	———	1	62
Anamosa	10	———	———	10
Vinton	6	———	———	6
Iowa Tuberculosis Sanatorium, Iowa City	33	1	———	32
Knoxville	15	———	———	15
Mount Pleasant	196	74	———	122
Marshalltown, individuals supplying milk for Soldiers' Home	66	7	———	59
	862	274	15	573

Note—Some of the above tests were completed after June 30th, but were subsequently included in the above table.

FINAL POST MORTEM, INDEPENDENCE HERD.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen		Disposition		
	Cervical	Bronchial	Medias-tinal			Portal	Mesenteric				Food	Lard	Offal
2154	*	*	*	—							P		
2231	—	—	—								P		
2068		—	—	—							P		
—		—	—				—				P		
—	†	†	†										—
—	†	†	†										—
—							—				P		
—		—	—	—							P		
—	†	*	*								P		—
—	—	—		—							P		
—			—				—				P		—
—	†	†	†					—			P		
—	—	—	—								P		
—	—	—	—	—							P		—
—	†	†	†								P		
—	—	—	—				—				P		

INDEPENDENCE HERD—Continued.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen		Disposition		
	Cervical	Bronchial	Mediastinal			Portal	Mesenteric				Food	Lard	Offal
—		—	—	—			—				P		
—	‡	‡	‡	—			—				P		
—	—	—	—	—				—	§		P		—
—	†	†	†	—				—			P	Bull	—
—	—	—	—	—			—				P		
—		—	—	—			—				P		
—	†	†	†	—			—				P		—
—	‡	—	‡	—		—	—	—			P		—
—	†	†	†				—				P		
—							—	—			P		
2326							—				P		
2050		—	—					—			P		
2187	—										P		
2428		—	—	—				—	§				—
2066								—			P		
2112	—										P		
2347		—	—	—							P		
2236	—	—	—	—				—					—
2485		—	—	—				—			P		
286			—	—				—			P		
2156	—	—	—	—							P		
2145		—	—	—				—			P		
2234	†	†	†										—
219	—	—	—	—							P		
2479	†	†	†										—
287	†	†	†										—
2249	†	†	†										—
50	†		†										—
128		—									P		
206	—	—									P		
—	†	†	†										—
—	—	—	—	—							P		
—							—	—			P		
—	—	—									P		
—		—	—								P		
2448	†	†	†										—
2463	†	†	†										—
—				—			—				P		
—	—	—	—								P		
2100	*	*	*								P		
—	—	—	—	—			—		§				—
—		—	—	—							P		
—	—					—	—				P		
2103	—						—				P		
2278		—											
2306	—	—	—	—			—						—
2336		—	—	—			—	—					—
2263	*	*	*								P		
2440	†	†	†										—
2415	—	—	—	—	—	—	—						—
—		—	—	—			—				P		
2127	—	—	—	—							P		
2358											P		
2219	*	*	*								P		
2210	†	†	†										—

INDEPENDENCE HERD—Continued.

Tag Number	Glands			Lungs	Pleura	Glands		Liver	Spleen		Disposition		
	Cervical	Bronchial	Mediastinal			Portal	Mesenteric				Food	Lard	Offal
2408	†	†	†										—
35		—		—							P		
2190		—									P		
141	†	†	†										—
2195		—	—	—							P		
221	—										P		
2308			—	—							P		
2074	†	†	†										—
300		—						—			P		
2378	†	†	†										—
299			—								P		
2177	—	—									P		
220		—	—	—							P		
2276	†	†	†										—
2500	†	†	†										—
2058	†	†	†										—
2388	†	†	†										—
2008	†	†	†										—
2301	—		—				—				P		
713		—	—								P		
15		—	—	—							P		
17		*	*	*							P		
19		—	—	—							P		
21		—	—	—							P		
23	†	†	†								P		+
25		—									P		
27		—									P		
29	—	—	—								P		
31		—	—	—							P		+
33	—	†	†	†							P		+
35		—	—								P		
37								—			P		
39	†	†	†								P		+
41				—							P		
43		—	—	—							P		
45	*	*	*								P		
47	—	—	—					—			P		
49		—	—	—				—			P		+
51	—										P		
53		—									P		
55						—	—	—			P		
57	†	†	†					—			P		+
59			—	—							P		
61	†	†	†								P		+
63		—	—	—			—						

†General tuberculosis.
‡Excessive tuberculosis.
§Emaciated.

The number of cattle tested by our department at the various institutions was 796 head, of which 267 reacted to the test, being a fraction under 34 per cent. There were also fifteen head suspicious, which, added to the 267 reacting, makes a total of 282 head, being about 35.5 per cent. Sixty-six head owned by individuals supplying milk to the inmates of the Soldiers' Home at Marshalltown were tested, seven of this number reacted to the test, about 11 per cent.

All animals reacting to the test showed tubercular lesions, and some of the suspicious animals were found diseased, a great many in an advanced stage. Out of the 135 cattle slaughtered from the Independence herd, including those suspicious, forty-seven were tanked, making a fraction under 34 per cent of those slaughtered. Among this number was one cow with extensive lesions, of which we have preserved a specimen, as shown in the following picture.

Of the 195 head tested at Mt. Pleasant, seventy-three reacted to the test, about 39 per cent. Seventeen were found diseased in a generalized condition, making about 23 per cent of the animals slaughtered.

The following cuts show post mortem results on the Independence herd after the diseased animals had been slaughtered at Cedar Rapids. This post mortem was witnessed by members of the State Board of Control and others interested in the test.

The first picture shows a number of the animals after post mortem and ready for disposal. The latter gives a closer view of the tubercular lesions as existing in each of them.

Experiments have proven that milk from a tubercular udder fed to calves has produced the disease in from one to ninety days. We also find that in Iowa the largest percentage of tubercular swine come from districts where the cattle are diseased, the infection coming through the fæces, milk or dead carcasses, as for example: A case came under our observation where a cow had died from tuberculosis. The carcass was drawn into the swine pen, giving the swine free access to the internal organs. The drove of swine were seventy-two in number, and were sold in about ninety days to a packing house where federal inspection was maintained. Upon being slaughtered every animal showed tubercular lesions, and twenty-two were consigned to the tank.

Animals very rarely become diseased without coming in contact with infected ones, or by eating and drinking from the same boxes or troughs. It has also been demonstrated that tubercular mothers very rarely give birth to tubercular offspring. Almost every example proves conclusively that the greatest method of infection is through the digestive tract.

Dr. H. E. Talbot, Assistant State Veterinarian, has compiled a report of intense interest, dealing with the testing of one thousand cattle, the animals being an average, and neither under suspicion nor within reach, so far as known, of the infection. Of this number, 306, or 30 3-5 per cent reacted, and 61 per cent of the entire

No. 4. Tuberculosis. Independence Herd.

No. 5. Tuberculosis. From Independence Herd

herds were suspected cases. The 306 animals found reacting were condemned, and were slaughtered under federal inspection, but one of the number being found free from tubercular lesions. There were seventy-six of the slaughtered animals put in tankage as unfit for use.

While this report of 1,000 animals comprises but approximately one-fourth of the number tested by us during 1908, this number has been sufficient to establish beyond any question of doubt the reliability of the tuberculin test.

We have experimented with tuberculin upon animals having previously reacted to the test, and infected with tuberculosis, for the purpose of determining how often cattle would react. We will give one experiment, using the owner's name by his permission:

W. F. Parks, Indianola, Iowa; dates, February 5 and 6, 1908; number tested, twenty-five, all being pure bred Short Horns; number reacting, thirteen. Of this number six were immediately slaughtered, the remaining seven being allowed to stay on the premises for the purpose of saving their calves. We were unable to give the exact dates of the subsequent tests, but can give them very closely. In about ninety days (May 1) these seven cows were retested, only five reacting, no attention whatever being paid to advanced pregnancy, the majority of them having calved. One animal, however, which was due to calf in about ten days, failed to react.

About sixty days later (July 1) they were tested for the third time, at that time all having reacted, when four of the seven failed to react.

Some time later they were tested for the fourth time, five reacting, but during these four tests there were two which failed to react after the first test.

Still later the seven cows were slaughtered at the Agar Packing Co. plant in Des Moines, Iowa, and all showed advanced tuberculosis, two of the seven being consigned to the tank.

However, we do believe repeated tests to be of vital importance to the non-reacting animals at any time from six to twelve months, as tuberculin will not always give a reaction during the period of incubation or where the disease has been arrested. The same is also true of advanced stages of the disease, so that the records of tested herds do not always point out all of the infected ones, as the ones recently infected, or those in the advanced stages, may not react until the disease becomes active. In order to eliminate the disease entirely from a herd repeated tests are necessary.

Where tuberculosis has been known to reappear in a herd, after the reactors have been slaughtered, both the owner and the public are prone to place the blame upon the veterinarian or to question the reliability of the test, when in fact the owner himself is to blame for his failure to have them retested. It is therefore quite important that the owner be advised by his veterinarian as to the necessity of subsequent testing, thereby relieving himself of the responsibility should the disease recur.

Cattle reacting to the tuberculin test should be disposed of in the following manners: (1) Total destruction; (2) slaughtered at abattoirs under proper inspection; (3) isolated for breeding purposes according to the Bang method.

The veterinarian must in all cases keep a record of animals tested, date of testing, owner's name, number reacting, and the disposition of all reactors, if possible.

Among the several thousand animals which have been tested during the past season there was no herd in which so great an amount of interest was taken as that of a State herd at Glenwood, and there were several reasons for this unusual interest, the first and greatest being that it was the most beautiful, typical dairy herd of Holsteins that it has ever been our pleasure to test. There were 106, practically all Holsteins, and of all ages, and were tested April 21 and 22, 1908. Of this number there were fifty-seven reactors, almost 54 per cent, and this was not considered a suspected herd.

Elsewhere in this report is given a brief summary of a proposed ordinance which should be adopted by every city and town in Iowa. This ordinance provides for the testing of all dairy cattle, and especially the cows from which the city milk supply is taken. Many Iowa cities and towns have adopted the suggestion and the results have been most gratifying. As an example we have a report from a town in northern Iowa, where inspection is in force. The local veterinarian while inspecting some cattle which had been slaughtered for beef purposes found tubercular leisons very pronounced. Other parties who refused to comply with the ordinance were prosecuted. At the preliminary trial, a fine of $25 was imposed by the mayor, and the case was taken to the district court where the verdict for the city was sustained. We reproduce here a cut showing one of the animals slaughtered and the tubercular leisons are shown to be so prominent that it leaves no question of doubt as to the importance of maintaining such inspection, wherever meat and milk are sold to the city trade.

No. 6. Tuberculosis. Found by Milk Inspection.

No. 7. Glanders in Man at Clinton, Iowa.

THE FENCE OR THE AMBULANCE

In a well populated district of one of our western states there is a cliff, over which thousands of people pass daily. Some are unaware of the close proximity of the cliff to their pathway, and when passing along make a misstep and are precipitated to the street far below.

The people wanted some remedy for the danger. Some argued for a fence and some for an ambulance. The latter method prevailed. An ambulance, then, was required to carry the injured to a hospital, and the expense was allowed to accrue, not to mention the loss of life and limb which continued.

Finally the accidents grew so numerous and the expense so heavy that the ambulance became a burden in place of a remedy—and then a fence was built. There were no more accidents. The ambulance was removed, and the hospital closed. And there was no more suffering. The needs to combat the dangerous cliff were satisfied.

Why not apply the same principle to the treatment of tuberculosis? Let us build a system of prevention by destroying its origin among stock. The hospital and its various attending avenues of taking care of the afflicted would then be useless—in time. Human suffering and heavy cost would be lessened and in keeping with this advanced stage of civilization. The expense would be small, and equality of misfortune in diseased stock would prevail.

GLANDERS.

We have to report quite a number of cases of glanders among horses and mules in this state, the disease having originated and existed in many different sections of the state at various intervals. We have given special attention to calls in suppressing the disease or preventing its spread, and although having accomplished good results, the losses have been extensive in some cases. Outbreaks of this disease have occurred in the following counties: Black Hawk, Buena Vista, Butler, Clinton, Chickasaw, Crawford, Cerro Gordo, Carroll, Dallas, Dubuque, Franklin, Greene, Hardin, Harrison, Hamilton, Iowa, Lynn, Lucas, Madison, Mitchell, Poweshiek, Pottawattamie, Polk, Pocahontas, Ringgold, Story, Shelby, Tama, Woodbury, Worth, Wright and Washington.

One case in particular which commanded urgent action came from Ames, where a contractor had set up winter quarters. He had shipped into Iowa from South Dakota, and glanders was discovered among these animals. Out of a herd of nineteen tested, fourteen reacted, and were destroyed, eight had died previous to the test. We were compelled to order the destruction of all others found diseased. It required rigid enforcement of quarantine regulations, however, to keep the disease within the herd. It is believed the disease was taken from among other stock in South Dakota.

Shortly after the above outbreak, another case was reported from Nevada, where a herd of horses and mules were found afflicted with the disease. Fifty-eight horses and mules were immediately quarantined, and several of them died or were destroyed. After making the proper tests, and finding that subsequent developments indicated the quarantined animals were not affected, they were released from quarantine.

Another call in May of 1907, from New Liberty, Iowa, developed five diseased out of a herd of thirty-two, and these were destroyed.

During the spring of 1907, an outbreak occurred near Kellerton, which was traced to a carload of western horses sold to various farmers in that vicinity. The disease was found to exist at seven different farms, and more than a dozen horses and mules were destroyed or died from the effects of this disease. One interesting feature of this case was, that from this same shipment of western horses, another and more severe outbreak occurred near Cummings, where

one farmer lost fourteen head of horses and mules. At the time our attention was called to these cases, four of the animals had died from the disease. Twelve head were tested, ten reacting to the test. Seven of this number showing symptoms were promptly destroyed by the owner. The other three were isolated and kept in quarantine, and in about ninety days, the disease developed and they were destroyed. The owner deserves a great deal of credit for generous and prompt action in destroying all animals found diseased, and thoroughly disinfecting the premises to prevent further spread. He kept over one hundred horses on his farm, and through his hearty co-operation no further evidence of the disease has developed.

During the early part of April, 1907, and prior to this time, we received calls from Clinton where several cases of glanders were reported. Investigations had developed no less than 26 cases of the disease, and among them were the horses used by the Clinton Transfer Company. An effective system of quarantine operative for a period of about two years, finally resulted in completely destroying all existence or trace of the disease.

But the most distressing result of this outbreak was the death of Thomas Farrell, aged 35, who was a driver for the Transfer Company, and had contracted the disease from horses he had driven and cared for. So seldom does it occur that glanders has been transmitted from animal to man, that this was a case which required the most careful consideration. During Mr. Farrell's sickness, and in the month of July, 1907, the time of his demise, it became known for the first time that he had been exposed to the disease through attending horses which were known to have had glanders. We were called upon then for our co-operation in determining exactly the nature of Mr. Farrell's sickness. The disease first made its appearance about the head and shoulders of the patient, thence it developed into pimples or pustules, showing in the glands and throat. There were symptoms at that time of malaria or septic poisoning. Associating the symptoms of Mr. Farrell with those of the diseased horses, it was found that the similarity justified further diagnosis. Microscopical and bacteriological examinations confirmed this similarity, and the mallein and agglutination test applied to three horses showing typical symptoms, proved beyond a doubt that the disease was glanders. We watched subsequent developments and by means of further microscopical examinations, concluded that Mr. Farrell had suffered and died

of glanders, as transmitted to him by the diseased horses he had attended.

Just after Mr. Farrell's demise, we secured the photograph shown on the opposite page, and the result of glanders, in the human form, may readily be seen.

Following is a treatise on glanders by Dr. J. H. Spence:

Glanders is an infectious and very destructive disease of the mucous membranes in horses and mules and other animals, characterized by a constant discharge of matter from the nose and an enlargement and induration of the glands beneath and within the lower jaw. Glanders or Farcy, is one of the oldest and most dangerous diseases of the horse and mule. That the disease has existed since the memory of man, is without doubt a fact, as we have only to refer to ancient history, or to such early medical writers as Aristotle and Hippocrates. Also the Roman authors, Apsyrtus and Vegetius described the disease, the latter recognizing the nasal and skin forms as being identical.

It is an infectious disease and was so recognized in the Seventeenth century. In the Middle Ages, the German law considered it constituted unsoundness and the sale of a glandered animal thus became null and void. Toward the end of the Eighteenth century two Danish scientists, Abildgaard and Viborg, proved by experiment that glanders could be transmitted from an affected animal to a healthy one; that the cause of the disease is a virus which leaves the body in the secretions or pus from the ulcerated surfaces; that the blood of the infected animal is far less potent to infect than are the discharges from the nose and ulcerated skin. Experiments made about the same period in England confirmed those made in Denmark, it being at the same time recognized that the nasal discharge is the principal carrier of the virus.

But in France at the beginning of the Nineteenth Century, the eminent veterinarians of the Alfort Veterinary College still doubted the theory of the contagiousness of glanders. They held, that it arose from a previous attack of strangles or distemper. The French Government accepting the Alfort doctrine, removed its restrictions against the disease, and glanders spread to an alarming extent. When in 1837, Rayer proved the transmissibility of glanders to man, and when Chauveau, in 1868, demonstrated that the infecting principle was contained in the diseased tissues, it was again generally accepted that glanders is a transmissible disease.

In 1868, the fungus was named as the cause by Zuern and Hullier. Other works attributed the disease to new microbes which they encountered in their search, but it was not until the advent of new and improved methods of isolating microbes from infected matter were invented, that progress was made in the right direction. In 1882, two German bacteriologists, Loeffler and Schuetz, discovered a microbe which all now recognize as the cause of glanders.

THE MICROBE.

The cause of the disease is a rod-shaped bacterium from one to three micromillimeters long and about one-fifth of those measurements in

thickness. The rods are straight with rounded ends, or they may be slightly curved, and are frequently found lying in couples, side by side. They easily stain in dyes. The microbe grows luxuriantly on all the ordinary media, but best on the blood serum of horses and sheep; on beef broth and sliced potato. While it can vegetate at the ordinary room temperature, its development is favored by the body temperature. It is killed in a week by drying, and experiment has shown that the microbe will remain active in the filth of stables for about three or four months. It will live in putrefying matter for from two to three weeks, and retains its virulence in water from fifteen to twenty days. Some authors claim the microbe forms spores, others deny this property. It is fairly resistent to germicides, but its resistance would be many times increased, if it possessed the spore-formation property. It is killed by a five-minute exposure to a three per cent solution of carbolic acid. Also a five per cent solution of creolin, or a 1-1,000 solution of corrosive sublimate is sufficient for its destruction.

ITS TRANSMISSION.

Glanders may be transmitted directly from an infected animal, or it may be transmitted indirectly by infected food, feeding and drinking troughs, harness, clothing, hitching posts, stable utensils, bedding and attendants, when any of these become contaminated with the discharges from the ulcers on the skin or in the nostrils. The majority of the horses become infected by the microbes entering the respiratory tract. The microbe or virus of glanders will remain alive under natural conditions of the stables for four months; hence a stable in which a glandered animal has discharged virus, will retain its infectiousness for four months after the glandered animal has been removed, provided it has not been disinfected.

While the discharge from the nose and skin has been shown to be the most infectious, the microbes may occur in any part of the body. Glanders does not move from place to place very rapidly, it will not jump from one stable to another of itself. It must be carried by an infected animal or by some of the other means mentioned before. It will spread very slowly through one stable, if the animals each have their own stalls and do not come in contact with one another while working, feeding or drinking. On the other hand, the disease will spread quite rapidly if the animals are allowed to range through the stables, visit one another in stalls, or get their heads together.

As an instance of the outbreak in Clinton, Iowa. One gentleman did not think he had a case of glanders, as he said he had been testing it by letting another horse drink from the same bucket as the supposed glandered one, and on examination, the other horse was found to be badly infected also. While, as a rule, there are many animals that escape the contagion, it is doubtful if any horse or mule is naturally immune from the disease. Those which fail to contract the disease escape by virtue of conditions, probably unknown to us at present. When this can be explained for glanders, we shall also have an explanation of why people escape certain diseases.

INFECTION.

In the majority of cases, the virus penetrates the respiratory organs. The microbes gain entrance into the nasal chambers and then the lungs

by being inhaled with the dust from infected feeding troughs, or rubbing its nose on infected hitching posts, stalls, wagon poles, or rubbing against its infected mate. Experiment shows that the more probable vehicle, is the virus-laden dust; because it has been shown that it is impossible to infect animals by having them inhale expired air from a glandered one. The disease may have its origin in either the nasal chambers or the lungs. In a large number of cases, the lungs alone are affected, as it is upon them we may observe the oldest lesions.

The skin is a second organ through which the microbes may enter. When the skin is affected ,the ulcers formed are known as farcy buds. This form was not recognized as glanders formerly, and even now, many deny their identity. Primary glanderous disease of the skin is only produced through wounds; farcy is thus generally secondary, when the disease is generalized, or when the bacilli are absorbed into the circulating blood, form the lesions in the blood or elsewhere.

That infection takes place rarely through the digestive canal in the horse, has been proved by feeding them with glanderous matter. While a few cases became infected, the majority escaped. It is possible that those infected had abrasions of the lining of the mouth, or other parts of the digestive canal.

Glanders as a rule first invades the lungs. Here the disease spreads invading the bronchial tubes. From these, the virus is discharged into the trachea and thence into the larynx, pharynx, and nasal chambers, where a secondary infection is set up. In a large proportion of cases in the horse, the disease begins in a chronic form and becomes acute in the manner described. In the majority of cases in mules, the disease is acute from the start. The same is true of the infections of man.

VARIETIES OF GLANDERS.

We distinguish glanders of the nostrils, glanders of the lungs, glanders of the skin, according to the location of the disease in nostrils, lungs or skin. Formerly true glanders was admitted as existing when the lungs or nostrils, or either of those organs, was affected. When the skin alone was affected, it was called farcy, and when the nose, lungs and skin was affected, it was termed glanders and farcy.

Glanders exists in two forms, chronic and acute. These names are applied according to its progress. Chronic glanders is more common and affects horses mostly. Acute glanders exists in a small per cent of horses and is the most common form in the mule. Acute glanders is rapidly fatal and never chronic, but chronic glanders becomes acute and destroys by doing so.

CHRONIC GLANDERS.

The anatomical changes which occur in this form are essentially inflammatory processes which cause suppuration, ulceration, granulation and scarring. These occur in the nostrils, larynx, trachea, lungs, lymphatic glands and the skin; sometimes other organs are diseased also. In the majority of cases, the health of the animal is not impaired and the disease is often supposed to be nasal gleet. The nostril is the usual seat of the disease, it exists here either as nodules, forming ulcers and scars or

as diffused patches of ulceration; the former being that ordinarily seen. The nodules are found situated on the lining membrane of the nasal chambers, chiefly in the upper portion of the cavity on the nasal septum and on the surfaces of the turbinated bones. The nodules first appear and vary in size from a mere speck to the size of a millet seed and are glassy, translucent, round or oval in shape and of a dirty grey or greyish-red color. They project above the surfaces and never get larger than a pea. They appear singly or in groups. Most cases are said to start in the chronic form, because the early stages escape notice. These early stages may cover a period of several months or as many years. The first noticeable symptom, is a nasal discharge from one nostril of a dirty white mucus. Sometimes the discharge is from both nostrils. Soon this discharge begins to change and becomes yellowish grey or yellowish green, and sometimes streaked with blood, due to the giving away of some of the small blood vessels. Gradually the discharge becomes thicker, mixed with purulent matter, green in color and has a tendency to adhere around the nostril. With these symptoms swellings of the sub-maxillary glands are noticed. The swellings are first doughy and painful, afterwards they become hard and painless and adherent to the jawbone and the skin.

The animal about this time loses condition; is easily tired; the coat looks unthrifty; may cough and have labored breathing; there may be fever and slight or severe bleeding from the nose when at work. Late in the disease, there are swellings of the limbs, abdomen, chest and joints.

In the chronic form, the skin is not so often affected as in the acute form. Its general location is on the limbs, shoulders, hips and abdomen. The boils very in size from a pea to a walnut. They frequently peel, leaving small scars. They discharge a sticky looking liquid. The animal will show stiffness or go lame in limbs affected. The progress of the chronic form is very slow, depending somewhat on the care and amount of work the animal receives. If well taken care of, he may exist for several years.

ACUTE GLANDERS.

Acute glanders is said to be rare in the horse, authors placing it at about ten per cent, but in mules to be of frequent occurrence. It may begin as acute glanders or a chronic case may become acute. When inoculated into the skin, either by accident or design, it starts in the acute form. This form of the disease progresses rapidly to a fatal termination. This process being septic and accompanied with gangrene of the mucous membranes of the respiratory tract and abscesses in the skin, lungs and other organs.

The disease begins with chills, followed with high fever with a temperature which may rise to 104 to 107 degrees F. The mucous linings of the nostrils become covered with nodules and chancres and the commencement of a thick nasal discharge which becomes reddish from the admixture of blood and serum. The throat becomes swollen and particles of food may be found in the discharge, sometimes changing the color of the discharge to that of the particular form of food the animal has been feeding on. The breathing becomes noisy and labored; the flanks heave, having the appearance of pneumonia. Sometimes when the larynx is

affected, there is great roaring. The animal fails rapidly and the skin presents the following symptoms: dropsical swellings, the formation of nodules and ulcers, the lymphatic vessels become corded and swollen and sensitive to the touch. There is loss of appetite, difficult swallowing, diarrhœa and rapid loss of flesh and death occurs in a very short time.

DIAGNOSIS OF GLANDERS.

The early diagnosis of glanders is more important and more difficult and uncertain than any other disease of the horse.

In well marked cases, no one is likely to make a mistake, especially if they have had former experience with this destructive malady. No one can be over careful in the examination of animals for purchase when they show symptoms of nasal gleet or other catarrhal symptoms.

The outbreak in Clinton was without doubt due to an oversight. The animal was shipped from the west to Chicago, then re-shipped to dealers in a little village in Illinois, across the river from Clinton, then sold to an ice man in Clinton and worked on the streets delivering ice for nearly two summers. The purchaser called the attention of a veterinarian to a discharge from one nostril at the time of the purchase, but he advised him to go ahead and buy, as it was only a cold or distemper or something of that nature and he would soon be over it. Over two-thirds of the animals destroyed in this outbreak had been killed before this animal was located. So we must give every attention possible for the careful diagnosis of this destructive disease.

The symptoms before given are not always present in their entirety, sometimes only one or two symptoms will be present. Sometimes strangles in a sort of chronic form will greatly resemble glanders and requires great care to arrive at the proper diagnosis. The one exact symptom of the disease is the appearance of the characteristic ulcers in the nostrils, with their eroded, raised edges and peculiar base. These ulcers may be present when there is no nasal discharge; so it is of great importance to make a thorough inspection, paying particular attention to the under side of the wings of the nose, and in getting a good history of the animal.

There are special modes of diagnosis, such as depleting the animal's vitality with purgatives, or it is said the injection of turpentine under the skin has been used to make manifest the symptoms by changing a chronic case into an acute one.

Another method is to inoculate susceptible animals with the discharge from a suspected case, or to inject the suspected animal with some of the supposed virus, which if he is infected will soon develop an acute case.

DIAGNOSIS BY MALLEIN.

The utility of mallein as a diagnostic agent has been questioned by some authors, but it is being extensively used by various governments. Horses with fever from any cause should not be tested with mallein. Animals after injection of mallein, should show their well marked deviations from normal conditions for at least twenty-four hours after injection, viz.:.

A well marked rise of temperature of two degrees or more which is maintained for twenty-four hours.

A hot, painful tumor around seat of injection and of a good size.

A well marked constitutional disturbance shown by depression, debility, loss of appetite, stiffness of muscles of the forelegs and embarrassed respiration. Unless these symptoms are present, it is well to release the animal.

Glanders may be mistaken for the following diseases: Chronic nasal catarrh, strangles or distemper, parasites in nasal chambers, lymphangitis and purpura hæmorrhagica, but each of those diseases have their peculiarities and if we are careful we will arrive at a proper diagnosis.

TREATMENT.

An occasional spontaneous recovery is said to take place. Repeated injections of mallein is claimed by some to cure the disease, but as yet the profession know of no medical measures with which to successfully combat the disease.

At present, the only safe method of dealing with glanders, is to apply the strictest sanitary measures. All animals affected should be immediately destroyed and buried deep or burned. The quarantine to be used on exposed animals. The thorough cleaning and disinfection of all harness, wagon-poles, neck-yokes, shafts and stable utensils with a bichloride of mercury solution; the burning and removal of feed and stalls, partitions, brushes, drinking-troughs and pails, and the thorough disinfection of the entire stable followed with a complete whitewashing with the addition of carbolic acid, creolin, or bichloride of mercury. Stables that can be abandoned for six months, should be closed up for that period of time. If animals have been yarded, the fences should be disinfected, the yard scraped and limed and closed up for at least six months.

MYCOTIC LYMPHANGITIS.

During the early fall of 1907, there appeared in Iowa, one case of the above disease. It is found to exist in foreign countries under the name of "African Farcy." Those countries where the disease is known to have spent its force with heavy losses are: Japan, China, Sweden, Finland, France, Algiers, Phillipines, South Africa, England and Ireland. In the one case above referred to, we received a call to investigate the condition of a valuable mule located near Runnels. Finding symptoms of glanders, we applied the Mallein test, but the animal did not react. We then made a thorough microscopical examination of the pus taken from running sores, and the result of this examination gave evidence of Mycotic Lymphangitis. Specimens of the pus were sent to the Bureau of Animal Industry at Washington, and were examined by Dr. Mohler, Chief Bacteriologist, who also pronounced the disease as stated. Inasmuch as this case was one of rare occurrence, we kept the animal in close quarantine for several months, and watched the progress of the disease, at the same time

using the case as a demonstration to others of its various symptoms and its course of destruction. At a meeting of the Iowa Veterinary Medical Association, this subject was presented by Dr. H. E. Talbot, assistant state veterinarian, and proved one of intense interest to those present. One object lesson to our veterinarians, as derived from this case, was that of giving due care to the diagnosis of cases of supposed glanders, and in such cases bringing out the necessity of following up any developments of any instance where the Mallein test does not cause a reaction where there are symptoms of glanders.

We produce on the opposite page, two cuts, one showing the mule referred to in this article, as he appeared when during the early stages of the disease, and the other, shortly before being destroyed, and showing the course taken by the disease as it spread over the mule's body. We have had no repetition of this disease, inasmuch as we put into effect the most rigid system of disinfecting.

No. 8. Mycotic Lymphangitis. Early Stage.

No. 9. Mycotic Lymphangitis. Advanced Stage.

HOG CHOLERA.

With the exception of the past two years, we have had less cholera than in any former period. The heaviest losses sustained throughout this country, occurred several years ago. Quarantine methods and regulations to keep under control the existence of any outbreak, have been the only way and means of preventing losses.

Possibly the most prominent avenues from which cholera is known to originate and spread, is through improper disposition of dead hogs. Birds are known to carry infection from one place to another, after having been around an animal which has succumbed to the disease. It is also believed that droppings from railway cars, or contagion beginning at public sales or markets, fairs, etc., have had to do with spreading the disease.

One gratifying report we have to make as related to our swine industry is that we have had very few cases of contagion reported among stock shipped to any state or county fair for exhibition purposes. When we take into consideration the fact that Iowa has had as many as 3,100 hogs on exhibition at our state fair, and also the fact that Iowa is the largest hog raising state in the Union, we have a right to expect more or less contagion. It is true that other states seldom have more than 1,000 hogs exhibited at one time, and yet these states have rigid rules and regulations to prevent the importation of any stock for exhibition purposes to their state fair. Some of our stock men were much concerned last year over the possibility of being barred from outside exhibitions on account of contagion among swine, but fortunately this has never occurred, and it is partly due to the careful manner in which these animals are cared for and protected from infection. At the last session of the legislature, in order to identify the township and county health organizations with their due responsibilities, included in connection with other laws enacted, the duty of local boards of health to take action wherever and whenever they were informed of any contagious disease among domestic animals in their locality, and to co-operate with the state veterinarian and serve him with notice of such disease promptly upon its discovery.

This not only applied to hog cholera, but to all other infectious diseases among live stock. While this regulation has not been fully complied with, it is true that there have been a large number of important calls come to this department through this means. We have appreciated the immediate attention given by many of these boards, and cannot too strongly urge others to follow their example, in order that public safety of live stock may better be conserved.

While the cholera has worked disastrous results among the hogs, it has been under constant surveillance and at least one remedy has been found after years of study, which it is believed will relieve the conditions, and eventually immunize hogs from taking it. Dr. W. B. Niles, co-operating with the government Bureau of Animal Industry, has experimented with what is known as hog cholera serum. The Bureau of Animal Industry has taken an active interest in the experiments, until now this serum has been practically adopted by the Bureau as official. It is hoped that Iowa will follow the example of other states in providing for the manufacture or preparation of this serum after this formula, so that farmers and stock raisers of Iowa may obtain much needed benefit from its application to their herds.

We include under this subject, an article by Dr. D. E. Baughman, assistant state veterinarian, residing at Fort Dodge, and referring to the subject of hog cholera serum.

HOG CHOLERA SERUM.

If cholera among swine can be stamped out in this state, as I firmly believe it can, it will save millions of dollars to farmers. It is a heavy loss as well as a disappointment for a farmer to raise a bunch of high grade or thoroughbred hogs, to watch them grow and feed them on high priced corn in anticipation of receiving a goodly sum, possibly to pay a note or mortgage on his farm, then to wake up some morning and on going to his hog pen, to find some of them refuse to eat and with positive evidence of hog cholera in his herd, and almost a positive assurance that he can only expect to save a small per cent of them.

Through the efforts of the experimental work which has been carried on for a number of years by the Bureau of Animal Industry in this state and at Washington, we are now able to produce a serum that will immunize our hogs against this dreaded disease. The process has been patented by the department of the bureau in such a manner that it insures its free use and manufacture to all people of the United States.

Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, says it is a well known fact, that hogs which recover from an attack of hog cholera are completely immune when subsequently exposed to the same disease. These two facts, the presence of the filtered virus in the blood of hogs

afflicted with hog cholera, and the immunity in hogs which have recovered from an attack of the disease, form a basis for the preparation of the serum which we have used successfully in immunizing hogs against hog cholera. He states that the protective serum is produced by a process of hyper-immunization carried out as follows: An immune hog is injected with a large amount of blood from hogs afflicted with hog cholera. This injection will not produce more than a transitory effect upon the health of the immune, although it would certainly prove fatal to a susceptible hog. This treatment of immune hogs with a large amount of disease-producing blood, is known as hyper-immunization, and gives to the blood of the immune the power to protect susceptible hogs from hog cholera. After a week or so after the immune has recovered from the effect of this treatment, blood is drawn from the immune by cutting off the tail. The blood drawing is repeated three or four times at intervals of a week between drawings, after which the immune is usually bled to death from the carotid.

After each drawing from the immune, the blood obtained is defibrinated and mixed with a suitable antiseptic. If preserved in sterile bottles, this defibrinated blood, or serum, as it is called, will retain its potency indefinitely. The protective serum having been obtained from an immune hog in the manner indicated, the potency of this serum is determined by injecting susceptible hogs with varying amounts of this serum, and at the same time exposing them to hog cholera along with untreated or controlled animals. In practice, it will, of course, be found best to first collect large quantities of serum and to mix this before testing. A standard serum will thus be secured at a minimum cost. This serum having been secured, either of two methods may be used for protecting susceptible hogs. These are known as: (A) The serum simultaneous method, and (B) Serum alone method.

The first of these, which is to be recommended for use especially in herds which have not been exposed to hog cholera, consists in injecting subcutaneously on one side of the body of the hog to be vaccinated, a suitable quantity of serum and simultaneously on the other side of the body, a small quantity of virulent blood taken from a hog afflicted with hog cholera. Experience has shown that by tnis method, hogs are given a firm immunity lasting at least six months and probably much longer.

The serum method alone, which consists simply of the injection of the protective serum with the simultaneous use of disease-producing blood, appears to confer only a temporary immunity upon the tested hogs, unless they be exposed to hog cholera a short time after receiving the serum, in which case, they also acquire a lasting immunity. For these reasons, the serum method alone is admirably adapted to the treatment of hogs in a herd where hog cholera has already broken out, but which have not themselves shown visible symptoms of the disease. It should be stated that either method when properly applied will not injure the hog in any way.

In reporting results of practical tests of serum made, Dr. Melvin states: "Concerning protective power of serum from hyper-immunized immunes are based upon tests of several thousand hogs. These tests were not car-

ried out in small experiment pens, but in great part upon practical conditions. During the fall of 1907, approximately two thousand hogs were treated on fifty different farms, a considerable portion of untreated hogs being left in all cases as a control on the action of the serum. Both methods of vaccination were used and the herd conditions varied widely.

The herds can be roughly classified as (A) those in an infected locality, but themselves free from disease; (B) those which were known to have been exposed by contact with sick hogs, but which had not developed disease at the time of treatment, and (C) herds in which hog cholera was present and hogs sick and dying at the time of treatment. In no case were any of the ordinary methods of combating hog cholera by disinfections and separation of the sick from the apparently healthy practiced. Where disease was present at the time of treatment, the treated were allowed to run with the sick animals along with a number of untreated animals, which served as controls; and the success following vaccination can, therefore, be attributed to the action of the serum. In herds where hog cholera appeared subsequent to treatment, all the vaccinated hogs remained well, while more than 65 per cent of the checks or untreated ones died.

In the herds which had been exposed, as in class (C), but were apparently well at the time of treatment, four per cent of the treated animals died when approximately 90 per cent of the checks succumbed. In the herds in class (C), where this disease existed at the time of treatment, and where they did not anticipate very great success, 13 per cent of the treated animals were lost where 75 per cent of the checks died.

These successful field trials, confirming as they did numerous tests carried out under experimental conditions, have convinced us of the efficiency of this method of dealing with hog cholera, and although improvements will undoubtedly be made in many other details producing this serum, the method is believed to be now in such condition as to make the practical use of it entirely possible.

While my experiments have been limited with the serum, yet with the good results I have obtained and those reported by the bureau, I have every reason to believe of its practicability. At the present time, the great drawback to universal use of this serum, is the almost prohibitive high price at which it is sold.

The price charged by those putting it on the market at the present time is $1.00 per twenty c. c., which would be a dose for a hog weighing from seventy-five to one hundred pounds, or $3.00 for one weighing three hundred pounds.

Michigan has begun the preparation of this serum, so I am informed, for the distribution to the farmers of that state at two cents per c. c., or forty cents per dose, which is sufficient for a hog of about one hundred pounds, but they hope to reduce the price materially before another season."

Dr. Melvin thinks that if the serum station would be under the control of the state, and with the production carried out with strict economy, it could be brought down to twenty-five cents per dose. This statement is based upon the supposition that each hyper-immunized immune will furnish one hundred fifty to two hundred doses of serum, and that the carcasses of the immune after final bleeding will be used for food, which would stand to reason, that the serum station should be located near some packing house center. As there seems to be no objection to the use of such a carcass for food purposes, providing the post mortem examination by a government inspector discloses no reason for rejecting it.

The serum station should be under the control of the state veterinary department, as it is the veterinary that the farmer applies to when he has sickness in his herd. It is the veterinary who must hold post mortem to positively diagnose the disease; it is also the veterinarian who administers the treatment and places the affected herd in quarantine.

The expense for the establishment of such a station would be very small as compared to the loss sustained annually from this disease. A tract of land could be leased for a term of years; rough, grazing land could be rented at a nominal sum and would answer the purpose as well as expensive land. A building for preparing the serum need not be an elaborate affair. Temporary sheds could be constructed for the housing of hogs in winter time.

The field application of serum should be in the hands of the State Veterinary Department. The state could be organized into districts, each in charge of an Assistant State Veterinarian who should have a supply of serum on hand so that prompt action may be taken when an infection appears.

Upon notification of the State Veterinarian that hog cholera has appeared in a certain locality, the diseased herd or herds should be immediately quarantined and all hogs on the farm which have been exposed or which are not visibly ill should be treated with the serum alone. All hogs on the farm which have not been exposed should be treated by the serum simultaneous method, and of course, the prompt removel of dead animals should be enforced, at the same time; all hogs on surrounding farms should be treated by the serum simultaneous method.

After the establishment of a serum station by the state, it could in a short time be made self sustaining, by selling the serum to the farmers at actual cost of production, and the farmers would vaccinate their hogs, when they are from two to eight weeks old, they could do it at a very small expense. A pig weighing twenty-five pounds only requires about 5 c. c., at the price that Michigan is selling it to its farmers, it would only cost ten or fifteen cents per hog, and larger hogs in proportion.

MALADIE-DU-COIT.

Perhaps the most interesting, and yet serious case coming to this department, and related to the horse, has been that of Maladie-Du-Coit, which originated in Van Buren County. It has been fully determined that this disease, while of very rare occurrance, was one of the most destructive known to veterinary science. In this case, the malady originated in a thoroughbred stallion, bought by a company of seventeen farmers in Van Buren County, and this animal came from Columbus, Ohio, having been shipped under proper authority, as at the time, being free from disease. The price paid for this horse was $3,000. Following is a photograph of the horse known as Marquis.

Some time after this horse was put into service by farmers, and during the latter part of the season, he developed symptoms of the disease, which was only in its incipiency when pronounced by the writer to be Maladie-Du-Coit, and stringent measures to prevent its spread were put in force at once. Later through co-operation of the Bureau of Animal Industry, this horse was shipped to Washington, D. C., with two mares, which were suffering from the same trouble. Our diagnosis was not only verified, but proved the occasion of one of the most interesting cases they had had. Subsequent action, almost brought about the quarantine of Iowa against the shipment of horses, but through the destruction of all other affected animals in Van Buren County, such measure was prevented. In all, 173 mares and 5 stallions were placed in quarantine, and about 20 head of mares were killed, the state paying for three of them and the government paying owners for the others. This practically ended the existence of Maladie-Du-Coit in Iowa. Following is another photograph showing the horse while he was in an advanced stage of the disease, and by comparsion with the first picture, it may be seen the disastrous affect produced by this disease.

MALADIE-DU-COIT.

By E. T. Davison, D. V. M.

"Maladie du Coit or Dourine, is a contagious venereal disease affecting horses and asses, and has been variously designated by different authorities as Equine Syphilis, Disease of Coitus, Covering Disease, Paralysis

No. 10. Maladie-Du-Coit
Van Buren Co.

No. 11. Maladie-Du-Coit.
Same Animal After Disease had Developed.

of Breeding Animals, etc. The different appellations being in a measure descriptive of the disease. Fortunately, the disease is rare on the western continent. The first outbreak in the United States of which we are cognizant, occurred in Illinois in 1882, being brought to this country by a Percheron horse. It was next discovered in northwestern Nebraska in the early nineties. Late in the year 1903, the disease was found by Drs. P. O. Koto and S. H. Bauman to exist in Van Buren county, Iowa. In March 1904, I was ordered by the Chief of the Bureau of Animal Industry to confer with Drs. Koto and Bauman regarding suspected outbreak of Maladie-du-Coit in Van Buren county. I did so, confirmed diagnosis already made and together with Drs. Koto and Bauman formulated plan for the eradication of the disease. Before proceeding to give in detail the campaign inauguarated for eradicating the disease in Van Buren county, possibly a history of the affection in general might be of interest to the stock raiser of Iowa.

To quote from Friedberger and Frohner—"This disease was first observed by Aumon in the Trakehnen stud in 1796. In the year 1817, it appeared in Hanover in the stud farm of Celle, and in Prussia, where it caused great losses during the thirties of last century, especially in Silesia and Poland; so that in 1840, a law containing a number of protective measures against it, had to be passed. From the year 1812, we find this epizootic in Australia, especially in Bohemia and Hungary, where it was widely disseminated at times, as for instance, from 1859 to 1862 in Bohemia.

In 1830 it was introduced into Switzerland and France where it also caused very great losses among the horses of the breeding establishments; in 1836 into Italy, in 1843 into Russia, and later into Algiers, Syria and other countries. According to Roll, it is known in England and Belgium. Although it was very prevalent for some years in Germany, it has almost entirely disappeared since the introduction of the German Imperial laws with regard to epizootics. For several years not one case has been mentioned in the statistics of the German states.

Various views have been held respecting the nature of this disease. It has been commonly supposed to be identical with human syphilis, as is evident with its old names—'equine syphilis' and 'chancre plague.' Even in recent times it was considered to be syphilis transmitted from man to mare, which view was held in France by Bouley, Trasbot, Laguerriere and others. The above mentioned authors assumed that the disease was transmitted at first by syphilitic Arabs to she-asses and from them to he-asses and mares. Laguerriere therefore, proposed the name of 'syphilis des equides' for this disease which is known in France as Maladie-du-Coit or dourine. This theory of origin is unsupported by any proof. Others state that they have seen several cases of glanders and farcy spring from dourine and consequently they regard it as identical with glanders of the genital organs. This mistake is evidently due to the fact that in a few exceptional cases, true genital glanders was mistaken for dourine. For a considerable time dourine was described by some authors as an independent disease of the spinal cord, the principal symptoms of which were stated to be paralysis. It was called on that account 'paralytic disease' (Strauss), 'nerve disease' and 'breeding

paralysis,' which is the name that is frequently applied to it at the present day."

ETIOLOGY.—Regarding the specific agent which is the cause of dourine, authorities differ. It has long been considered one of the germ diseases, but the specific germ or organism responsible for the disorder is still a matter of conjecture. Thanhoffer a noted bacteriolgist and pathologist, maintains that the specific organism is a coccus; that it is found in the vaginal secretions, semen, spinal fluid and also in the blood.

A. Lingard, M. B., Imperial Bacteriologist to the Government of India and other authorities of equal note state that the disease is due to an organism known as "trypanosoma equipiderm," a protozoon which in no way resembles the coccus claimed to have found by Thanhoffer. I quote from the article from Prof. Lingard on the subject of dourine: "The trypanosoma or its developmental form is present in the semen of the affected male and is also frequently present and after long periods but at irregular intervals in the vaginal mucus of the affected mare. The disease is transmitted by the entrance of the trypanosoma by means of an erosion of the genital mucus-membrane in either sex but an abrasion may perhaps be unnecessary in some instances. In the stallion the preferential location for the development of the protozoon appears to be the extremity of the penis and later its sheath. In the mare the vulva appears to be the usual seat in the majority of cases."

PERIOD OF INCUBATION.—The time which may elapse from time of exposure to the development of the first symptoms is variously estimated by different authorities as being from ten days to two months or even longer. I am rather inclined to the opinion however, that the period does not vary to such an extent as this would seem to indicate but that the first symptoms, in some cases are so slight as to escape notice.

METHOD OF COMMUNICATION.—The disease is transmitted from mare to stallion and vice versa, during act of copulation and not otherwise. So far as is known there is no evidence to support the theory of accidental inoculation and the chance of the disease being conveyed from one animal to another other than as above stated, is too remote to be considered.

SYMPTOMS.—In the mare may at first be so slight as to escape the notice of the owner. This is especially true where mares are running at large on the range and not seen by owners only at long intervals. Being a venereal disease, the first lesions will be found in the genital organs. The vulva will be swollen, mucus membrane of vagina, thickened and inflamed. There will be a mucu-purulent vaginal discharge which may be slight or profuse in quantity. The mare will switch her tail, appear uneasy and urinate frequently. Tumefaction of the vulva and thickening of the vaginal mucosae will soon be followed by the formation of vesicles or pimples, on the black skin of the vulva externally and on the mucus membrane of the vulva and vagina internally. These vesicles soon rupture but before doing so the contents undergo a change from a partially transparent fluid to a substance more nearly resembling pus. The rupture of these vesicles or pustules is the initial stage in the formation of deep angry ulcers. These ulcers show a tendency to heal

rapidly but invariably leave a cicatrix or scar which is permanent. On the vaginal mucosae scars in healing will cause a slight puckering of membranes. On the black skin of vulva, cicatrices or scars will always be white, usually circular in outline, from one-eighth to three-eighths of an inch in diameter depending on the size of the ulcer and will usually be pit-like and leave a slight depression similar to a pock-mark. The depigmentation of the black membrane, not temporary, as is the case in certain benign affections which simulate it. The course of the disease is chronic in most cases and in the affected subject the symptoms just described is all that will be observed for a time. In the acute form, coincident with the tumefaction of the genital organs, vaginal discharge and ulceration, paralytic symptoms will appear. Animal will become rapidly emaciated, lose the use of the hind quarters, become perfectly helpless and die in a few days. Mares have been known to succumb in thirty days after manifesting first symptoms. The paralytic stage which in the usual course of the disease may be considered the second or last stage is influenced in the time of its appearance by the conditions and environment to which the animal may have been subjected. Bad weather, exposure, insufficient feed and such diseases as influenza and distemper, or in fact any condition which tends to lower the vitality of the animal will hasten the termination of the disease.

On the other hand good care and abundant feed will prolong life indefinately. It is even possible under favorable conditions that an animal possessed of abundant vitality may have dourine in the latent for several years manifesting no alarming symptoms and yet be a source of danger. In the usual course of the disease paralysis comes on very gradually. It will be noticed that in traveling, animal does not pick up one hind foot as freely as the other. There is a tendency to partially drag the foot which will wear off the toe more than normal. This condition may shift from one hind leg to the other, in fact such a course is quite common but not universal by any means as both hind legs may become affected simultaneously. Animal after standing still for some time and being made to move suddently will manifest a tendency to get his hind legs crossed or "tangled up." Knuckling at the fetlocks is another common symptom. Prior to the manifestation of paralytic symptoms the animal may be in good flesh but becomes rapidly emaciated as paralysis becomes more complete. Mares in foal usually abort during the third or fourth month however, in rare instances mare will carry foal full time and colt may appear perfectly sound but such cases are very unusual.

IN THE STALLION disease runs much the same course as in the mare First symptoms being slight swelling of the sheath, tumefaction of the penis in the region of the glans, development on the penis of vesicles will soon form deep angry ulcers usually few in number and from one-eighth to one-half inch in diameter. Primarily ulcers are circular in outline, but where they are in close proximity, there is a marked disposition to coalesce, a large raw surface with irregular borders is the result. This ulcerative process may form a wound extending entirely around the penis. As in the mare ulcers manifest a tendency to heal rapidly leaving

white cicatrices or scars which are permanent. Coincident with the appearance of vesicles on the penis, mucus lining of the urethra will become inflamed and in some cases there will be a continual dripping from the urethra of a semi-transparent glutinous discharge. After the healing of ulcers on the genital organs there will be a gradual "falling off" in the condition of the stallion. He will lose flesh and animation. As in the mare disease terminates with paralysis which in the ordinary course of the disease comes on gradually. As paralysis becomes pronounced penis will be observed hanging pendulous from the sheath with inability to retract it, swelling and paraphimosis supervening as a natural consequence.

CLIMATIC CONDITIONS play a prominent part in the development and course of the disease in both stallions and mares. A dry climate and a high altitude seems to occasion the disease to run a more chronic course than where a moist climate and a low altitude obtains. Of the many cases that have come under my supervision in northwestern Nebraska and western South Dakota very few came up to text-book requirements in the matter of symptoms manifested. Also such cases as I had an opportunity to see in Alberta, Canada were short in the manifestation of what was considered the orthodox symptoms. The imported Percheron stallion "Marquis" (48422) 28166 was the best illustration of a typical case of any I have ever seen. This stallion which may have been responsible for the outbreak in Van Buren county, Iowa, although there is a decided element of doubt as to the extent of his responsibility, was the property of a stock company interested in the improvement of live stock in Van Buren county. Late in the year 1903, it was noted that this stallion was affected with a venereal disorder of some kind and dourine was suspected. As the symptoms became more pronounced the suspicion became a certainity and the authorities Drs. Koto and Bauman realized that unless prompt and energetic measures were inaugurated at once the disease would become disseminated through mares exposed the previous season which would inevitably result in Iowa being tied up in a quarantine. The matter was reported to the secretary of agriculture and I was directed to confer with Dr. Koto regarding ways and means of eradication. After mature consideration of the situation it was decided that all mares or stallions that had been exposed directly or indirectly, should be placed in quarantine. As a result 173 mares and 5 stallions were placed in quarantine and inspected at frequent intervals by federal and state officials during the year of 1904. It was found that 18 mares showed sufficient symptoms of the disease to warrant their slaughter. These were purchased and destroyed, the department of agriculture paying the indemnity on 15 and the state paying the indemnity on the other three. Two stallions were castrated, one of which showed symptoms of the disease. The stallion "Marquis" and two diseased mares were shipped to the government experiment station at Washington. One of the mares died a few hours after arriving in Washington. "Marquis" died late in the fall of 1904.

When we come to trace up and locate in the spring of 1904, the mares and stallions that were exposed to dourine during the season of 1903,

it was surprising to find to what an extent they had become scattered. One stallion was found in Nebraska, one in Illinois, one mare after a long hunt was found in St. Louis. One mare was found working on a dray wagon in New York City. The tracing and finding of this last mare I consider a very creditable piece of work and was accomplished by Dr. L. Enos Day an inspector in the bureau of animal industry.

The hearty co-operation of state and federal authorities in eradicating this outbreak is a striking illustration of what can be accomplished by such co-operation. As result, Maladie-du-Colt does not exist in Iowa today and I might state in this connection that so far as we know, it does not exist elsewhere in the United States.

CATARRHAL PNEUMONIA.

By Dr. Hal C. Simpson.

The causes of Catarrhal Pneumonia are variable. Some that may be mentioned are: Young age, a weak constitution, lymphatic disposition, an imperfect nutrition and overheated stables. Cold plays an important part, as does damp weather, sudden changes and thick fogs. Its appearance in the spring and fall can often be traced to these causes: Mechanical and chemical irritations, inspirations of gas, hot air or smoke, air loaded with fodder rust and infectious matters. It is of great importance in cattle because it forms the usual foundation for the entrance and the spread of the tubercle bacillus.

Catarrhal Pneumonia is characterized by its distribution in centers. At times there may be but one small island. At other times a number of islands may become united and when the small air tubes are pressed upon, a bloody or rusty discharge appears.

A special form of catarrhal pneumonia is the hypostatic or sinking pneumonia. It arises when in consequence of gradually increasing weakness of heart, the flow of blood from the lungs is disturbed. Hypostatic pneumonia has its real seat in the lower parts of the lungs whither the congested blood sinks by gravity. It occurs especially in weak and enfeebled individuals; also during chronic heart complaints, blood diseases, etc.

SYMPTOMS. Shivering, followed by a hot stage, accelerated pulse, short, quick, labored breathing, heaving flanks, frequent cough, which is hacking and easily excited, dilated nostril, and redness of the mucous membranes, a dry muzzle, tenderness of the back and breast bones, and a flinching when they are pressed between finger and thumb, suspension of the appetite and rumination, and in cows, suppression of the secretion of milk. The mouth is open and the tongue protruding to facilitate breathing, and in bad cases, each expiration is accompanied by a moan or grunt. In many cases, the ox can lie on his flattened breast bone and maintain the breathing process, but when the disease is severe, he stands no less obstinately than the horse, his elbows turned out and nose protruding and directed toward a window or other opening.

Among the favorable symptoms may be mentioned, increased anxiety and distress, a more oppressed breathing; the animal standing constantly in one position with legs spread apart, elbows turned out, nose ex-

tremely raised, nostrils widely dilated, mouth open and tongue protruded; the expiratory grunt deep and prolonged; the cough, frequent and so weak as to be almost inaudible, being rather like a forced respiration; and the pulse, rapid, feeble and imperceptible.

The prognosis is favorable in moderate cases subjected to early treatment. The termination by suppuration, is more frequent than in the horse. The general symptoms are ameliorated, appetite and rumination return, though they remain capricious and irregular, there remains the double action of the flanks, the dry, rough muzzle, the tense, inelastic skin, frequently varying in temperature; the beast shivers at intervals; the cough is weak and often repeated; a yellowish, thick discharge takes place from the nose; weakness and emaciation increases, and the animal dies in from twenty to thirty days.

Gangrene of the lung, sometimes intervenes. In severe and prolonged cases, a violent fetid diarrhoea often supervenes and hastens a fatal result.

TREATMENT. A saline laxative may be used with advantage early in the disease, and then a small amount administered every other day to prevent constipation. Counter-irritants are of great value, mustard plasters are of great benefit, and are better and cleaner than oily liniments.

In cases where the disease deviates from its normal course, the theropeutic intervention varies according to the cases. When fever is high and animals weak, we must resort to acetanilid and alcohol. If we recognize symptoms of cardiac weakness, digitalis is indicated. When recovery is slow, we must resort to inhalations of steam and cold compresses and administer alkalines. When suppuration or gangrene is present, inhalations of tar or cresol, is of great value, and the application of mustard plasters. This treatment should be aided by hygenic surroundings and good feeding.

INFECTIOUS CONJUNCTIVITIS ENZOOTIC OPTHALMIA.

By Dr. F. J. Neiman.

Infectious conjunctivitis enzootic opthalmia, is a fairly common contagious disease of cattle, sheep and goats, and is usually found among animals grazing on low lands, age not seeming to render any exempt.

CAUSES. The causes given by different authors are numerous. Some claim that it is due to an irritant in the food, while others lay the whole blame to micro-organism, each theory being based on practical observations.

TRANSMISSIBILITY. It has, however, been shown beyond a reasonable doubt, that it is transmissible from one animal to another. We know of several instances where a herd has become infected from the admission of a diseased animal. One attack usually renders an animal immune, although the premises may be infected for years.

SYMPTOMS. The usual symptoms of an animal suffering with an elevation of temperature are presented, such as dullness, loss of appetite, suspended rumination, with the addition of muco-purulent discharge from the eyes, sometimes streaked with blood, causing swelling of the eyelids and irritation of the mucous membrane.

If, at this stage, the disease does not terminate favorably, complications may arise causing opacity of the cornea, which may result in ulceration and perforation, terminating in partial or complete loss of vision.

TREATMENT. The following treatment has proved very satisfactory in my practice:

First—Remove all infected animals to as comfortable and sanitary quarters as possible.

Second—Allow only the most digestible food, giving internally as a purgative, epsom salts, followed by nitrate of potash as diuretic and sedative, doses being regulated according to the size and age of the animal affected.

Local treatment consisting of silver nitrate, one in one hundred, injected into the eye once or twice daily.

In conclusion, I cannot state too forcibly, that stockmen should be exceedingly careful about admitting suspicious animals into their herds without first ascertaining whether or not they are affected with this disease.

VERMINOUS BRONCHITIS.

This disease has been discovered in various parts of the state during the last few years, more especially the southern portion, but the outbreaks have been less numerous during the last two or three years, than formerly. While it is considered that Verminous Bronchitis prevails during the wet and rainy seasons, it is an interesting fact, that less outbreaks have occurred during the last two or three years than formerly even though the rainy seasons continued. This probably can be accounted for to a certain extent owing to the fact that when the disease has once obtained a foothold in a herd, it is quite probable that the parasites may spread from one animal to another, through the young parasites or eggs, being caught up by an affected animal and swallowed with the food or drink, or inspired in the air by a healthy animal. Oft-times, the unsanitary conditions of the premises are responsible in a measure. Ponds of stagnant water supplied by drainage tiles from infected districts, etc. The theory of migration of the parasite (strongylus micrurus) is not definitely determined. It is possible that the eggs entering into the digestive tract are taken up through the circulation and pierce their way through the vicera into the bronchial tubes where they develop. The symptoms of this disease vary, usually the first thing noticeable is a slight cough and general debility, the cough increasing with labored breathing. Enlarged glands of the throat, and swollen tongue, with bulging eyes, are also symptoms. Medicinal treatment as a rule is not very satisfactory. Hypodermic injections of turpentine into the trachea or windpipe, or inhalation of chlorine gases are sometimes beneficial. The animal should receive good, wholesome, nutritious food, and be placed in warm and sanitary quarters.

For a fuller detailed explanation and description of this disease, will refer you to the following article by Dr. L. U. Shipley, assistant state veterinarian.

Verminous bronchitis is caused by strongylus which are lodged in the trachea and bronchial tubes, where they set up successively bronchitis and catarrhal pneumonia. The strongylus which are found in domestic animals are in the sheep and goat, strongylus filaria, and rarely strongylus paradoxus; in cattle, the strongylus micrurus, horses are said to be rarely affected with this species. In the pig, the strongylus paradoxus.

NATURAL HISTORY. When in a sexual condition, the strongylus are located in the trachea and bronchial tubes of sheep, ox and pig. Eggs in embryo are developed in the ducts; those which are expelled by coughing continue to grow in pools and swamps. It is not yet known if their complete evolution requires an intermediate host, the larvae are ordinarily injected with water and food and possibly by inhalation of dust in which they are suspended. Infection of animals usually occurs in spring or in summer. The disease is usually dormant for some time and does not appear until late summer months or in fall. It is most common during rainy years and may disappear during dry years. This would seem to establish the influence of dampness upon the development of the strongylus. In some damp and swampy countries, the verminous disease is stationary and enzootic. It has not been recognized in animals kept permanently stabled; direct contamination is not probable. It is likely that the embryo after having entered the stomach, reaches the bronchia by the oesophagus and trachea. The tenacity of existence of strongylus and their embryo is great. It has been demonstrated that they preserve their vitality in water for more than two months; they also resist exposure to heat.

PATHOLOGICAL ANATOMY. The alterations found in the bronchial tubes and pulmonary tissues are variable; we observe at times lesions of chronic bronchitis, lobular centres of bronchial pneumonia. Verminous bronchitis is characterized by tumefaction, purulent hemorrhagic phlegmasia of the bronchial mucus membranes which is covered with nodules containing parasites. In the trachea and bronchial tubes are found balls formed by worms and coated by mucus and pus. This duct presents sac-form dilation, at these points, the interior of the bronchial tubes is filled with purulent viscous exudate which in some instances is bloody and in which may be found mobile eggs and embyro. We may also observe centers of lubular pneumonia, produced by extension of inflammation into the pulmonary tissues. Beside the pulmonary alterations, we recognize in serious cases, general anemia and infiltration of internal cavities and connected tissue.

SYMPTOMS of Verminous Bronchitis are: Bronchial catarrh; the animals begin to cough, which is first strong, croaking, rattling, later it is weaker; it is excited when the animals are exercised; there is a mucus discharge salivation, respirations are labored, wheezing and rattling; the animal becomes weak and emaciated; the mucus, membranes are pale and bloodless; death occurs from general anemia and exhaustion after weeks or months, or by asphyxia at any time.

VERMINOUS BRONCHITIS, is prevalent in parts of Continental Europe, according to the veterinary authors of those countries. It is also quite widely distributed throughout the United States. The veterinary departments of various states, have reported its existence from time to time. In northwestern Iowa, its first appearance to my knowledge, was in the summer and fall of 1904. In August or September of that year, I visited an affected herd near Struble, Plymouth county, Iowa. In this herd of about 200 yearlings, 30 head had succumbed to the disease

at the time of my visit. This lot of cattle had been purchased at the Sioux City stock yards a month or more previous, and were undoubtedly infected when purchased. I was unable to trace these cattle to the point of origin, the statement of the commission man who sold them was, that they were a mixed lot purchased from different parts of the country. These cattle were pastured after purchase on a bottom pasture along the west Floyd river, where plenty of running water flowed through the pasture, but was not convenient for the fact that the bank was too steep to allow the cattle easy access to the water. Back on the bottom, there was a good sized pond of stagnant water easily accessible and out of which these cattle obtained the most of their drinking water,—so I was informed by the owner. Had these cattle been pastured here all summer, to this pond might have been attributed the source of infection.

In October of the same fall, I visited a farm near Sioux Center, Sioux county, where I found several spring calves affected. This party had also purchased a part of his calves in Sioux City, but some of his own raising as well as those purchased, were affected with verminous bronchitis. The question here arises: Were those home raised calves infected by the imported ones? It would seem to be so, for as far as I could learn, there were no other animals affected in this vicinity.

TREATMENT. Various methods of treatment have been recommended for verminous bronchitis with variable success. Some report success by inter-tracheal injections of turpentine. In the Plymouth county herd reported in this paper, the chloride gas treatment was recommended and applied three successive times by a veterinarian at Le Mars, who reported the treatment successful, stating that no more animals died after the treatment. It is also important that affected animals should have a good supply of nourishing food, also, tonic medication may be resorted to.

RABIES, OR HYDROPHOBIA.

This disease in certain parts of the state, has been very fatal among live stock. In certain localities, it has been more prevalent than in former years. The disease has been found to exist in the following counties: Allamakee, Boone, Buchanan, Clinton, Clayton, Chickasaw, Cedar, Crawford, Carroll, Dallas, Dubuque, Delaware, Iowa, Johnson, Jefferson, Jones, Madison, Muscatine, Polk, Pottawattamie, Tama, Van Buren and Warren. Several outbreaks have occurred in the counties of Polk and Warren near the Army Post, where several horses, cattle and swine were bitten, and died from the disease. The outbreak was started by a rabid dog. Strict quarantine measures were enforced for some time, and the disease practically eradicated. A recurrence took place with similar results, but was finally stamped out.

A few very bad outbreaks occurred in the counties of Jasper, Story, Linn and Clinton. A few of the exposed people took treatment at the Pasteur Institute at Chicago.

The new rules and regulations makes it the duty of the local board of health, and township trustees, when informed of an outbreak of rabies or any other contagious disease in their locality, to co-operate with the State Veterinary Surgeon in eradicating such diseases. These rules have been of material benefit in stamping out this disease. One effective measure taken was that of requiring all dogs to be muzzled. All stray dogs were killed, and those directly exposed were, by request of this department destroyed by their owners.

The following article is contributed by Dr. J. G. Parslow.

Rabies, or hydrophobia, is an acute, infectious disease of the central nervous system, which occurs in man as well as in other warm blooded animals.

In this country, it is commonly met with in the dog and allied species, the wolf, fox, jackal, rabbit, cat, etc. So far, no species of animal except pigeons, has been found to bear immunity against rabies virus. In these birds, the older ones only seem to bear a certain resistance.

From the many points of anology which exists between rabies and other acute infectious diseases, the conclusions would seem unavoidable, that rabies is caused by a specific micro-organism, but all efforts to

establish this by experiment and observation, have so far proved futile. Though the specific infectious agent is not known, it can be propagated in the central nervous system of living animals. By inoculation of animals, it has been shown that the poison is always present, sooner or later after infection, in the brain, spinal cord, nerve trunks, and saliva of infected animals. It is present in these situations even before any symptoms have developed. During the incubation period, while the animal is apparently well, it is not usually found in the milk, lachrymal secretions, pancreas, testicle of semen, aqueous humor of the eye, cerebro-spinal fluid, or in the foetus, though it has been found in one or the other.

Accidental infection usually results from the bite of a dog and therefore, is due to the introduction of the saliva of the rabid animal into wounds made by the teeth. Sometimes infection results from the licking of an abrasion by a pet dog, that is going through the incubation period, and before any symptoms of the disease have manifested themselves in the animal. For this reason, mad dogs are especially dangerous while going through this stage. They are not suspected of being mad and are not avoided as they are after the symptoms have developed.

In rabies, as in other infectious diseases, there is always a period of incubation between infection and the appearance of the symptoms of the disease. This period of incubation varies in rabies not only in different species of animals, but also in different individuals of the same species. In dogs and horses from fifteen to fifty days, seldom more or less. In man, it varies more and might be from fifteen to seventy-five days or even longer.

SYMPTOMS. The symptoms of rabies does not appear as soon as the poison reaches the brain and spinal cord. The saliva may be infectious for two or three days before any symptoms are presented. In the dog and horse, the first symptom is an irritation of the original wound. This wound although completely healed, commences to itch when the patient will rub or bite it into a new sore.

Melancholia and moroseness, with restlessness and irritability, abnormal appetite, satisfied only by indigestive foods, such as sticks, stones, dirt, etc. The symptoms may be insignificant at first, and for this reason the animal is more dangerous at this time than later, when the symptoms are more manifest. This stage lasts from one to three days, and is often followed by a period of raging madness. In the absence of this frenzied form, there will be a morose stage, followed by paralysis of the muscles of the jaws and later of the hind quarters. The lower jaw drops, the mouth remains open, the bark is peculiar and hoarse, there is rapid emaciation, irregular movements, partial paralysis and death in from two to three days. This form of the disease is spoken of as "dumb rabies" and runs a more rapid course than the "raging madness." The early symptoms are the same, in the latter we see frenzied spells characterized by a desire to snap and bite at everything around. This lasts from three to four days and passes into the paralytic stage, death following from three to six days.

The microscopic changes shown at autopsy, are not characteristic as one might expect. The blood is dark and thick. The mucous membrane shows a catarrhal condition with hyperaemia, especially so in the respiratory and digestive tract. In the dog, the stomach usually contains various indigestible substances which was taken to satisfy an abnormal appetite, emaciation is pronounced.

But the most marked lesions, are noticed in the central nervous system. Besides extensive oedema of the brain, there were considerable microscopic changes. These consist of diffuse myelitis of both white and gray matter, accompanied by degeneration of the nerve fibres and ganglia. The axis cylinders of the nerve fibres of the central nervous system, are hypertrophied. The nerve cells are trophied and contains pigment. These changes are most marked in the motor centers. The most characteristic lesions are seen in the cerebro-spinal ganglia, in which there is a proliferation of the endothelial capsule of the ganglion cells and a corresponding destruction of the latter cells (Van Guhuchten & Nelis).

The disease may be prevented by an early excision or cauterization. This should not be overlooked, though hours or even days might have elapsed since the suspicious wound was received. The very slow progress of the virus in the tissues, might in this way be overtaken. It is said to at least prolong the incubative period. In this way, the Pasteur treatment could be resorted to, as it should be and invariably is, for it affords a means of prevention that very rarely fails.

The principle of this treatment, or rather the object aimed at, is the rapid production of the immunity in the patient during the period of incubation of the disease. If immunity can be established before the termination of the period of incubation before any symptoms have developed, the progress of infection is arrested. The method consists in inoculation once a day, for from fifteen to twenty-one days, with a virus of graded potency. The virus employed consists of bits of the spinal cords of rabbits possessing such potency, by repeated passages through the central nervous system of these animals, that it produces death from rabies in nine to ten days in rabbits by subdural inoculation.

OUR RELATION TO KINDRED DEPARTMENTS OF OTHER STATES.

The Department of the State Veterinary Surgeon of Iowa, has, during the past three years, affiliated closely with similar departments of other states. Reports of all contagious and infectious diseases existing among live stock, have been forwarded to this office from time to time, promptly, as such diseases originated. We have, therefore, kept in close touch with existing conditions in other localities.

While there have been few infectious diseases transmitted to the State of Iowa through shipping stock, we believe that the precautions here stated, have prevented any such movement on the part of owners of such animals, and, it is a well known fact, that Iowa is not a dumping ground for undesirable live stock.

In accordance with Section 5028-j, Chapter 14, we have caused to be issued to purchasers of stock residing within the State of Iowa, a certificate proving that all stock imported into this state, are free from infectious diseases. This is commonly known as a health certificate and permit for the shipment of cattle for dairy or breeding purposes, and applies only to registered cattle or cattle eligible to registration. There have been a large number of such certificates received by this department.

In this connection, we find but one draw-back to the plan of receiving such certificates. There have been some cases under suspicion where tuberculosis is at issue, and we believe that stock have had the tuberculin test one or more times, and finally become immune to the test, so that when passing before the inspector ready for shipment, the tuberculin test does not develop the actual conditions of such animals. In such cases, we have made tests which have developed tuberculosis in such cattle passing inspection, and they have been slaughtered, and the fact that these cattle were registered and were high priced stock, has been a heavy burden of loss to such purchaser, and for this reason, the certificate described above, has become a matter of utmost importance as a protective measure to breeders of high grade stock. On the other

hand, the department issues a certificate upon the same plan. Appended hereto, is the blank form used for this purpose. These certificates, and so far as our knowledge extends, prove of the utmost value to shippers of live stock to Iowa, and they have been subjected to the closest scrutiny of the officials examining them at the point of delivery.

The expense of this inspection and issuance of this certificate is borne by the shipper.

REPORTS FROM PACKING HOUSES.

In each of the larger packing houses located within the State of Iowa, the government maintains an inspector whose duty it is to pass upon the condition of stock received for slaughter after post mortem. These inspectors in turn, send to this department a memorandum of final post mortem examinations, showing the nature and condition of disease, if any, of any live stock so slaughtered; also giving the location from which such stock is received. Through this means as applied to inter-state shipments of cattle, we have been in close touch with the conditions existing among practically all the live stock offered for sale to the packing house.

We have also traced back tuberculous conditions to localities where they were least suspected, and after examination, have found we were justified in making the tuberculin test, and preventing through quarantine measures, any further spread of the disease. The reports above referred to, are filed in this office and under constant surveillance, so that in the event that they are of a serious nature, we are able to prevent outbreaks of any other surrounding stock. We have been favored with the co-operation of the management of packing houses, owners of shipping stock and shippers in suppressing any spread of disease, and also, in disinfecting premises and stock cars where disease is known to have existed.

THE BUREAU OF ANIMAL INDUSTRY.

There is no wider range of identification of the live stock interests of this country, than that originating through the Bureau of Animal Industry. An efficient corps of inspectors under the management of a chief inspector at Washington, is always in close touch with the stock shipments originating throughout the United States. Iowa has had no small part of shipments to eastern markets. The inspector at such points or yards, where the Iowa cattle are unloaded, also makes a thorough investigation of their condition, and we have had but few reports derrogatory to the welfare of our cattle shipping interests.

The Bureau of Animal Industry file with this department a list of the names and addresses of all Iowa shippers, number of animals shipped, points of destination, and finally, the last post mortem reports on such animals. These reports originating in Washington, and forwarded under the authority of the chief of the Inspection Division, are on file in this office.

During the past three years, there have been few other diseases outside of tuberculosis and scabies reported, and these were found to be of an incipient form only. The Bureau of Animal Industry also have supervision over the inter-state shipments, and the shipment of breeding and dairy cattle into other states. There is a stringent law prohibiting the shipment of infected stock and this law is enforced, inasfar as the jurisdiction of the inspectors will admit. We have had cases where an effort has been made to ship diseased stock from Iowa into other states, and through the Bureau of Animal Industry, we have learned of this effort, and prevented such violation of the law. In this connection, we also received through a joint circular issued by the Western Trunk Line Committee of Chicago, information as to the quarantine rules and regulations applied to state and inter-state traffic, and under supervision of the Railway Company's transporting stock; also governing the location of unloading or feeding points upon the route or any cross-country shipments. Such unloading or feeding pens are subject to disinfection, etc., to prevent the existence or spread of any disease.

These reports are kept on file in this office for reference at any time.

FEDERAL MEAT INSPECTION.

DR. G. A. JOHNSON.

According to the English statistics, the people of the United States are the largest meat eaters of the world, with the possible exceptions of the Australians. It is probable that we now consume an average of about 125 pounds of meat annually for each person, young and old, of the United States proper. Taking into consideration the fact that such a vast amount of meat is being annually consumed for food, together with the absolute knowledge that a number of diseases are communicable from the lower animals to man, should make it patent to all that the health of our people demands that its meat supply should be clean and wholesome and free from diseases.

On the other hand, it will be readily understood that any unnecessary demands that would materially interfere with the live stock industry, would be felt to a greater or lesser degree throughout our vast business system; because the live stock industry is not only one of the largest of the country, but it is also intimately connected with such industries as the packing houses, the stock yards, the railroads and agriculture. With this information before us, it must be evident to all, that to formulate and carry into effect any set of regulations relative to the inspection of the meat products of the country that will afford reasonable protection for the consumer on the one hand, and that will not, on the other hand, be burdensome to any of the allied industries, is a problem of vast magnitude and importance. But we are now in a position to state that this has been accomplished in a large measure by the system of federal inspection now in vogue in this country. And, notwithstanding the fact that the primary object of this inspection was to protect our export trade, it has under the wise direction of Dr. D. E. Salmon, ex-chief of the Bureau of Animal Industry, been gradually enlarged and perfected so that now it includes a large proportion, but not all of the meat products used in this country.

Owing to the fact that the federal government has no legal authority to make regulations that interfere with the matters of state within the state, it has no authority to inspect any meats except such as are offered for interstate or export trade. Consequently, no slaughter house is supposed to have federal inspection that does not do an interstate or export business, but many, in fact most of the packing houses, do more or less local trade, as well as interstate and export business. At first, the packers thought that by taking advantage of the law, they could get all the benefits of the inspection for their interstate and export trade, and at the same time, escape the loss of the condemned carcasses by stating that all such carcasses were intended for local trade; but it was found impractical, if not impossible, for the inspectors in the large packing houses to keep the carcasses that were slaughtered for local trade separate from those slaughtered for the interstate and export trade. So in order to obviate the difficulty and also to relieve the state of the burden of looking after the diseased carcasses that might be rejected from interstate and export trade, the Secretary of Agriculture early adopted the plan of making each firm enter into an agreement, to abide by the rules and

regulations and to tank all diseased meats that are condemned by the inspectors before he grants them inspection, and should they refuse to stand by this agreement, he could take the inspection away from them. By this method, the chances for a conflict between the packers and inspector, and the federal and state inspectors, is greatly lessened and the local patrons of these houses get meats that are inspected the same as those for interstate and export trade.

From a sanitary standpoint, the meat products from the large packing houses where federal inspections are maintained, are more wholesale than are the meats slaughtered in the smaller houses where no inspection is maintained, because, where there is no inspection, the butcher will seldom tank a whole carcass, but usually he will trim off the diseased parts and sell the remainder. The fact that the federal government maintains a system of inspection at the larger live stock centers, adds rather than detracts from the reasons why local communities should maintain inspection at their local slaughter houses; because the tendency is for those who know that their stock is diseased to try to sell it at home and often they will sell at a very low figure rather than ship it to the stock yards where there is inspection and take the chances of having it condemned. For this reason, many diseased animals find their way to the slaughter house of the local butcher, who, because there is no inspector present to watch him, can remove the diseased parts and sell the remainder as good wholesome meat to the unsuspecting public.

Having thus given a somewhat general discussion of the reason why meats should be inspected and the objects to be obtained, we will now take up the discussion of how the work is done.

In the first place, there are at least two inspections of every animal—the first of the animal while alive, which is known as the ante-mortem. This is made at the stock yards, or where there are no public yards, in the pens of the packing house where the animal is killed. This ante-mortem inspection is for two purposes. First, to note such animals as show symptoms of such diseases as actinomycosis, lumpy jaw, hog cholera, etc. These animals are tagged or marked, and a notice is sent to the inspector in the slaughter house, so that the symptoms that they present alive, may be considered when the final inspection is made of the carcass. The second purpose is to learn if they are affected with any contagious disease that is of sufficient importance to demand attention, such as sheep or cattle scab, hog cholera, etc.

It will be readily understood that the inspection at our large public yards, where many animals are received from various parts of the country to be sold and re-shipped to other parts, is of great importance, not so much from the point of wholesome meats, but more especially to the stock industry because of the check it forms to the carrying of contagious diseases from one section of the country to others, some of which might be of considerable distances.

By the system now in vogue, all stock arriving at yards where inspection is maintained, is inspected at the dock as the animals are unloaded; or in case they have been unloaded in the night, they are inspected in the pens before they are sold; and any lots that present symptoms of

such diseases as scab, cholera, etc., are held for final disposition according to the regulations of the Secretary of Agriculture.

These regulations are formulated for the purpose of preventing the spread of the disease, and consequently vary according to the character of the disease and its mode of transmission; and the regulations relative to any particular disease may be changed from time to time as the conditions change. For illustration, cattle or sheep that are found upon yard inspection to be affected with scabies, may be slaughtered at the local abattoirs; for these are diseases of the skin due to a small parasite, somewhat like a louse, and the flesh is not affected except in the latter stages of very severe cases. But scabby cattle are prohibited from being shipped to other public yards until after they have been dipped; and where they are to be shipped to country points for feeding, stocker or breeding purposes, they must be dipped twice at about ten days apart. This is done to prevent these diseased animals conveying the disease to those localities that are now free. The regulations relative to hog cholera and its allied diseases, prescribes that no swine can be shipped from public yards to country points for any purpose.

The reasons for this are, that these diseases are contagious and healthy swine may contract them by being yarded in pens that have recently held diseased hogs. Owing to the fact that more or less diseased swine are being continually shipped to market, the public yards are always infected so that all hogs being yarded in them are exposed to the germs of these diseases, and experience has demonstrated that where hogs have been taken from public yards to country feed lots, they usually contract one or more of the diseases and more or less of them die; thus making it not only a poor investment for the owner, but also a center of infection for the spread of the disease; and, therefore, a source of danger to all his neighbors who own swine. Numerous instances are on record where cholera has been carried into non-infected territory and at times several hundred miles from the yards where the disease was contracted.

The general public may think that no one would take the chances of carring a contagious disease like hog cholera, sheep scab, or cattle mange from the yards to their stock at home, but it should not be forgotten that there are always men who do not know that these diseases and others—a more dangerous class, who think that they are wise enough to do those things that good prudent business men would not consider wise or safe, and the public needs protection from these classes of individuals. This protection is afforded to a greater or less degree by the extension of the meat inspection system to cover this work. So much for the branch covering the control of contagious diseases.

The stock that is sold for slaughter in the city where the inspection is carried on are inspected again—as they go to the scales to be weighed —for such diseases as actinomycosis, tuberculosis, abscesses, injuries, etc., and such animals as present any of these diseases sufficient to make probable that their flesh will be unwholesome for food, are tagged with a metal tag bearing a number so that the animal may be identified when it reaches the slaughter house. Then the inspector doing the post mortem work is notified of the condition of the animal at the time it was weighed

and this information is used by him in making his decision as to the wholesomeness or unwholesomeness of the carcass.

When slaughtering is going on at a house where federal inspection is maintained, the inspectors are there to inspect the animals as they are dressed. The inspection of cattle is made by the inspector passing along with the gutter, the man who removes the internal organs, intestines, liver, lungs, heart, etc., and as these viscera drops to the floor, the inspector has an opportunity to examine them. As the inspectors are all educated in this line of work, by practice, they soon become so proficient that they can tell at a glance if the carcass is in a normal condition or not, and usually they can tell as soon as all of the parts can be seen whether the carcass will be wholesome for meat or not. But, in cases where it cannot be determined at once whether the flesh is fit for human food, the carcass is tagged with a numbered paper tag and sent to the detention room where it is held until the exact condition has been determined. All parts of the carcass, as head, tail, fat, etc., must be tanked or held until the animal is finally disposed of and in case the carcass is condemned these parts go with it.

The carcasses of all cattle that are considered unwholesome for food are tagged with condemnation tags and tanked at once or are held in the detaining room, which is under a government lock, the key of which is held by the inspector until such time as it is convenient to the house and inspector to tank them. All condemned carcasses are tanked and rendered with fertilizers, etc. This is done under the supervision of an employe of the bureau, who sees the carcass cut up and put into the tank and then he seals up the tank so that it cannot be opened without breaking the seal. After the carcasses are cooked sufficiently to destroy them for food, the same or another employe of the bureau breaks the seal. All beef quarters that are passed for food, are marked with a label bearing a serial number and the words "U. S. Inspected."

In the larger packing houses, the hogs that are to be slaughtered are driven into a small pen—catch pen—where they are caught by fastening one end of a short chain around one hind leg, and the other end is hooked to a large revolving wheel (hoist) which raises the hog on an inclined rail and as the animal slides down this rail, the sticker, with a long, sharp-pointed knife, severs the large blood vessels just inside the chest. As the carcass passes along the rail, a large part of the blood escapes from the body, then the carcass is dropped from the end of this rail into a long scalding vat, through which it is worked, so that when it reaches the further end, it is sufficiently scalded and is lifted from the vat by machinery to a table where, by means of a special hook inserted between the lower jaws, it is attached to an endless chain which draws it up through a machine known as a scraper, which removes a large portion of the hair.

From the scraper the carcass is dropped to the scraping or heading bench, which has a moving top that carries the carcass along the rail. On this bench more of the hair is removed, the head is nearly severed from the body, and the gambrel is put in place. By this time, the carcass has reached the end of the bench and the gambrel is put upon a roller hook

and dropped head downward upon the rail. From here, it is carried along by means of an endless chain arrangement. While the carcass is passing along this rail, the remainder of the hair is removed, the carcass is opened, the viscera (internal organs) and leaf lard are removed, and after passing through one or more washers, the head is cut off and the carcass is split in halves. In this condition, it passes to the hanging floor, where it is held a short time to drip and cool off. It is then passed on to the chill (refrigerating) room, where it is thoroughly cooled before being cut up into shoulders, hams, loins, bellies, etc.

By this means it is possible to kill from 200 to 1,000 hogs per hour, according to the room, machinery, and number of men employed. To those not familiar with the work, it might appear impossible to properly inspect so many hogs per hour, but, by the method now in vogue, it is possible for two men to do this work very thoroughly and without materially interfering with the workmen of the company.

This is accomplished by having one man examine the glands of the head and neck, either on the header's bench after the head has been cut nearly off, or on the rail before the carcass reaches the gutters; and when a carcass presents lesions of disease either on the external skin surface or in the glands of the neck, he attaches a numbered tag on the carcass, the head and viscera, except the intestines, being left in these carcasses.

The second man, who is stationed at the gutters' bench near the rail, can plainly see all of the carcasses as they pass and also all of the viscera as they are removed; and when he sees a carcass or viscera that is diseased, he tags the carcass. He also makes a close examination of the viscera of all tagged carcasses and notes the lesions found upon a record slip kept for this purpose. When a carcass bearing a government tag reaches the hanging floor, it is run aside and held for final inspection.

The final inspection is made by making a close examination of the carcass and the retained viscera—lungs, liver and spleen—and the conditions presented at this examination, together with those noted by the man at the visceral bench, determines what shall be done with the carcass. This final inspection is made necessary because the men do not have time to make a sufficiently close examination while the carcass is passing along the rail. On final inspection, those carcasses that are found diseased to such an extent as to make flesh unwholesome for food, are condemned. But where the disease is not of sufficient extent to render the meat unwholesome, the diseased parts are removed and the carcass passed for food, when it is taken to the chill room with the others of the day's kill.

Of the carcasses condemned when the disease is of such a character or extent as to render it fit for food after proper cooking, it is permissible to render them into lard after all diseased parts have been removed by the inspectors; while such carcasses as are so diseased as to make them wholly unfit for food and all diseased parts are at once placed in tanks and cooked with other refuse material until rendered inedible. Or they may be placed in the retaining room and held under lock until such time as it is convenient for the company and inspector to tank them. The tanning of hog carcasses is done under the supervision of an employe of the government the same as beef carcasses.

The inspection as now carried out is of great importance, not only to the public because of giving them a more wholesome meat supply, but also to the live stock industry in general by materially checking the spread of certain contagious diseases and protecting and keeping open foreign markets for our surplus meat products.

Again, the records of the post mortem inspection furnish valuable knowledge of the prevalence of the more common diseases of meat animals and by comparing the records from year to year, it may be ascertained whether these diseases are on the decrease or increase.

Thus it is demonstrated that tuberculosis of cattle and swine is on the increase, while hog cholera and its allied diseases have been gradually diminishing for several years.

The stock raisers could receive valuable lessons if more of them would call upon the inspectors and go with them and look over the diseased carcasses. By such a method, they would not only learn what diseases are prevalent, but they would become familiar with the appearances—pathology—of the various diseases; and by questioning and discussion of the various questions with the inspectors, they could gain valuable information relative to the freeing and keeping their animals free from disease.

Name	Address	No. Days	Per Diem	Expense	Total
D. E. Baughman	Fort Dodge	246	$ 1,230.00	$ 1,060.18	$ 2,290.18
S. H. Bauman	Birmingham	10	50.00	32.23	82.23
L. U. Shipley	Sheldon	63	315.00	186.71	501.71
H. C. Simpson	Denison	84	420.00	311.77	731.77
W. L. Evers	Iowa Falls	29	145.00	82.50	227.50
S. H. Kingery	Creston	5	25.00	12.13	37.13
J. R. Sanders	Corydon	27	135.00	53.77	188.77
Peter Malcom	New Hampton	41	205.00	145.58	350.58
S. K. Hazlet	Oelwein	43	215.00	171.13	386.13
J. W. Griffith	Cedar Rapids	101	505.00	351.54	856.54
J. G. Parslow	Shenandoah	38	190.00	89.15	279.15
Bernard Harmon	Decorah	18	90.00	38.37	128.37
J. D. Inger	Waverly	8	40.00	19.83	59.83
S. H. Johnston	Carroll	31	155.00	75.94	230.94
J. H. McLeod	Charles City	20	100.00	72.40	172.40
F. J. Neiman	Marshalltown	32	160.00	122.72	282.72
E. G. Piper	Ida Grove	6	30.00	18.88	48.88
George Kerr	Washington	27	135.00	70.22	205.22
G. A. Johnson	Sioux City	5	25.00	7.85	32.85
R. R. Hammond	Cherokee	14	70.00	59.20	129.20
J. A. Anstey	Massena	9	45.00	35.50	80.50
E. A. Buxton	Vinton	1	5.00	3.50	8.50
J. H. Spence	Clinton	63	315.00	269.76	584.76
F. E. Brazle	Harlan	32	160.00	100.03	260.03
C. E. Stewart	Chariton	18	90.00	73.20	163.20
S. T. Miller	Council Bluffs	24	120.00	42.48	162.48
A. L. Wood	Hampton	14	70.00	37.10	107.10
H. E. Talbot	Des Moines	390	1,950.00	1,201.79	3,151.79
Paul O. Koto	Des Moines	239	1,195.00	2,606.93	3,801.93
G. Lames	Dysart	5	25.00	2.50	27.50
R. F. Readhead	Corning	1	5.00		5.00
	Totals	1,644	$ 8,220.00	$ 7,354.89	$15,574.89

RULES AND REGULATIONS.

OFFICE OF THE IOWA STATE VETERINARY SURGEON,
DES MOINES, IOWA, JULY 20, 1907.

Pursuant to authority granted 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 enclosure, 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 import the disease. As they are communicable by inoculation to human beings, great precaution should be used in handling animals affected with these diseases.

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, still 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 yard, 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 Veterinary Surgeon 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.

RULE 13. The State Veterinary Surgeon is hereby authorized and directed to co-operate with the United States Bureau of Animal Industry and may formulate and publish printed instructions for the use of local boards of health pertaining to the treatment and the prevention of the spread of contagious diseases among domestic animals.

RULE 14. It shall be the duty of local boards of health upon the appearance of contagious or infectious diseases among domestic animals, to adopt speedy measures to eradicate the same, and to co-operate with the State Veterinary Surgeon to secure such results in the shortest possible time.

RULE 15. Whenever the State Veterinary Surgeon shall have knowledge of an outbreak of any contagious disease among domestic animals, he shall take such action as he may deem necessary for the prevention of the spread of such disease or diseases, and is authorized to call any assistant veterinary surgeon or other person to aid him in the prosecution of his duties.

RULE 16. The flesh of pregnant animals shall neither be sold nor used for human food after the seventh month of pregnancy for cows, and the tenth week for sows.

RULE 17. The importation of registered cattle or cattle eligible to registry for breeding and dairy purposes into this State is prohibited, except when such cattle are accompanied with a certificate from an inspector recognized by the authority charged with the control of domestic animals in the State from whence the cattle come, certifying that said cattle have been subjected to the tuberculin test within sixty days next preceding the date of such importation, and free from disease.

RULE 18. Township trustees and local health officers of towns, villages and cities are hereby authorized and instructed to seize and hold in quarantine all live stock in violation of above rule, and to notify the State Veterinary Surgeon at the Capitol, Des Moines, Iowa. The expense of quarantine and examination must be paid by the owner (or agent) of the quarantined animals as prescribed by law.

RULE 19. This shall not be held to apply to cattle brought into the State from other states for the purpose of exhibition at the State, District or County Fairs: Provided, that in the event that sales shall be made from such exhibition herds, to remain in the State of Iowa, such cattle so sold shall be first submitted to the tuberculin test before the sale is consummated and the cattle are shipped to their destination.

RULE 20. Whenever the State Veterinary Surgeon shall have knowledge of any horses, cattle, sheep or swine affected with scabies (mange), it shall be his duty to place such animals in quarantine and require owners to dip such animals until cured from such disease.

RULE 21. It shall be the duty of any city or local board of health, or township trustees, whenever notice is given by the State Veterinary Surgeon, or person acting by his authority, of animals being affected with rabies or having been exposed to the disease, to require such animals to be isolated, tied up, and kept separate from all other animals until released by order of the State Veterinary Surgeon. It shall also be the duty of said city or local board, during such outbreak, to destroy all stray dogs or dogs owned by persons violating the rules of this section.

RULE 22. Animals reacting to the Tuberculin test shall be kept in strict quarantine at the expense of the owner; or destroyed on the premises; or slaughtered at a packing house where federal inspection is maintained, the owner to receive the price paid by the packing house, its actual value in its condition when destroyed.

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, slaked lime, 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.

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 diseases 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.

PAUL O. KOTO,
State Veterinary Surgeon.
J. H. SAMS,
President State Board of Health.

LOUIS A. THOMAS,
Secretary State Board of Health.

Approved September 28, 1907.

ALBERT B. CUMMINS,
WILLIAM C. HAYWARD,
BERYL F. CARROLL,
WILLISON W. MORROW,
Executive Council.

THE STATUTES.

CHAPTER 14, TITLE 12, CODE.

SEC. 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. He shall maintain an office at the Capitol in a room assigned for his use by the Executive Council, and his postage, stationery and office supplies shall be furnished by the State.

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 peace officer. He may call experts to his assistance when the exigencies of any case demand such action, and may appoint a secretary, who shall receive a salary of seven hundred and fifty dollars ($750) per annum, which shall be paid from the State treasury.

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. It shall be the duty of all local boards of health in the State, upon the appearance of any contagious or infectious disease among domestic animals, to notify the State Veterinary Surgeon at once of the existence of such contagious or infectious disease; and it shall be his duty, whenever notified in writing by a majority of any board of supervisors, township trustees, or of any city or town council, whether in session or not, of the existence of, or probable danger from, any contagious or infectious disease among domestic animals, to repair at once to the place designated in such notice, and make an investigation, and take such action as the exigencies of the case may demand. The Governor may

appoint such assistant state veterinary surgeons as may be deemed advisable, who shall act under the instruction of the State Veterinary Surgeon, and, when engaged in the discharge of their duties, shall receive the sum of five dollars ($5) a day and their actual expenses, which compensation and expenses shall be paid from the State treasury upon itemized and verified accounts, audited and approved by the Executive Council.

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 upon whom they agree as umpire, and their judgment shall be final when the value of the stock, if not diseased, would not exceed twenty-five dollars; but in all other cases either party shall have the right of appeal to the district court; but such appeal shall not delay the destruction of the animals. The veterinary surgeon shall file with the Executive Council his written report thereof, who shall, if found correct, endorse their findings 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 object 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 any moneys, not otherwise appropriated, the sum of seven thousand five hundred dollars ($7,500.00) 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. The State Veterinary Surgeon shall receive an annual salary of eighteen hundred dollars ($1,800), which shall be paid in equal monthly installments from the State treasury, and shall also receive the actual expenses incurred by him in the discharge of his official duties. All claims for expenses shall be itemized, verified and paid from the State treasury when audited and allowed by the Executive Council.

Approved April 4, A. D. 1907.

CHAPTER 170.

AN ACT to protect the public health and the health of domestic animals by providing for the inspection of registered cattle brought into the State for breeding or dairy purposes.

SECTION 1. *Certificate of Inspection.* That the importation of registered cattle or cattle eligible to registry for breeding and dairy purposes into this State is hereby prohibited, except when such cattle are accompanied with a certificate from an inspector whose competency and reliability are certified to by the authority charged with the control of domestic animals in the State from whence the cattle came certifying that said cattle have been examined and subjected to the tuberculin test within sixty days next preceding the date of such importation, and are free from disease.

SEC. 2. *Detention and Inspection-Quarantine.* In lieu of an inspection certificate as required in the preceding section, cattle may be detained at suitable stock yards or other inclosure within this State nearest to the State line, on the railroad or highway over which they were shipped, driven or hauled, and there examined at the expense of the owner, or may be shipped or driven to their destination under quarantine, there to remain in quarantine until properly examined at the expense of the owner, and released by the State Veterinary Surgeon. Such expense shall be a lien upon the cattle.

SEC. 3. *Penalty.* Any person, firm, company, corporation or agent thereof, violating any of the provisions of this act, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined for each offense not more than one hundred dollars, or be imprisoned in the county jail not more than thirty days, or both fine (d) and imprisonment, at the discretion of the court. Such person, firm, company, corporation, or agent, shall be liable for the full amount of damages that may result from the violation of this act. Action may be brought in any county in which said cattle are sold, offered for sale or delivered to a purchaser, or in which they may be detained in transit.

SEC. 4. *Enforcement.* It shall be the duty of the State Veterinary Surgeon to enforce the provisions of this act.

CHAPTER 168, ACTS OF THE 31ST G. A.

PASTEURIZATION OF SKIMMED MILK.

SECTION 1. *Skimmed Milk to be Pasteurized.* That every owner, manager or operator of a creamery shall before delivering to any person any skimmed milk cause the same to be pasteurized at a temperature of at least one hundred and eighty-five (185) degrees Fahrenheit.

SEC. 2. *Penalty.* Whoever violates the provisions of this act, shall, upon conviction, be liable to a fine of not less than twenty-five dollars nor more than one hundred dollars.

CHAPTER X, TITLE 24, CODE.

DISEASED ANIMALS.

SEC. 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, 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 persons having charge of 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 any 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 are 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, infected with any disease, to escape his control or run at large.

SEC. 5019. Any person violating or failing to comply with any provisions of the four preceding sections shall be fined not less than five 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 railway 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 splenetic, or Texas fever, shall be fined not less than three hundred 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 12, CHAPTER 3, CODE.

DISEASED SHEEP.

SEC. 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.

OFFENSES AGAINST THE PUBLIC HEALTH.

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 nature and condition of 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.

LAWS PERTAINING TO THE 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 medicine, surgery, or dentistry in this State, who shall not have complied with the provisions of this act.

SEC. 2. *Existing Practitioners.* Any person of good moral character who has practiced in 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 has actually practiced veterinary medicine, surgery and dentistry in the State of Iowa for a period of five years immediately preceding the passage of this act of which this is an amendment, application for such registration to be made before July 4, 1902.

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. All applications for such registration to be made before July 4, 1902.

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 upon 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. 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. 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 exminations.

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. It shall be the duty of each person registered as a practitioner under this section, to pay to the secretary of the board an annual fee of one dollar, on or before June 1st of each year, as long as he shall continue in practice in the State of Iowa.

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—Examinations—Fee—License.* From and after Janaury 1, 1901, any person not authorized to practice veterinary medicine, surgery, or 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 the 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 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 sufficient 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 hunderd 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 gratuitiously treat diseased animals.

SEC. 14. *Further Penalty.* Any person who shall, without having been authorized so to do 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-examinations.* 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 1st to the Executive Council an account of all fees collected and per diem expenses paid, together with the necessary expenses of the board, and pay over the balance into the State treasury.

HOUSE FILE NO. 387.

AN ACT to amend Section twenty-five hundred and thirty-eight-i (2538-i) of the supplement of the Code, and provide for registering without examination veterinarians registered in other states or in foreign countries.

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

SECTION 1. That section twenty-five hundred and thirty-eight-i (2538-i) of the Supplement of the Code and provide for register amended by adding thereto the following:

(a) A certificate of registration showing that an examination has been made by the proper board of any State or foreign country, the holder thereof having been at the time of said examination a graduate of a legally chartered and authorized veterinary college, or veterinary department of any university or agricultural college, recognized as in good standing by the Iowa State Board of Veterinary Medical Examiners.

(b) A certificate of registration or license issued by the proper board of any State or foreign country, may be accepted as evidence of qualification for registration in this state, provided the holder thereof was at the time of such registration the legal possessor of a diploma issued by a legally chartered and authorized veterinary college or veterinary department of any university or agricultural college in any State or foreign country, and that the date thereof was prior to the legal requirement of the examination test in this State. The fee for such registration shall be fifty dollars ($50.00).

SEC. 2. If by the laws of any state or foreign country, or rulings or decisions of the appropriate officers of boards thereof any burden, obligation, requirement, disqualification or disability is put upon veterinarians registered in any State or foreign country, or holding diplomas from any legally chartered and authorized veterinary college, or veterinary department of any university or agricultural college recognized as of good standing by the Iowa State Board of Veterinary Medical Examiners, affecting the right of said veterinarians to be registered or admitted to practice in said State or foreign country, then the same and like burdens, obligations, requirements, disqualification or disability, shall be put upon the registration in this State of veterinarians registered in said State or foreign country, or holding diplomas from any legally chartered and authorized veterinary department of any university or agricultural college recognized as in good standing by the Iowa State Board of Veterinary Medical Examiners.

RECOMMENDATION.

The Iowa State Board of Health recommends that all dairy and breeding cattle used in the State of Iowa be tested with tuberculin at intervals of one year, until it is determined that such herds are free from tuberculosis. The board also recommends that every dairyman and breeder when purchasing cattle, be required to see that such animals are free from tuberculosis, as determined by the tuberculin test. It is recommended that the council of every city, town or village in the State of Iowa, adopt a milk and dairy ordinance similar to, or incorporate the provisions embodied in the copy for an ordinance as given below.

SUGGESTED ORDINANCE.

AN ORDINANCE providing for testing dairy herds with tuberculin and regulating the sale of milk in the city of .....

Be it Ordained by the City Council of .....

SECTION 1. No person, firm or corporation shall sell any cream within the city limits of..... without first having obtained a license so to do, in the manner provided in section 2 of this ordinance.

SEC 2. Any person, firm or corporation on desiring a license or renewal of license to sell milk or cream in..... shall first make application for such license to the city council by filing an application in writing, which application shall state explicitly the name and address of the applicant, the names and addresses of all persons from whom he purchases milk or cream to be sold, the number of cows owned by him and by each of the persons from which he purchases milk or cream, and that the application be accompanied by a certificate from an inspector whose competency and reliability are certified to by the authority charged with the control of contagious and infectious diseases among domestic animals in the State of Iowa, certifying that said cattle had been examined and subjected to the tuberculin test and found free from disease within one year from the date of filing said application, and that the premises from which the milk is obtained is kept in a sanitary condition.

SEC. 3. Additional cattle may be added to the herd or herds, at any time, provided that the holder of the license relative to such, submits to the Mayor, within one week of such addition, a written statement indicating the exact number of cows added to such herd or herds, from whom and where they were obtained, and accompanied by a certificate from an inspector as provided for in section 2.

SEC. 4. The expense of the inspection of the herd or herds as provided in section 2, are to be borne by .....

SEC. 5. Every license permitting the sale of milk must be renewed at least once every year.

SEC. 6. Any person, firm, or corporation, or employe thereof, violating any provisions of this ordinance, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not exceeding $100, or

be imprisoned in the county jail not exceeding thirty days, or both such fine and imprisonment at the discretion of the court.

SEC. 7. The City Council shall have full authority to revoke any license issued under the provisions of this ordinance.

SEC. 8. This ordinance shall take effect and be in full force from and after its passage and publication, as provided by law.

.....

Mayor.

Attest:

.....

Recorder.