

STATE OF IOWA

1916

REPORT OF THE

VETERINARY DEPARTMENT

FOR THE

Biennial Period Ending June 30, 1916

J. I. GIBSON

State Veterinary Surgeon

PUBLISHED BY
THE STATE OF IOWA
DES MOINES

VETERINARY DEPARTMENT

LETTER OF TRANSMITTAL.

HON. GEORGE W. CLARKE, *Governor of Iowa:*

In compliance with Section 2532, Chapter 14 of the Code, I take pleasure in presenting this Tenth Biennial Report of the State Veterinary Surgeon of Iowa, for the period ending June 30, 1916.

Respectfully submitted,

J. I. GIBSON, *State Veterinary Surgeon.*

Des Moines, Dec. 30, 1916.

REPORT OF THE STATE VETERINARY SURGEON

During the biennial period ending June 30th, 1916, this department has answered seven hundred and fifteen official calls. The principal diseases found to exist were hog cholera, tuberculosis, forage poisoning, hemorrhagic septicaemia, coital exanthema, rabies and scabies.

We are pleased to report that none of these diseases exist to any alarming extent, although, as the state develops and the live stock industry increases, the demands upon this department become more numerous. The increase in the value of live stock calls for greater efforts, on the part of this department to protect against the diseases that tend to depreciate or destroy our domestic stock.

For many years, hog cholera was the cause of great loss to the Iowa farmer, but with a preventive serum treatment, and an organized effort along educational and regulatory lines, the losses from this disease have been reduced to a minimum as compared to former times, and with more complete organization and persistent efforts, the time is at hand when cholera should be controlled and eradicated.

Tuberculosis is now the most serious menace confronting the cattle and swine industry of the state. This disease is causing greater losses to the Iowa farmer today than hog cholera and it is high time that we should have legislation with sufficient appropriations to control and eradicate tuberculosis.

This disease is found to exist in cattle, and is being transmitted to hogs that run with the cattle, to an alarming extent. It is costing about \$5,000,000.00 annually, to run the hogs with the cattle in Iowa. If tuberculosis could be eradicated from our bovine herds this loss could be prevented.

To accomplish such results the Animal Health Commission and the Veterinary Department of the State must necessarily be endowed with largely increased appropriations.

Iowa has practically double the live stock values of any other state in the Union, and at present we have an appropriation of only \$11,000.00 annually for our work of controlling animal diseases. Minnesota, with about one-half our live stock values, has about

\$80,000.00 a year for its live stock sanitary work. Pennsylvania, with live stock values not exceeding 25 per cent of those in Iowa, has approximately \$75,000.00 a year to carry on their live stock sanitary work. These comparisons are surely sufficient to indicate that the great state of Iowa is not doing enough for the protection of her live stock.

We recommend that there be appropriated annually at least \$100,000.00 to carry on the live stock sanitary work in Iowa, especially looking toward the eradication of tuberculosis and hog cholera.

During this period we were confronted with the greatest possible menace to our live stock industry, in the outbreak of foot and mouth disease, which occurred in November, 1914, which, in full co-operation with the Bureau of Animal Industry, United States Department of Agriculture, we succeeded in eradicating in less than five months, with no recurrence, which fact proves that the work of eradication was thoroughly carried out in every detail.

To accomplish this result it was necessary to resort to severe quarantine measures to which there was some opposition, although considering the extent to which these measures interfered with the business of the state, we must say that the people with few exceptions, were loyal in their support of the work of the department. The United States Department of Agriculture bore one-half of the expense connected with the outbreak, and we take this opportunity of publicly expressing our thanks and appreciation to the Secretary of Agriculture, the Chief of the Bureau of Animal Industry, and all the bureau inspectors who worked so faithfully, assisting us in overcoming the dread foot and mouth disease.

In this report we present a short history of the general outbreak of foot and mouth disease throughout the country, by Dr. John R. Mohler, and a detailed statement of the outbreak in Iowa, by counties and individual premises.

The following number of cases were investigated during the period between July 1, 1914, and June 30, 1916:

Actinomycesis	1	Measles	4
Blackleg	2	Rabies	25
*Cholera	27	Scabies (cattle)	4
Colic	48	Scabies (sheep)	45
Forage poison	22	Stomatitis	1
Hemorrhagic septicemia	36	Pneumonia	4
Glanders	24	Tuberculosis	414
Mange (horses)	4	Necro-bacillosis	1
Miscellaneous	52	Total	715

*Does not include eradication work done in Clay, Dallas, Clinton, Muscatine and Scott Counties, nor many investigations where no contagious or infectious disease was found to exist.

OUTBREAK OF FOOT AND MOUTH DISEASE IN 1914-15.

Foot and mouth disease has appeared in the United States on six different occasions—1870, 1880, 1884, 1902, 1908 and 1914. The widespread outbreak of 1914-15 was the most serious and extensive that has occurred in this country. The previous outbreaks were limited to comparatively small areas and did not appear farther west than the state of Michigan. The last outbreak was discovered in the state of Michigan, near Niles, in October, 1914, and it had evidently existed there since the latter part of the previous August. Its source has never been definitely determined and actual proof will probably never be obtained, although the infection was undoubtedly introduced in some way from abroad.

On September 3, 1914, the state veterinarian of Michigan, together with a veterinary inspector of the Bureau of Animal Industry from the Detroit station and two local practitioners inspected the two infected herds near Niles, but failed to recognize foot and mouth disease because of its mild type at that time, its slow progress through the infected herds, its disinclination to spread quickly to adjacent herds, the absence of vesicles which are the characteristic lesions of the disease, the absence of any history of vesicles, the advanced age of the lesions, the presence of lesions due to secondary invasion of other infections, the resemblance of the lesions to necrotic stomatitis, and the prevalence of mycotic and necrotic stomatitis in Michigan and other states at that season of the year.

A few scrapings, consisting of saliva, scabs, pus, and bits of necrotic tissue, forwarded to the pathological laboratory of the Bureau of Animal Industry at Washington by the assistant veterinary inspector, apparently were characteristic of a form of stomatitis, but arrived in such a condition as to render it impossible to make a diagnosis of foot and mouth disease from this material.

Nothing further was heard from the disease in Michigan by the Washington office until October 10, when a letter and three specimens taken from lesions of recently affected animals were received from the inspector in charge of the Detroit, Michigan, meat inspection station. The inspector stated in his letter that he had visited Niles in company with the state veterinarian, and found the disease had spread from the original two herds to six others. The history of the various affected herds and the lesions found in those most recently infected were so completely described in the letter that foot and mouth disease was suggested. On receipt of this in-

formation an expert was sent from Washington on the next train to investigate the report. The three specimens which were received with the inspector's letter were used immediately to inoculate three calves at the Department Experiment Station located at Bethesda, Md. On October 12, the expert wired from Niles, Michigan, that the clinical appearance of the affected animals was positive of foot and mouth disease and requested that Dr. J. R. Mohler be sent to confirm the diagnosis. The chief of the bureau in return wired instructions to the expert at Niles to inoculate a calf and if there were no developments within forty-eight hours in the three calves inoculated at the experiment station, Dr. Mohler, the assistant chief of the bureau, would be sent to Niles. No disease developed at the Experiment station within forty-eight hours, and Dr. Mohler, accompanied by several veterinary inspectors, proceeded to Niles, arriving there at 6:30 o'clock on the evening of October 15th. He proceeded immediately to one of the infected herds, made his examination by the aid of an electric flashlight, confirmed the diagnosis, and wired a report to the chief of the bureau that night, in which additional men were requested to assist in the work of eradication.

The long time required for the inoculated animals at the experiment station to show any evidence of disease—one requiring seven days, one nine days, and the third remaining healthy—as well as the slight extent to which the disease had spread on the farms in Michigan before its nature became known, showed that at first the infection was of an exceedingly mild form, although it increased in virulence as the outbreak progressed. In spite of the fact that no quarantine measures had been imposed, the disease remained confined to a restricted area for more than six weeks, which is very unusual with foot and mouth disease and very commonly observed in various forms of stomatitis.

Through active scouting by employees of the Bureau of Animal Industry on October 16 and 17, many diseased herds were discovered in the vicinity of Niles, and it was learned that the infection had been spread rapidly through local creameries but was yet confined to an area about eighteen miles long and eight miles wide, extending from Niles southwest through Barrien county, Michigan, into St. Joseph and LaPorte counties, Indiana. Barrien and Cass counties, Michigan, and St. Joseph and LaPorte counties, Indiana, were quarantined under an order of the Secretary of Agriculture, effective October 19, 1914, and the authorities of the infected states proceeded immediately to issue their quarantine orders.

Before proceeding with the actual work of eradication, arrangements were made with the various state officials for co-operation in the work, and it was mutually agreed that the United States Department of Agriculture and the states should share equally the expenses incurred in the purchase of diseased and exposed animals, the cost of burial, the cleaning and disinfection of infected premises, and the appraised value of property destroyed in connection with the cleaning and disinfection of infected premises. These arrangements proved generally satisfactory and the states willingly rendered valuable assistance in suppressing the disease.

As this outbreak occurred in a thrifty dairy and stock raising community in close proximity to the public stock yards of the Central West and not far from the open range territory, the live stock industry of the country was threatened with a grave calamity, and it was realized that prompt drastic measures must be adopted if we hoped to eradicate the disease. After seriously considering the unfavorable conditions that were confronted and the consequences to the live stock industry that would follow failure, it was decided to adopt the quarantine, slaughter and disinfection method in combating the disease, as this method had proved successful in eradicating previous outbreaks from this country and is, in fact, the only method that has ever proved effectual in eradicating foot and mouth disease from any country.

Steps were taken immediately to assemble a sufficient number of inspectors; the creameries were closed; all movement of live stock in the quarantined district was stopped; all shipments that had gone out of the infected territory for the previous three months were traced back to the farm, and all cars that had carried live stock out of the district during that time were ordered cleaned and disinfected before they were again used. Everything was going along smoothly and rapid progress was being made in eliminating the centers of infection in the quarantined counties. But on October 27, a report was received from Blissfield, Michigan, that some stocker steers shipped from the Chicago stock yards to Blissfield October 19, were sick. Dr. Mohler, in company with Michigan officials, left Niles for Blissfield immediately, arriving there early the next morning, October 28. Three of the steers were found to be affected with very acute lesions of foot and mouth disease, while the others in the carload lot had not as yet developed any symptoms. This was the first intimation anyone had that the Chicago stock yards might be infected, and there were some grounds for believing

that the steers at Blissfield might have picked up the infection in the cars in which they were transported to or from the Chicago stock yards, rather than in the yards themselves.

No disease as yet had been discovered in the Chicago stock yards; however, as a precautionary measure, the stocker and feeder division was closed and locked on the evening of October 28, by request of Dr. S. E. Bennett, the inspector in charge, who acted on his own initiative in this matter soon after receiving a message by wire from Dr. Mohler informing him of the outbreak at Blissfield, and giving further instructions in regard to sanitary precautions to be observed in handling animals at the yards. Dr. Bennett received the support of all interested parties in closing this division of the yards, and his action was approved by the department.

In addition to closing the entire stocker and feeder division on the night of October 28, 1914, steps were taken immediately to clean and disinfect it under government supervision, to locate all shipments of stockers and feeders that had gone out from the Union Stock Yards since October 1st, and all available veterinarians were sent out to make inspections throughout the state of Illinois of such shipments. Notices were also sent to bureau and state officials advising them of shipments that had gone into their territory, with the request that these animals should immediately be located and inspected to ascertain if they had developed any symptoms of foot and mouth disease since they left the yards. Arrangements were made with the various railroad companies to call in immediately their live stock cars for cleaning and disinfection, especially those that had carried live stock from or through the infected districts of Michigan and Indiana. All this work was done before any disease appeared in the Union Stock Yards and when there was but a suspicion of it. The railroads responded willingly to the request of Dr. Bennett for co-operation, and an endeavor was made at this time to supply cleaned and disinfected cars for all shipments going out of the fat stock division that might be diverted as feeders.

The government and Illinois state officials and the members of the Chicago Live Stock Exchange lived in hourly dread and expectation of an outbreak of the disease in the stock yards, as they had during the 1908 outbreak in Michigan, but no one knew then or even now that any infection existed in the fat stock division on October 28, when word was received of the outbreak at Blissfield in cattle that had left the stocker and feeder division of the yards on October 19, 1914. No foot and mouth disease ever developed in any

live stock that passed through the Chicago yards prior to October 19, 1914.

While a thorough investigation failed to locate infection more definitely in the Chicago stock yards than was indicated by the Blissfield shipment, it was decided to take precautionary measures and as a result, the Secretary of Agriculture issued an order effective October 31, quarantining these yards.

The National Dairy Show was held at Chicago from October 22 to 31, and at the time the quarantine order of October 31 went into effect, the National Dairy Show cattle were in the barns of the Union Stock Yards Company, having been held for observation by the state veterinarian of Illinois on October 29, at the request of the bureau, and in addition a large number of stockers and feeders as well as fat cattle were in the pens of the Union Stock Yards Company. Shipments from the stocker and feeder division had been discontinued since the evening of October 28. The day following the quarantine of the Chicago yards, one of the dairy show cows developed unmistakable lesions of foot and mouth disease, and two days later, November 3, several of the feeders which had been held under lock and key in the stocker and feeder division of the yards since October 28, likewise developed the disease. The discovery of these cases in the dairy show barn and the stocker and feeder division of the Chicago stock yards was the first knowledge anyone had that foot and mouth disease existed in Chicago.

The secretary's quarantine order stopped the movement of all animals to and from the Chicago stock yards, except for immediate slaughter, and as soon as the disease was discovered there, all of the pens were cleared of animals and preparations made for a general cleaning and disinfection. The 840 cattle that had been held in the stocker and feeder division under lock and key since the evening of October 28 were slaughtered and buried in the infected portion of the yards. Even though no infection had been discovered in the Union Stock Yards outside the stocker and feeder division, the entire yards were closed November 6, 1914, for cleaning and disinfection, and remained closed until the work was finished November 16, 1914. It was important to eliminate this prolific source of infection as soon as possible. The Stock Yards Company employed 1,800 men and provided 146 lines of disinfecting hose in addition to their splendid cleaning and flushing facilities, and in order that the work might progress unretarded at night, an elaborate temporary lighting system was installed.

After the infection of foot and mouth disease reached the Chicago stock yards it was rapidly disseminated from there between October 19 and 29 to various states, and the prospect of successfully eradicating this outbreak became most discouraging. However, by diligently and persistently pursuing the policy of eradication adopted in the beginning, all centers of infection were gradually eliminated and by June 18, 1915, all known infected and exposed animals had been slaughtered and the disinfection of premises completed, and it appeared that the disease was eradicated.

On July 28, however, infection was discovered in Steuben County, New York. Seven herds were slaughtered in this county. On August 8 it was discovered that some infected hog cholera serum had been used in treating eight herds of swine in Illinois, one in Minnesota, one in Michigan, and one in Indiana. The disease developed in five herds in Illinois, one in Indiana and Minnesota. The remainder of the eleven herds was slaughtered before the disease had time to develop. The infected herds were promptly slaughtered and buried, and fortunately the disease in Indiana and Minnesota did not spread beyond the originally infected herds. The outbreak in Illinois was confined to that state, and the last affected herd that contracted the disease in the ordinary manner was slaughtered February 16, 1916. On May 2, 1916, however, the disease appeared in some of the animals that had been placed on a farm in Christian county to test the efficiency of the cleaning and disinfection. This outbreak was not entirely unexpected as the cleaning and disinfection had been done under very unfavorable weather conditions. This was the last herd slaughtered in the 1914-15 outbreak of foot and mouth disease, and it is believed the disease has been completely eradicated.

Considering that the outbreak appeared first in a densely populated live stock community in the Central West; that within thirty days after the disease was diagnosed it had been carried to both the Atlantic and Pacific coasts and affected herds had been found in seventeen states and the District of Columbia; that before its progress was stopped it had spread to twenty-two states and the District of Columbia, and it had even appeared on the ranches of Montana, the eradication of this extensive outbreak is an achievement that has not been paralleled in any other country, and this great service to the live stock industry will be appreciated more in the future than it is at present.

The accompanying table gives the statistics of the outbreak.

FOOT AND MOUTH DISEASE IN THE UNITED STATES, 1914-15.

Statement Showing Number of Counties, Herds and Animals Affected and Expenditures in Eradication.

State	Counties	Herds	Cattle	Sheep	Swine	Goats, etc.	Total of all animals	20% approved value animals	20% approved value prop-erty	20% cost of burial, disinfection and other expenses	Total
Connecticut	1	32	701	22	175	.....	878	\$ 24,183.05	\$ 639.64	\$ 2,044.20	\$ 27,866.80
Delaware	1	12	152	4	49	.....	213	4,653.06	148.00	2,078.51	6,900.00
District of Columbia	1	4	48	.....	.....	.....	48	2,890.00	18.00	13.89	2,916.89
Illinois	54	1,239	21,074	1,896	10,500	127	78,369	1,784,191.34	21,791.49	107,001.19	1,906,977.02
Indiana	39	118	2,487	660	3,073	.....	7,060	39,893.32	639.62	1,632.50	42,136.44
Iowa	9	4	1,217	22	203	.....	1,442	86,046.45	591.74	2,899.45	89,143.64
Kansas	11	82	2,943	210	800	.....	4,035	67,000.26	561.26	7,155.00	74,716.52
Kentucky	19	79	1,008	313	1,784	1	3,105	24,372.19	2,342.39	7,305.14	34,027.63
Maryland	10	273	2,662	818	6,198	0	9,289	100,148.56	4,782.62	2,949.00	110,081.18
Michigan	4	42	1,150	260	51	.....	1,663	1,124,500.00	84.00	86.50	1,125,470.50
Minnesota	1	52	1,213	9	11	.....	1,235	32,861.25	77.50	1,094.43	34,035.18
Montana	1	1	1	.....	.....	.....	1	67,648.72	807.72	4,000.23	72,456.67
New Jersey	1	219	5,787	150	685	28	6,649	229,280.04	2,860.00	13,607.00	256,651.57
New York	1	1	1	.....	.....	.....	1	479,885.00	2,679.00	10,000.00	492,564.00
Ohio	1	1	1	.....	.....	.....	1	1,111.00	.....	.....	1,111.00
Rhode Island	1	1	1	.....	.....	.....	1	30,537.75	1,177.13	4,722.50	36,437.38
Texas	1	1	1	.....	.....	.....	1	2,025.00	.....	.....	2,025.00
Virginia	1	1	1	.....	.....	.....	1	1,871.77	.....	.....	1,871.77
Washington	1	1	1	.....	.....	.....	1	2,025.00	.....	.....	2,025.00
Wisconsin	12	69	1,565	1,764	1,485	1	4,795	59,377.55	651.28	1,231.58	61,260.41
Total	300	2,650	77,240	9,767	86,000	128	174,822	61,022,800.37	\$ 99,001.39	\$ 299,256.02	\$ 62,321,057.31

This shows statement shows the amount of money expended by the United States Department of Agriculture, and it is understood that the various infected states paid an equal amount. This statement does not include the salaries, traveling and other expenses of the State Veterinarian, nor the reimbursement of expenses authorized by Congress to the owners of the Dairy Show Herd.

FOOT AND MOUTH DISEASE IN IOWA, 1914-15.

Foot and mouth disease was evidently introduced into the state of Iowa by three means: The shipment of cattle from the infected Union Stock Yards at Chicago between the dates of October 19 and 30, 1914; by vaccination of swine with infected hog-cholera virus; and by infection carried by persons and dogs from the neighboring state of Illinois.

Nine counties were infected and forty-nine herds, the property of forty-nine owners, and located on forty-three premises, were slaughtered. These herds were composed of a total of 1,547 cattle, 2,335 swine and thirty-two sheep. The appraised value was \$125,296.90. The burial and disposal of the carcasses, disinfection of premises, and miscellaneous expenses of the men employed, and property was destroyed in disinfection to the amount of \$1,329.48, making a total of \$136,287.34, which was shared equally by the state and the United States Department of Agriculture.

The first discovery of infection in the state was made on November 5, 1914, in the county of Iowa. Five other counties were infected in November and three in February.

Final disinfection in the state was concluded on March 22, 1915.

IOWA BY COUNTIES.

BUCHANAN.—Infection discovered February 15th, 1915. Three herds, three owners, three premises.

Source of infection of first herd slaughtered in Buchanan county is unknown, but is believed to have been carried into the state by a visitor from Whiteside county, Illinois. Both remaining herds were infected directly or indirectly through the first herd slaughtered, one by infection probably carried by dogs, and the second through exchange of work by the owners. Disinfection in this county was completed March 13th, 1915.

CEDAR.—Disease was discovered November 15, 1914. Ten herds, ten owners, nine premises.

The first herd slaughtered in this county was infected through the shipment of 30 head of cattle, shipped from the Union Stock Yards at Chicago on October 30, 1914. These cattle came through the Stanwood (Iowa) yards of the Chicago & Northwestern railroad, and two herds of swine in the yards were infected as a result. Two herds slaughtered in this county were infected as a result of vaccination for hog cholera, with infected virus, and the remaining five herds were infected through neighborhood visiting, dogs, poultry, crows, etc. Final disinfection, January 9, 1915.

DUBUQUE.—Disease discovered February 7, 1915. One herd, one owner, one premises.

Source of infection unknown but possibly the result of infection carried by persons from Whiteside county, Ill. Disinfection completed March 2, 1915.

CLINTON.—Disease was discovered November 12, 1914. Five herds, five owners, five premises.

First herd slaughtered infected through shipment of 25 feeder cattle from Chicago on October 23. In January, 1915, this county became re-infected, probably through dogs and crows from Whiteside county, Illinois, which were attracted to the premises afterwards found infected, by the carcass of a horse. Three other herds were infected through this latter premises by neighborhood visiting. Disinfection was completed February 22, 1915.

IOWA.—Disease was discovered November 5, 1914. Nine herds, nine owners, nine premises.

A lot of cattle shipped from Chicago on October 21, 1914, consisting of 34 animals, was divided, going to four owners. Two other herds were infected through these by contact, and three others by neighborhood visiting. Disinfection in this county was completed January 18, 1915.

JACKSON.—Disease was discovered November 13, 1914. Ten herds, ten owners, eight premises.

First herd slaughtered was infected by 36 feeder cattle purchased in Chicago, October 20, 1914. Three other herds were infected through direct contact. One herd, slaughtered in December, source of infection unknown, but probably in some manner from Jones county. An outbreak in January was attributed to the employment by a stock buyer of a man from northern Illinois and southern Wisconsin. Five herds which he visited were afterwards found infected. Another herd was infected by contact with one of the five. Disinfection in this county was completed February 25, 1915.

JOHNSON.—Disease was discovered November 21, 1914. One herd, one owner, one premises.

Thirty-two feeder cattle shipped from Chicago, October 19, 1914, brought the disease to this county. Disinfection was completed November 25, 1914.

JONES.—Disease was discovered November 8, 1914. Seven herds, seven owners, seven premises.

County infected by importation of 26 feeder cattle shipped from Chicago via Oxford Junction (Iowa) on October 28, 1914. Five other herds were infected through this one by contact, dogs, etc. One herd slaughtered in this county was evidently infected by neighborhood visiting from Jackson county. Disinfection was completed February 23, 1915.

LINN.—Disease was discovered February 28, 1915. Two herds, two owners, two premises.

Source of infection of first slaughtered herd a mystery. One herd infected through use of breeding animals. Disinfection was completed March 22, 1915.

The live stock industry of Iowa was confronted with the greatest and gravest menace in its history when foot and mouth disease appeared in the state. Never before had there been an outbreak of the disease so far west nor in a state where susceptible animals were so numerous. The department and state officials charged with the responsibility of directing the fight against this outbreak were deeply conscious of the importance of adopting measures that would beget beyond control it would result in incalculable losses, as Iowa ranks as the greatest live stock producing state in the Union. The fact that the disease was completely eradicated from the state in a little over four months at comparatively small cost is sufficient proof that the policy pursued was both prompt and effectual. The live stock producers of Iowa have reason to consider themselves fortunate in escaping a more extensive and prolonged outbreak, and the state live stock sanitary authorities deserve credit for the energy and intelligence they displayed in handling the difficult situation. Their task was made more difficult because of differences of opinion in regard to quarantine methods that should be applied, complaints from those whose financial interests were necessarily affected, requests from influential persons in the infected district for special favors, and the embarrassment caused by attempts to use political pressure to the detriment of the work.

Iowa has been free from foot and mouth disease since March, 1915, and there is no reason to believe that there is any harbored infection within its borders. Had it not been for the splendid co-operation received from the Governor of the state, the Animal Health Commission, and the state veterinarian, the eradication of foot and mouth disease from Iowa would have been very difficult, if not impossible to accomplish.

FOOT AND MOUTH DISEASE IN IOWA, 1914-15.

Record of Herds Affected, Stock Slaughtered and Cost of Eradication in Iowa.

Owner and Address	Date discovered	Animals slaughtered	Cattle and swine	Stock Slaughtered			Appraised value	Cost of burial	Cost of prop. destroyed	Cost of herd infected (see list 62)	Total
				Cattle	Sheep	Swine					
HUCKLEBERRY COUNTY.											
Polarik, F. Jr., Hazleton.....	2-6-15	2-11-15	2-11-15	45	51	86	\$ 2,275.00	\$ 136.35	\$ 394.50	79.90	2,694.85
Schmitt, T. J., Independence.....	2-10-15	2-10-15	2-11-15	12	21	33	1,007.00	90.12	41.00	79.90	1,218.12
Schlesinger, Hazleton.....	2-8-15	2-8-15	2-11-15	12	11	23	2,908.00	122.27	97.50	154.80	2,256.47
CECIL COUNTY.											
Hollig and Gehlke, Starwood.....	11-20-14	11-20-14	11-20-14	15	15	30	532.00	22.80	.....	.....	554.80
Davidson, A. B., Starwood.....	11-20-14	11-20-14	11-20-14	15	15	30	532.00	22.80	.....	.....	554.80
Dobson, H. A., Tipton.....	11-20-14	11-20-14	11-20-14	27	43	70	1,053.00	75.25	10.00	28.00	1,206.25
Eastman, F., Tipton.....	12-4-14	12-4-14	12-19-14	27	43	70	1,053.00	75.25	10.00	28.00	1,206.25
Eastman, F., Tipton.....	12-4-14	12-4-14	12-19-14	27	43	70	1,053.00	75.25	10.00	28.00	1,206.25
Mathey, S. A., Starwood.....	11-25-14	11-25-14	11-25-14	29	14	43	5,300.00	62.50	25.00	136.50	5,524.00
Mathey, S. A., Starwood.....	11-25-14	11-25-14	11-25-14	29	14	43	5,300.00	62.50	25.00	136.50	5,524.00
Mathews, L. A., Tipton.....	11-25-14	11-25-14	11-25-14	100	223	323	1,072.50	44.00	.....	.....	2,077.90
Mathews, L. A., Tipton.....	11-25-14	11-25-14	11-25-14	100	223	323	1,072.50	44.00	.....	.....	2,077.90
Mathews, L. A., Tipton.....	11-25-14	11-25-14	11-25-14	100	223	323	1,072.50	44.00	.....	.....	2,077.90
Mathews, L. A., Tipton.....	11-25-14	11-25-14	11-25-14	100	223	323	1,072.50	44.00	.....	.....	2,077.90
Stammemaker and Hanna, Tipton.....	11-27-14	11-27-14	11-27-14	20	20	40	1,900.00	103.50	15.00	66.25	2,085.75
Stammemaker and Hanna, Tipton.....	11-27-14	11-27-14	11-27-14	20	20	40	1,900.00	103.50	15.00	66.25	2,085.75
CLINTON COUNTY.											
Dehmann, E., Lost Nation.....	2-15-15	2-15-15	2-15-15	53	15	68	1,652.00	130.10	67.00	148.75	1,998.55
Hobson, Wm., Lost Nation.....	2-15-15	2-15-15	2-15-15	53	15	68	1,652.00	130.10	67.00	148.75	1,998.55
Leitch, J., Union.....	1-17-15	1-17-15	1-17-15	100	100	200	1,702.00	137.00	131.14	221.29	2,191.33
McKervey, F., Clinton.....	1-17-15	1-17-15	1-17-15	100	100	200	1,702.00	137.00	131.14	221.29	2,191.33
Troy, Geo., De Witt.....	1-27-15	2-5-15	2-5-15	52	52	104	2,000.00	120.25	120.25	273.00	2,493.50

FOOT AND MOUTH DISEASES IN IOWA—Continued

Owner and Address	Date diagnosed	Animals slaughtered	Cattle and sheep diseased	Stock Slaughtered			Appraisal value	Cost of births	Cost of property destroyed	Cost of disinfecting and cleaning	Total
				Cattle	Sheep	Pigs					
EMERSON COUNTY.											
Brossel, O., Eganorth	1-7-15	2-17-15	2-2-15	24	64	2,852.00	167.10	20.00	110.00	2,101.10	
JACKSON COUNTY.											
Bowling, M. S., Iron Hills	11-15-14	11-21-14	11-25-14	47	44	2,000.00	195.00	60.00	30.00	2,765.00	
Bradley, F. S., Bernard	1-20-15	2-9-15	2-10-15	49	44	1,670.08	197.13	60.00	30.00	2,019.21	
Edwards, J., Iron Hills	11-21-14	11-21-14	11-21-14	2	2	130.00	.....	.....	.....	130.00
Fayram, A. J., Monmouth	12-10-14	12-25-14	12-30-14	59	41	5,724.28	138.87	27.00	27.00	5,906.17	
Federspiel, J., Bernard	1-14-15	1-26-15	2-2-15	73	103	12,122.55	121.68	105.00	200.00	12,399.68	
Lyons, R. W., Iron Hills	11-20-14	11-20-14	11-20-14	59	29	3,173.50	31.00	25.00	80.00	3,309.50	
Lynch Bros., Bernard	1-20-15	2-9-15	2-10-15	21	73	2,727.50	207.78	15.00	90.00	3,040.28	
Lyons, Robt., Bernard	2-20-15	2-28-15	2-28-15	4	9	210.00	6.00	.....	30.50	242.50
JOHNSON COUNTY.											
Moran, Jno., Tiffin	11-21-14	11-21-14	11-25-14	22	.....	2,428.00	74.07	.....	.....	2,502.07
JONES COUNTY.											
Hall, Wm. D., Oxford Junction	11-29-14	12-2-14	12-19-14	17	75	1,400.20	24.00	.....	46.00	1,520.20
Lehrer, J. P., Cascade	2-7-15	2-14-15	2-23-15	38	28	2,285.00	121.28	45.00	110.00	2,561.28	
Lehrer, N. R., Oxford Junction	11-8-14	11-17-14	12-9-14	119	8	6,562.00	79.00	49.00	49.00	6,699.00	
Miller Bros., Oxford Junction	11-20-14	11-20-14	11-20-14	19	.....	1,725.00	12.00	.....	.....	1,737.00
Skinner, Jas., Oxford	11-24-14	11-24-14	12-7-14	24	25	1,270.00	43.00	60.50	49.00	1,423.50	
IOWA COUNTY.											
Gallagher, O. F., Williamsburg	11-8-14	11-18-14	11-28-14	23	.....	1,224.00	62.20	.....	.....	1,286.20
LISS COUNTY.											
Long, Henry, Williamsburg	12-28-14	1-6-15	1-18-15	42	14	2,443.08	162.48	97.41	60.00	2,703.08	
Manor and Evans, Williamsburg	11-10-14	11-25-14	12-14-14	46	114	1,670.00	47.50	20.00	46.00	2,383.50	
Manor and O'Donnell, Williamsburg	11-27-14	11-28-14	11-28-14	16	.....	2,615.20	142.00	.....	.....	2,757.20
Seabolt, J. J., Williamsburg	11-28-14	11-28-14	12-6-14	19	.....	1,600.50	82.00	.....	.....	1,719.50
Stephens, J. F., Williamsburg	11-5-14	11-12-14	11-20-14	29	15	1,670.50	16.00	25.00	15.00	1,786.50	
Watkins, R., Williamsburg	11-14-14	11-22-14	11-28-14	47	35	2,681.00	15.25	27.00	14.00	2,747.25	
.....	11-19-14	11-19-14	11-28-14	1	.....	77.50	73.00	.....	.....	150.50
DANISH COUNTY.											
Danisch, Thos., Springville	2-26-15	2-28-15	2-11-15	25	17	1,940.00	51.50	41.80	105.70	1,828.00	
Larson, Mike, Springville	2-10-15	2-28-15	2-28-15	11	4	686.00	25.00	15.00	44.00	730.00	
Total	.....	.....	.....	1,547	22,229	\$125,270.88	\$6,796.23	\$1,439.43	\$2,665.90	\$134,182.40

Long, Henry, Williamsburg	12-28-14	1-6-15	1-18-15	42	14	2,443.08	162.48	97.41	60.00	2,703.08	
Manor and Evans, Williamsburg	11-10-14	11-25-14	12-14-14	46	114	1,670.00	47.50	20.00	46.00	2,383.50	
Manor and O'Donnell, Williamsburg	11-27-14	11-28-14	11-28-14	16	.....	2,615.20	142.00	.....	.....	2,757.20
Seabolt, J. J., Williamsburg	11-28-14	11-28-14	12-6-14	19	.....	1,600.50	82.00	.....	.....	1,719.50
Stephens, J. F., Williamsburg	11-5-14	11-12-14	11-20-14	29	15	1,670.50	16.00	25.00	15.00	1,786.50	
Watkins, R., Williamsburg	11-14-14	11-22-14	11-28-14	47	35	2,681.00	15.25	27.00	14.00	2,747.25	
.....	11-19-14	11-19-14	11-28-14	1	.....	77.50	73.00	.....	.....	150.50
DANISH COUNTY.											
Danisch, Thos., Springville	2-26-15	2-28-15	2-11-15	25	17	1,940.00	51.50	41.80	105.70	1,828.00	
Larson, Mike, Springville	2-10-15	2-28-15	2-28-15	11	4	686.00	25.00	15.00	44.00	730.00	
Total	.....	.....	.....	1,547	22,229	\$125,270.88	\$6,796.23	\$1,439.43	\$2,665.90	\$134,182.40

ERADICATION OF HOG CHOLERA THROUGH SANITARY MEASURES.

It is quite evident that to eradicate cholera from our country, it is necessary for us to continue in a state-wide educational campaign, as has been started by federal and state authorities and veterinarians throughout the country.

There seems to be a lack of co-operation between the farmers and veterinarians in many cases, for too often when an outbreak of cholera occurs, nothing more is done than to vaccinate the apparently healthy hogs, letting those die that show sickness, without any attempt to isolate the sick to keep them from spreading the natural virus over the entire premises. Often, farmers having infection on their places will show lack of interest in cleaning up and disinfecting, and thereby keep their places infected almost continuously, where the active agent lies dormant, ready to attack the new crop of pigs that comes on the next summer, or season.

Causes of outbreaks of cholera are numerous, such as introduction of a male hog on a farm. Infection is very often carried on the shoes of men. Dogs, pigeons, sparrows and crows are also listed as carriers. Hogs having died from cholera, when left lying near streams, will cause the infection to be carried along the water course.

I recall a case that came to my attention a few years ago, where a herd of seventy-five head which had died from cholera were buried in a tile drain. It so happened that, while the farmer was having some tiling done near his barn yard, his hogs became sick with cholera and died. They were all buried in the ditch.

Farmers are sometimes called to help their neighbors haul hogs to market which have become infected, a practice which should be discouraged. They seldom disinfect their wagons after hauling sick hogs, and thereby bring cholera into their own herds. Farmers will walk through infected stock yards and then go home and walk through their own hog yards, without pretending to disinfect their shoes. Farmers should refuse to allow any shipper into their hog yards unless his shoes are disinfected with a strong disinfectant.

It is claimed by some that virus given simultaneously for immunization may infect the premises. Yet, as a matter of fact, larger amounts of virus are used each year. It is estimated that over a million and a half c. c.'s of virus have been used each year since 1913, and yet, in the face of all this, the conditions are very satisfactory, cholera having decreased year by year.

Much has been said and written in regard to cleaning up and disinfecting places after an outbreak has occurred. Yet, how little is being done today! We, as veterinarians and sanitarians, should not neglect this very important phase of eradication. We should co-operate in every possible manner with our State Animal Health Board to see that the rules established by them are strictly enforced. It should be made compulsory for farmers to burn all dead hogs within a very short time after death. All litter and manure in hog pens and yards should be either burned or thoroughly disinfected with a strong dip or slacked lime before it is scattered upon the fields. Buildings in which sick or dying hogs have been kept should be disinfected, for it is usually in such places that the hog cholera germ is kept alive for the longest period of time, for these sheds are usually dark and damp. The walls should be thoroughly saturated with a very strong disinfectant, and if the floors are of dirt, there should be several inches of the top removed, and a heavy coating of lime applied. Then it should be refilled with dirt to the thickness that has been removed. All litter and cobs scattered over the hog yards should be raked up and burned. Veterinarians should not leave an infected place without washing their hands and disinfecting their shoes before entering their vehicles. The importance of this feature should be impressed upon the farmer so that he may do likewise. There is no doubt that cholera has many times been carried from one farm to another in this way. Unless a veterinarian is sure that his shoes are free from infection, he should not step inside any farmer's hog lot. He should always carefully protect the interest of his client in every way possible.

On account of the crop condition in the past year, many stock hogs were shipped from the frost-stricken districts to other parts of the country which were less affected by frost. Many of these hogs came from Minnesota and Wisconsin. In some cases where shipments were interstate, the Iowa law, which requires that hogs from other states shipped into Iowa must be vaccinated either with the single treatment immediately before shipment or the double treatment twenty-one days prior to the time of shipment, was disregarded. These hogs were driven through infected stock yards and shipped in infected cars, and consequently, in the course of two or three weeks after arriving at their destination, many outbreaks appeared.

In a number of cases where interstate shipment was made, railroads notified the veterinary department, which caused them to be

vaccinated upon their arrival; but a large number was shipped from points within the state and were not vaccinated. This was the cause of many new centers of infection in localities that previously had been free. It is unfortunate that the Iowa state laws do not require that all hogs shipped from one point to another within the state must be vaccinated just the same as if they were shipped in from another state.

If the quarantine and shipping regulations, recommended by the Commission on Uniform Methods for the Control of Hog Cholera at the United States Live Stock Association in December, 1913, were adopted and strictly enforced, the loss could readily be reduced to a minimum. These rules have been published in other periodicals, but I give them again, as I consider them of great importance.

1. The shipment or movement, interstate, of swine affected with hog cholera to be prohibited.
2. Exposed swine to be shipped under permit and placarded.
3. The movement of cholera-infected swine over the public highways of the state to be prohibited.
4. Provision for moving exposed swine under permit in approved manner.
5. Carcasses of animals and particularly of swine that have died of cholera, to be burned within twenty-four hours after death, or under special permit to be disposed of otherwise.
6. The shipment of swine by rail for purposes other than immediate slaughter to be permitted only through special pens and unloading chutes, or through portable chutes directly into wagons. If unloaded in regular loading pens, to be moved under permit in approved manner.
7. Public stockyards to be under close supervision and cleaned and disinfected at intervals determined by the proper state authorities.
8. Railway cars for the transportation of swine, other than such as are intended for immediate slaughter, to be cleaned, washed and disinfected before swine are loaded.
9. All cars in which diseased swine are found, or in which exposed swine were shipped for immediate slaughter, to be cleaned, washed and disinfected within twenty-four hours after unloading, or cars to be held until the presence or absence of disease has been determined.
10. All cars or vehicles carrying cholera-exposed swine, to be placarded in a conspicuous manner, "Cholera-Exposed Swine for Immediate Slaughter."
11. Owners of swine and persons in charge, including attending veterinarians, to report without delay to state authorities all outbreaks of cholera among swine.
12. Livestock sanitary authorities to quarantine all infected herds and premises, but may permit shipment of exposed swine for immediate slaughter, as above provided.

13. Infected premises to be quarantined not less than sixty days after last traces of disease have disappeared, and premises have been cleaned and disinfected.

14. Infected premises to be cleaned and disinfected under supervision prescribed by livestock sanitary authorities.

15. The live stock sanitary authorities to be given power to provide in a practicable manner against the dangerous pollution of streams with hog-cholera virus, and provide for the safe disposal of garbage liable to be infected with hog-cholera virus.

16. To prevent the spread of hog cholera by swine shown for exhibition purposes, such swine to be treated with serum and virus not less than twenty-one days prior to the opening date of the exhibit, or with serum alone, not more than fifteen days before such time.

17. Provision for controlling for thirty days, by quarantine or otherwise, when deemed advisable by the proper authorities, of all swine treated with serum-virus, or premises on which such swine are kept, to prevent danger of possible spread of infection from inoculated animals.

If we would do nothing more than to pass laws that strictly enforce these rules, passed by this association, we could reduce the loss of hog cholera from millions each year to a very small amount.

The question of eradication evolves itself into the willingness of the farmer and stock raiser to co-operate with the State Animal Health Board in passing laws along scientific sanitary lines, but just so long as they continue to fight all laws and regulations laid down by state and federal boards (as has been done in the recent fight against foot and mouth disease here and in our neighboring states), just so long will hog cholera continue to kill millions of dollars' worth of hogs each year. But as soon as all parties interested will be willing to get together and work in unison, just so soon will we be able to entirely eradicate this disease from our country.

DOURINE.

Early in October, 1915, the existence of Dourine was suspected in some horses in the southern part of Carroll County. Samples of blood sera were sent to the Bureau of Animal Industry, U. S. Department of Agriculture, at Washington, D. C., and on October 30, 1915, this department was notified from Washington that the blood samples gave positive reaction to the complement fixation test indicating the existence of Dourine.

In co-operation with the Bureau of Animal Industry this department made investigation, studied the stud books of the community, and tested every stallion, mare and jack that were known to have been exposed to the infection. In addition to this, all stallions and

jack in Carroll and Crawford Counties, and those in the southwestern townships of Greene County, the northwestern townships of Guthrie County, and the northern townships of Audubon County were subjected to the compliment fixation test. Samples of blood sera from all the animals were forwarded to the Laboratories of the Bureau of Animal Industry, where the tests were made and results promptly reported. In all, 229 original tests were made and a number of the animals were retested.

The outbreak is now under control. Some of the infected animals have died in quarantine, the remainder of the infected animals are under quarantine and will be disposed of as soon as the legislature can provide sufficient appropriation to bear half of the appraised value and burial expenses, the department at Washington paying the other half.

LIVE STOCK IMPORTED INTO IOWA.

Number of Animals Imported and States from Which They Came, July 1, 1914, to June 30, 1916.

State	Horses	Mules	Dairy and breeding	Stockers	Hogs	Sheep
Alabama	21				1,487	
Arkansas	32					
Arizona	7				1	
California	19		7			
Colorado	218	14	51	114		
Florida	2					
Georgia			49			
Idaho	2					
Illinois	2,948	452	866	2,790	656	41
Indiana	91	17	188		6	1
Kansas	219	64	114	250	2,492	2
Kentucky	7		32		16	
Louisiana	15	4	2			
Massachusetts	2					
Michigan	2	4	4			
Minnesota	2,022	91	2,269	27,298	2,265	36
Mississippi						
Missouri	1,286	1,154	2,094	47,438	13,030	202
Montana	270	30	319	730	1,228	10,282
Nebraska	2,949	450	1,054	22,830	2,248	984
New Mexico	2	1				889
New York	2					
North Dakota	486	1	118	87	200	1
Ohio	103		24		16	41
Oklahoma	392	46	90			
Oregon					8	106
Pennsylvania		3	12			
South Dakota	1,288	80	480	292	673	
Tennessee	41	12	284			

LIVE STOCK IMPORTED INTO IOWA—Continued

State	Horses	Mules	Dairy and breeding	Stockers	Hogs	Sheep
Texas	112	95	14			305
Utah	27					
Vermont	3		99			
Virginia	3		1			
Washington	1					
West Virginia						
Wisconsin	200	8		247	84	
Wyoming	229	24	5	13	149	1,221
Canada	233	8	30			451
Totals	10,421	2,463	10,222	228,000	29,498	13,820

LIVE STOCK EXPORTED FROM IOWA.

Number of Animals Exported and Destination Between July 1, 1914, and June 30, 1916.

State	Horses	Mules	Dairy and breeding	Stockers	Hogs	Sheep
Alabama	29	2	102		55	1
Arizona	2		180		23	
Arkansas	110	5	27		40	1
California	92		122		77	
Colorado	962	30	655		50	8
Connecticut	607					
Florida	5	12	1		6	
Georgia	2		177		13	
Idaho	106	4	267		16	
Illinois	820	12	4,200	800	501	41
Indiana	79		63	95	200	2
Kansas	817	20	600	459	6	
Kentucky	4		19		16	
Louisiana	27	2	94		24	
Maine	284					
Maryland	14	2	12		2	
Massachusetts	27					
Michigan	542	4	79	96	23	
Minnesota	15,569	228	8,728	322	4,524	207
Mississippi	25		139		15	1
Missouri	669	43	1,379	200	246	129
Montana	1,527	67	1,324	78	152	6
Nebraska	2,127	140	2,250	2,687	1,249	99
Nevada	6		193		4	
New Jersey	2		1			
New Mexico	19		140		9	1
New York	572		25		15	2
North Carolina	1		2		8	
North Dakota	2,924	95	1,328		403	65
Ohio	32		30		9	
Oklahoma	270	41	593		22	1
Oregon	46		49		13	
Pennsylvania	121	2	7		77	
Rhode Island	21					
South Carolina			33		2	
South Dakota	2,240	100	4,720	820	2,000	245
Tennessee	30	1	259		20	1

LIVE STOCK EXPORTED FROM IOWA—Continued

State	Horses	Mules	Dairy and breeding	Stockers	Hogs	Sheep
Texas	164	28	722		50	2
Utah	17	2	113		8	
Vermont	59					
Virginia			69		12	
Washington	10	1	57		12	
West Virginia	2		2		2	
Wisconsin	2,127	40	1,459		107	
Wyoming	208	22	1,274		64	
Canada	1,204		5		2	
South America			1			
Totals	37,600	1,024	22,015	6,988	11,400	1,241

RESULTS OF VETERINARY EXAMINATIONS.

Under the veterinary practice act, the examining board is required to meet at least twice a year, which is as often as practical. However, this makes it necessary for many veterinarians to wait considerable time to qualify, and, according to law, they cannot enter into practice until they have been registered. This difficulty could be met by a clause providing for a temporary permit upon presentation of proper credentials. Other changes, such as a reciprocity clause and a clause providing that no person who has not registered in accordance with the provisions of the original veterinary practice act, shall be permitted to practice or represent themselves to be a veterinarian.

Many inquiries have been received regarding credentials necessary to qualify for examination under the veterinary practice act of the state of Iowa. It seems many are led to believe that a course in a veterinary correspondence school or even a few years' services with a practicing veterinarian is all that is required.

The veterinary examining board have adopted as a standard the following list of colleges recognized by the Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D. C., and which is also accepted by most state veterinary examining boards:

Alabama Polytechnic Institute, College of Veterinary Medicine.
Chicago Veterinary College.
Cincinnati Veterinary College.
Colorado State College, Division of Veterinary Medicine.
George Washington University, College of Veterinary Medicine.
Grand Rapids Veterinary College (2).
Indiana Veterinary College.
Iowa State College, Division of Veterinary Medicine.
Kansas City Veterinary College.

Kansas State Agricultural College, Veterinary Department.
McKillop Veterinary College.
Michigan Agricultural College, Division of Veterinary Science.
New York-American Veterinary College.
New York State Veterinary College.
Ohio State University, College of Veterinary Medicine.
St. Joseph Veterinary College (2).
San Francisco Veterinary College.
State College of Washington, Veterinary Department.
Terre Haute Veterinary College.
United States College of Veterinary Surgeons (4).
University of Pennsylvania, School of Veterinary Medicine.
University of Toronto, Ontario Veterinary College (to include only those graduated during or prior to 1897).

Graduates of the following named colleges which are not now in session will be admitted to examination:

American Veterinary College, New York, N. Y.
Columbia Veterinary College, New York, N. Y.
Columbian University, Veterinary School, Washington, D. C.
Harvard University, School of Veterinary Medicine, Boston, Mass.
McGill University, Veterinary Department, Montreal, Canada.
National Veterinary College, Washington, D. C.

Graduates of the following named foreign colleges will be admitted to examination:

Glasgow Veterinary College, Glasgow, Scotland.
Royal Veterinary College, London, England.
Royal Veterinary College of Ireland, Dublin, Ireland.
Royal (Dick) Veterinary College, Edinburgh, Scotland.
The New Veterinary College, Liverpool, England.
Veterinary College of Lemberg, Austria.
University of Melbourne Veterinary School, Melbourne, Australia.

1. This list is subject to change. The failure of any college to comply with the provisions of the regulations will necessitate removal from the list.

2. To include only those graduates who have pursued the study of veterinary medicine at this college or in some other accredited college for three years.

3. Matriculates of 1910, in addition to the regular course, will be required to take one year's additional instruction at this college. Graduates prior to 1914 will be required to have had one year's practice and to take an additional year's instruction at this college.

4. Graduates of 1910 and 1911 will be required to present a certificate showing attendance for an additional session at this or some other accredited veterinary college.

The following is a statement of veterinary examinations by the veterinary examining board of the Animal Health Commission:

College	July, 1914			January, 1915			July, 1915			January, 1916			Total		
	Examined	Re-examined	Failed	Examined	Re-examined	Failed	Examined	Re-examined	Failed	Examined	Re-examined	Failed	Examined	Re-examined	Failed
Chicago Veterinary College	22	3	4				10		4	4			20	0	8
Iowa State College	13						14						27		
Kansas City Vet. College	14			3			9		3	1	1		19	1	3
McKillop Veterinary College	8					1	6						17		4
St. Joseph Vet. College	1			1			1		1				4		
Colorado State College							1						1		
Grand Rapids Veterinary College				1			4		1				9		2
Ohio State Vet. College	4												4		
Ontario Veterinary College	3						1		1				4		
Cincinnati Vet. College							1		1				1		1
Indiana Veterinary College	3	1	1			1	1		1	1	1	1	4	1	4
United States College Veterinary Surgeons							1						1		
Kansas State College				1									1		
Terre Haute Vet. College									1				1		
Total	79	3	5	30		2	66		12	10	5	2	153	5	22

FINANCES OF THE DEPARTMENT.

During the Biennial period the financial transactions of the Department were as follows:

SALARY OF STATE VETERINARY SURGEON AND ASSISTANTS AND OF OFFICE FORCE (GENERAL PAY ROLL).

State Veterinary Surgeon (2 years)	\$ 2,600.00	
Secretary (2 years)	2,400.00	
Stenographer (2 years)	1,500.00	\$ 7,500.00
Appropriation for two years for operation of Veterinary Department		\$ 2,204.90
Overdrawn account for year ending with June 30, 1914	\$ 2,560.38	
Per diem, transportation, hotel and miscellaneous expenses of Department and Assistant State Veterinarians for year ending with June 30, 1915	5,425.71	
Per diem, transportation, hotel and miscellaneous expenses of Department and Assistant State Veterinarians for year ending with June 30, 1916	11,485.77	\$22,475.86
Account for Biennial period ending with June 30, 1916, overdrawn		\$ 471.50
There was received for examination and practice certificate renewal fees and sale of Veterinary Registers for the Biennial period ending June 30, 1916		\$ 3,914.00
Salary Animal Health Commission for Biennial period ending with June 30, 1916	\$ 2,757.50	
Transportation, hotel and miscellaneous expenses of Animal Health Commission for Biennial period ending with June 30, 1916	1,029.63	\$ 5,763.12
*Balance		\$ 147.57

*Claims for salary and expenses for Biennial period ending with June 30, 1916, in excess of balances were filed with State Board of Audit July 1, 1916.

HOG CHOLERA CONTROL WORK IN DALLAS COUNTY.

BY J. B. MOELLER, ACTING CHIEF OF BUREAU OF ANIMAL INDUSTRY.

The work of hog cholera control in Dallas county was instituted in July, 1913, in co-operation with the state authorities, with the use of free serum, administered by bureau veterinarians, to demonstrate the possibility of reducing hog cholera losses by quarantine and sanitary measures in connection with the preventive serum treatment, and to work out a plan that might be applied for state-wide hog cholera control work.

Surveys from time to time indicate that in 1913 there were 118,550 hogs raised in the county, and that there were 324 outbreaks of hog cholera with a total loss of 12,000 hogs or 10.1 per cent.

In 1914 there were 138,320 hogs raised and 302 outbreaks of hog cholera resulting in a loss of 6,810 or 4.9 per cent.

During the year 1915 there were 124,540 hogs raised, with only 60 outbreaks of hog cholera and 1,240 hogs lost, or nine-tenths of one per cent.

In connection with these experiments in Dallas county during the three years, the bureau treated 25,250 hogs in infected herds, with a loss of 4,231 or 16.8 per cent, notwithstanding the fact that 9,510 were sick at the time of treatment. According to general estimates the loss in these infected herds without treatment would have been 85 per cent or 21,547 hogs, which would indicate a saving at the average price during that period of \$142,758.00 which represents many times the cost of the work.

It is also reasonable to presume that in the absence of these experiments cholera would have become widespread over the county, whereas our reports indicate that on June 30, 1916, there was no hog cholera in the county. The bureau feels that the success of the work was largely due to the cleaning and disinfecting of stock cars, stock yards, and unloading chutes, the proper disposition of dead animals, and the restrictions placed upon the movement of stock, together with the early application of the preventive serum treatment.

The experiment in Dallas county, as well as those in other states, has served a useful purpose by demonstrating what may be accomplished in this way, but the plan with the use of free serum administered by bureau veterinarians is too expensive to lend assistance to any great portion of even one state, and has therefore been discontinued. It is believed that with the plan now being instituted, under which the various interests share in the expense, hog cholera losses in Iowa will be reduced to a minimum and the disease in time eradicated.

ABORTION IN COWS.

BY DR. PETER MALCOLM, ASSISTANT STATE VETERINARIAN, NEW HAMPTON, IA.

This question is one of great importance to the veterinarian as well as to the breeder of cattle.

Abortion, using the general meaning of the word, is expulsion of the foetus before it is viable. In viewing this subject from a practical

point of view it is not necessary to go into the more minute details of the different stages of development of the foetus and the periods when the mishap may occur. The common causes of abortion in cows are due to external injuries, such as one animal butting another, squeezing through narrow places, slipping and falling, kicks from vicious attendants, in fact any injury to the abdomen may produce it.

Causes of a more obscure nature are internal, such as an abnormal or diseased condition of the uterus, inflammation of the bowels, kidney, bladder or lungs, indigestion in the acute or chronic form, evolution of gas in the intestines sufficient to cause an irritation to the uterus or interfere with its circulation, diarrhoea, whether caused by irritant food or reckless use of purgatives. The presence of a calculus in the kidney, ureter, bladder, or urethra, may cause a sympathetic disorder of the uterus and expulsion of its contents, also irritant poisons that act on the urino-genital organs, such as cantharides, savin, tansey, ergot (rye smut), and various fungi found in decomposing vegetable matter.

Another cause, and one of great importance, is bad ventilation, or any like condition that interferes with the normal oxidation of the blood. The importance of keeping pregnant animals in well ventilated stables can be seen at a glance when you take into consideration the condition of their blood, which contains an excess of water and a smaller proportion of albumen and red globules. This condition, aggravated by bad ventilation, decomposing animal and vegetable matter, poor food and stagnant water, is almost certain to produce abortion.

The dam with all the diseases and accidents that may be forced on her is not alone responsible for abortion. To the sire a great deal of this trouble is due, and this should not be lost sight of as he plays a prominent part in the transmission of this disease.

In the first place it is not reasonable to suppose a sire that is overworked can produce a strong and vigorous spermatozoa. No, the conditions are directly opposite and when this weakened spermatozoa comes in contact with the ovum the chemical constituent will be of a debilitated character, which will, if it develops, ultimately cause disease of the foetus or its envelope. Furthermore, this overworked sire is in a condition by the weakened state of his generative organs to furnish a favorable field for the development of vigorous micro-organisms, which, when the act of copulation is performed, are carried to the vagina, and together with the spermatozoa, enter the uterus and there develop, causing disease of the foetus, or its envelope, which may bring about abortion, or if not, the offspring may be diseased.

Another cause, and of great importance, is infection. In some instances its origin is obscure but the majority of outbreaks can be traced to neglected cases of simple or accidental abortion. In this division of the causes it no longer remains a doubt as to the pathogenic agent as science has proven beyond a doubt that it is due to a micro-organism. (I will not attempt to advance any new theory or give a name to this organism as the authors of today are seemingly exploding their theories

of yesterday). However, such conditions exist and we are called upon to treat them. To do this successfully it is essential to understand the character and pathological action of this organism. It is a pathogenic microbe, developed in decomposing animal or vegetable matter. Entering the system by way of the respiratory or digestive tract, the vagina, or any abrasion of the skin, gaining access to the blood and causing a putrefactive fermentation, which produces an irritation to the sympathetic system, or death to the foetus.

In the treatment of this disease, or more properly speaking, this dysteropathy requires tact and energy as the conditions and circumstances that favor its progress are numerous and of an obscure nature. To overlook a seemingly trivial condition may cause abortion in a herd.

An essential point to be considered in the preventive treatment, is to see that the sire and dam are in a healthy condition before mating them. The sire should be kept away and not allowed to run with the cows, nor should he be allowed to have intercourse with a cow that has aborted for at least three months, and then only one service, and no day should he serve more than three. In the treatment of the cow, that is, one that has aborted, she should not be bred until after the period at which she would have given birth naturally, for in the majority of cases if they become impregnated they will abort when that period is reached, due to the mental impression that was established by the first impregnation, this condition being better developed the longer she carries the first foetus. As to the treatment of a herd for abortion, do not wait to see if it is going to take on the epizootic form, for delay is dangerous, as one neglected case, no matter what produced it, may cause abortion to every cow in the herd. Therefore, it is very essential to remove the cows that have aborted and thoroughly disinfect them, burn the placenta, destroy the foetus, and all other debris that may become contaminated with the fluids. Disinfect the stable, using carbolic acid. My experience has taught me to believe that carbolic acid is not only a specific in the destruction of this particular microbe, but that it arrests the fermentative changes that favor its development. In using carbolic acid in cases of this nature, two things should be noted: First, that the inhalation of the fumes is necessary in as much as they arrest and destroy germs that may have gained access to the air passages; secondly, that if used too freely it may cause an irritation to the respiratory organs sufficient to produce inflammation of the lungs. A safe formula and one of sufficient strength is carbolic acid one ounce, glycerine one-half ounce, warm water twelve quarts. Give once a day by sprinkling on the hay. This amount is sufficient for twelve cows of average weight.

When abortion starts in a herd to any extent, it is very essential to see that the drinking water does not become contaminated, as the dirt and filth that may be smeared on the tails of the cows that have aborted may be switched into the watering tank and thereby cause the water to be a source of infection. To counteract this condition, put sodium hyposulphite in the drinking water, using three pounds of hyposulphite of soda in a tank that will hold about twenty barrels. Do this twice a week.

ASSISTANT STATE VETERINARIANS.

		Commission Expires		Commission Expires
Aleora, H. A.	Adair	October 18, 1918	Hunt, C. E.	Mt. Pleasant
Anderson, T. E.	Adair	June 3, 1917	Hoaglund, A. L.	Orfium
Anstey, J. A.	Nassau	June 12, 1917	Harry, C. E.	Orfium
Adamson, C. W.	Newton	May 11, 1917	Holm, W. F.	Le Mars
Anderson, C. W.	Jewell	July 8, 1917	Hazel, S. K.	Oelwein
Alcorno, G. W.	Belle Plaine	July 11, 1917	Hickman, B.	Central City
Baumman, S. H.	Birmingham	June 12, 1917	Hoffels, H. J.	Alla
Beaumont, L. C.	Britt	May 21, 1918	Ingman, J. E.	Red Oak
Brodie, A. S.	Osage Falls	June 15, 1917	Johnson, S. H.	Carroll
Broska, L.	Clinton	June 6, 1917	Johnson, R. E.	Centerville
Button, F. G.	Cresco	July 21, 1917	Johnson, P. L.	Sioux City
Baldwin, A. F.	Creston	May 20, 1918	Johnson, Raymond	Richard
Brazie, F. H.	Fort Dodge	June 8, 1917	Juhl, C. E.	Osage
Baughman, D. E.	Harlan	June 12, 1917	Jensen, Julius A.	Shelby
Ballard, F. S.	Shelby	July 1, 1917	Kelso, R. F.	Allerton
Baker, G. O.	Spencer	October 27, 1917	Koen, J. S.	Des Moines
Bunker, J. W.	Winterset	June 19, 1917	Kippen, N. A.	Independence
Buxton, E. A.	Vinton	June 2, 1917	Kuhl, A. D.	Harlan
Barrett, L. P.	Cascade	June 5, 1919	Kuerner, A.	Pt. Dodge
Bevins, N. O.	Hawkeye	February 22, 1917	Knight, E. L.	Waukon
Bionkley, C. E.	Seymour	March 12, 1918	Lodge, H. G.	Clarksville
Bronson, W. W.	Waukon	March 12, 1918	Loeber, R. A.	Sidney
Brockenbauer, H. E.	Sioux City	March 12, 1918	Licht, J. M.	Sioux City
Cannors, H. W.	Bloomfield	October 12, 1918	Larimer, R. E.	Madrid
Chandler, T. W.	Layport	June 8, 1917	Lovsee, R. G.	Manson
Copeland, F. B.	Logan	April 1, 1917	Lantz, R. A.	Kaira
Crawford, N. N.	Waukon	June 6, 1917	Long, J. H.	Lone Tree
Cahn, P. A.	Estherville	April 8, 1918	Miller, D. H.	Council Bluffs
Conquest, A. M.	Gowrie	July 16, 1918	Marks, J. J.	Lamson
Delling, N. J.	Dallas Center	April 16, 1917	Marks, W. H.	Loke Park
Diller, L. L.	Marshalltown	December 8, 1917	Miller, C. B.	Manning
Dodge, Geo. A.	Northwood	June 7, 1917	Mason, S. B.	New Hampton
Dowling, Thos.	Washington	June 5, 1917	Miller, A. C.	Rock Rapids
Dixon, James	Tipton	April 11, 1917	Milford, W. F.	Storm Lake
Edwards, F. H. P.	Sioux City	June 8, 1917	Macklin, W. E.	Coun Rapids
Evans, C. S.	Sioux City	March 13, 1918	Miller, G. G.	Council Bluffs
Fyllerton, W. R.	Dubuque	June 6, 1917	Moore, R. G.	Toledo
Frank, J. E.	Indianola	February 12, 1917	Menary, A. R.	Cedar Rapids
Flickinger, P. W.	Greenfield	April 19, 1918	Mosey, O. Q.	Mt. Vernon
Freed, O. F.	Luxley	August 22, 1918	Morris, H. R.	Omaha, Nebr.
Fisher, B.	Prescott	November 25, 1917	Moulton, W. E.	Hawarden
Gooder, W. J.	Osage	June 15, 1917	McRoberts, H. I.	Columbus Junction
Gillies, H. M.	Wason City	June 3, 1917	McAhen, D. W.	Sioux City
Guinn, S. H.	Marengo	June 7, 1917	McCallough, H. I.	New Sharon
Gidley, Thos. W.	Milvern	July 2, 1917	McIntosh, H. A.	Maple Rock
Griffith, J. W.	Cedar Rapids	June 2, 1917	McIntosh, W. C.	Elma
Gilison, T. J.	Byersville	October 16, 1918	McCabe, J. C.	Fairfax
Gidley, R. H.	Shandoanh	July 24, 1917	Neiman, P. J.	Marshalltown
Goldbrown, J.	Ft. Madison	October 6, 1917	Norden, C. J.	Nebraska City, Nebr.
Glenn, J. C.	Northwood	December 2, 1917	Nicholson, James	Humbolt
Grover, B. E.	West Branch	April 10, 1918	Nielsen, Jas. M.	Sigourney
Greenwood, E. S.	Laurens	October 23, 1918	Nielsen, H. J.	Waverly
Gubser, N. E.	Earlham	October 23, 1918	Nitty, N. S.	Nevada
Hall, J. W.	Burlington	June 8, 1917	Salomon, C. O.	Ogden
Haxby, J. W.	Charinda	June 8, 1917	Niege, C. A.	Marshalltown
Hollingsworth, F. H.	Council Bluffs	July 18, 1917	Gimsted, H. H.	Greene
Harmon, B.	Des Moines	June 10, 1917	Olsen, C.	Sac City
Howe, E. E.	Des Moines	June 6, 1917	Poss, E. H.	Cherokee
Hagerty, H. J.	Dubuque	June 8, 1917	Piper, E. G.	Jds Grove
Hanson, R. E.	Forest City	June 2, 1917	Park, Chas.	Mobile
Hell, Henry	New Liberty	June 2, 1917	Parker, F. F.	Oskaloosa
			Parlow, J. G.	Shandoanh
			Petig, C. D.	Clear Lake
			Potter, J. S.	Iowa City
			Potter, L. D.	Emmetsburg
			Quinn, A. H.	Creston
			Russell, L. W.	Anamosa
			Readhead, Wm.	Lenox
			Readhead, R. F.	Corning

		Commission	Expires
Howe, O. W.	Keokuk	June	10, 1917
Roach, F. C.	Miles	June	8, 1917
Robertson, J. E.	Monona	June	9, 1917
Roach, F. L.	Preston	June	2, 1917
Robinson, V. J.	Atlantic	November	4, 1916
Rogers, H. C.	Audubon	February	22, 1917
Ricketta, R. A.	Zearing	May	5, 1918
Reynard, J. P.	Ossola	March	12, 1918
Sayers, E. E.	Algona	June	6, 1917
Stange, C. H.	Ames	July	1, 1917
Stewart, C. E.	Charlton	January	12, 1918
Sirapton, H. C.	Denison	June	6, 1917
Smith, V. J.	Eldora	January	29, 1918
Scott, J. W.	Chicago	June	6, 1917
Shegmaker, E. C.	Mt. Ayr	June	10, 1917
Shipley, L. U.	Sheldon	July	11, 1917
Stewart, W. C.	West Union	June	10, 1917
Scott, C. J.	Knoxville	January	28, 1918
Sexton, G. J.	Sumner	November	1, 1916
Sparke, C. J.	Sully	November	21, 1918
Smith, L. E.	Jefferson	March	2, 1917
Sevenseter, Jno.	Hamburg	March	2, 1917
Spence, J. H.	Clinton	March	17, 1917
Smith, W. C.	Fairfield	May	2, 1917
Shipley, T. A.	Sioux City, Gov't Service	March	12, 1918
Spiker, W. A.	Melcher	October	12, 1918
Smith, W. A.	Stock Valley	April	1, 1918
Trafton, F. J.	Jefferson	May	8, 1917
Treman, A. J.	Lake City	October	25, 1918
Tille, John	Muscatine	June	8, 1917
Talbot, P. L.	Grinnell	June	6, 1917
Talbot, W. W.	Pt. Madison	October	19, 1918
Thomsen, J.	Armstrong	May	5, 1917
Taylor, F. W.	Maxwell	August	24, 1918
Treman, H. B.	Rockwell City	November	28, 1918
Thompson, H. G.	Davenport	January	18, 1918
Thompson, J. L.	Calmar	July	6, 1919
Uehran, Geo. E.	Atlantic	August	8, 1917
Underwood, J. R.	Des Moines	November	21, 1916
Vernon, J. M.	Des Moines	May	18, 1918
Van de Waa, H. J.	Orange City	October	10, 1919
Van Vranken, H. S.	Burt	June	20, 1917
Wall, R. D.	Des Moines	June	8, 1917
White, C. L.	Manilla	June	10, 1917
Wolfe, R. F.	Guthrie Center	June	8, 1917
Wood, A. L.	Hampton	June	7, 1917
Williams, J. E.	Webster City	May	21, 1918
Wolfe, E. C.	Assess	June	21, 1919
Ward, B. F.	Anthony	September	26, 1919
Wolfe, Jerry	Grand Mound	March	27, 1917
Webel, J. H.	Keota	January	25, 1918
Wall, Joe F.	Altoona	August	21, 1918
Winch, Geo. R.	George	September	25, 1918