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ANNUAL REPORT

OF THE

BOARD OF CATTLE COMMISSIONERS

OF THE

COMMONWEALTH OF MASSACHUSETTS.

JANUARY 9, 1901.

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REPORT.

To the Honorable Senate and House of Representatives.

The Board of Cattle Commissioners herewith presents its annual report, as required by section 3, chapter 408, Acts of 1899, of the work it has performed during the past year.

The Legislature of 1900 appropriated the sum of \$50,000 for the expenses of the commission in dealing with the contagious diseases of animals. This sum has proved insufficient for carrying out the law, and all cattle quarantined after the 1st of December were released for lack of funds.

In order to have this report ready by the 10th of January, it is necessary for the commission to close its books the 15th of December; that is, the annual report of the Cattle Commission involves the period between December 15 of one year and December 15 of the following year; therefore, while the report shows a balance on hand December 15 of about \$4,300, when the bills against the commission all come in, January 1, it is feared that there will not be funds enough on hand to meet them, and that a small deficiency will be the result, which will probably amount to a little over \$3,000.

As work had to be closed December 1, leaving forty or fifty diseased cows to be looked after another year, and as the work done during the past year has been only that which was in the main absolutely imperative, the commission finds that it will require an appropriation to be placed at its disposal this year of \$75,000, in order to properly carry out the provisions of the law which it has to administer. This amount will be necessary to meet the expenses incurred in dealing with tuberculous cows reported by the local inspectors of animals, keeping up the quarantine regulations requiring healthy cattle to be brought in from other States, examining and killing horses with glanders or farcy, investigating and limiting outbreaks of hog cholera and rabies, and incident-

ally inquiring into any other outbreaks of disease reported to it, thought to be of a contagious character.

In dealing with tuberculosis among cattle, the commission feels that, in taking animals that can be condemned upon a physical examination or that have tuberculous udders, it is protecting the public health and giving the State a good system of inspection of dairy herds, but that it is little more than holding its own against the disease, and not diminishing it as rapidly as could be desired. Many farmers would like to have their herds freed from disease, but in most instances it has been necessary to refuse for lack of funds, and when it has been done, the conditions imposed seem to have been too onerous for many farmers to bear.

It does not seem unwise, therefore, to suggest the advisability of a special appropriation, in addition to that absolutely necessary for administering the law, to be used for testing the herds of cattle of owners who request it, paying for animals found to be diseased, such owners being willing to comply with the requirements of the Cattle Commission in disinfecting their premises and keeping their herds healthy after once rendering them so. If an appropriation of \$25,000 could be placed at the disposal of the Cattle Commission for this purpose, it is believed that in some localities very material advances could be made toward further diminishing the amount of bovine tuberculosis in this Commonwealth.

An inspector of animals has been appointed in every city and town in the State during the past year, nearly all of the appointments being approved by the Board. In two or three instances appointments were made of persons who were not thought by the commission to be suitable for the position; in these cases it declined to approve them, as provided for in the law, and requested that inspectors be appointed who were properly qualified for these offices. The selectmen of one town declined to make an appointment after the commission refused to confirm its appointee; the Board accordingly appointed an inspector of animals for them, as provided for under section 18 of chapter 408, Acts of 1899. In one of the cities the Cattle Commission appointed an inspector of

animals. The board of aldermen refusing to confirm the mayor's appointment, the mayor requested the commission to make an appointment, as he and the aldermen could not agree on a suitable person; this was therefore done.

The inspectors have done very much better work during the past year than they did the year before; only four have failed to make the annual report required of them, and two of these had good excuses; while in 1899 the inspectors of animals in twenty-three cities and towns neglected to make the reports they should have made.

New books were furnished the inspectors last year in which to make their reports, and perhaps one reason for having reports from more towns is due to the books being simpler and the blanks in them more easily filled out. Formerly the inspectors were furnished with a book in which to record the results of their herd inspections and another in which to record the results of the inspection of stables and premises; now one book is sent, having spaces to fill out, answering questions relative to the animals and premises all on one page; and the questions asked are fewer and simpler, making the inspectors' task lighter, while the results arrived at are the same.

The commission takes this opportunity of renewing its thanks to Dr. Theobald Smith, professor of comparative pathology at Harvard University, for the valuable advice and assistance he has ever been so ready to render when they were needed.

The laboratory work required by the commission during the year 1900 has been performed as usual by Dr. Langdon Frothingham at the bacteriological laboratory of the Harvard Medical School, except when he was on his vacation, when Dr. John N. Coolidge took his place. Their services have been fully appreciated, as have also the facilities granted the Board at the Harvard Medical School.

FINANCIAL STATEMENT.

During the year ending Dec. 15, 1900, there has been expended by the Cattle Commission, under chapter 408, Acts of 1899, as follows:—

Paid for cattle condemned, killed and found tuberculous, 1,423 head,	\$30,870 22
Paid for cattle condemned, killed and no lesions found, 43 head,	886 33
Paid for quarantine expenses, 17 head,	24 15
Paid for expenses of killing and burial,	11 50
Paid for arbitration expenses,	1 00
Paid for salaries of commissioners,	5,740 00
Paid for expenses of commissioners,	2,227 07
Paid for services of agents,	7,390 57
Paid for expenses of agents,	3,130 61
Paid for clerks and stenographers,	2,608 50
Paid for postage, stationery, printing and other office ex- penses,	1,206 71
Paid for expenses of laboratory and experimental work,	981 99
Paid for expenses of quarantine stations,	2,733 79
Paid for expenses of glanders, killing and burial,	209 00
Paid for tuberculin and implements,	184 29
Total,	\$58,205 73

Of this amount, there was paid for 1899 accounts \$12,-573.52, leaving balance paid for expenses of current year to December 15, \$45,632.21. The average price paid for the 1,466 head condemned was \$21.66. During the year there has been received and paid to the State Treasurer, proceeds from sales of hides and carcasses of condemned cattle, \$791.78.

TUBERCULOSIS.

As in previous years, the chief cause of expense in eradicating the communicable diseases of animals has been in connection with bovine tuberculosis, and more animals have been condemned and killed on account of this affection than any other; hence it is given the first place in this report, although it can hardly be considered of greater importance than glanders under existing conditions, or than rabies at times when this disorder is very prevalent.

The management of tuberculosis, as in former years, may be divided under three general heads:—

First.—The maintenance of quarantine regulations against other States, requiring that all cattle imported into Massachusetts for dairy or breeding purposes shall be free from tuberculosis, their health being based upon their being able to pass the tuberculin test. The owner may have them

tested by a veterinarian satisfactory to the Cattle Commission before shipment, or after arrival at their destination, at his expense and risk.

Second. — That portion of the work called for by the quarantining of manifestly diseased animals by the local inspectors.

Third. — Testing entire herds at the request of the owners, with a view to permanently eradicating tuberculosis from them.

First. — The maintenance of quarantine regulations will first be considered.

All cattle brought into the quarantine stations at Brighton, Watertown and Somerville remain in quarantine until released by the commission. All persons bringing cattle from without the Commonwealth into these stations are required to bring with them certificates of test made by competent veterinary surgeons, the cattle to be tagged in the ear, and said tag number must correspond with the number upon the certificate. If any fail to have such certificate and tag, they are held until tested with tuberculin and released or condemned by the commission.

The following tables will show the amount of stock received at these stations during the year: —

Receipts of Stock at Brighton, from Dec. 15, 1899, to Dec. 15, 1900.

Maine cattle,	11,203
New Hampshire cattle,	1,689
Massachusetts cattle,	12,290
New York cattle,	917
Connecticut and Rhode Island cattle,	436
Western cattle,	81,498
Vermont cattle,	656
Sheep,	25,314
Swine,	681,694
Veal,	39,797
Cattle released on certificate,	9,354
Cattle tested,	495
Cattle released after test,	490
Cattle condemned and killed after test,	5
Massachusetts cattle in stock barn,	16,969

*Receipts of Stock at Somerville, from Dec. 15, 1899, to
Dec. 15, 1900.*

Maine cattle,	1,432
New Hampshire cattle,	5,217
Vermont cattle,	5,027
Massachusetts cattle,	3,422
New York cattle,	605
Western cattle,	10,819
Sheep,	326,738
Swine,	17,610
Veal,	52,896
Cattle released on certificate,	1,567
Cattle tested,	7
Cattle released after test,	7

*Receipts of Stock at Watertown, from Dec. 15, 1899, to
Dec. 15, 1900.*

Vermont cattle,	4,578
New Hampshire cattle,	5,097
Massachusetts cattle,	3,007
New York cattle,	26
Western cattle,	44,338
Sheep,	355,585
Swine,	585,567
Veal,	53,169
Cattle released on certificate,	6,122
Cattle tested,	131
Cattle released after test,	129
Cattle condemned after test and killed,	2

Total Amount of Stock at the Three Stations.

Cattle,	192,257
Sheep,	707,637
Swine,	1,284,871
Veal,	145,862
Released on certificate,	17,043
Tested at stations,	633
Released after test,	626
Condemned after test,	7

This year more cattle have been brought to market without certificates than in any year since 1896. There have been tested by the commission 633 cattle, 7 of which number have been condemned, killed and found to be tuberculous, — a little over 1 per cent.

In 1896 there were 501 cattle tested at the stations, of which number 18 were condemned, killed and found to be diseased, — $3\frac{3}{5}$ per cent.

There has been a steady decrease in the per cent. of cattle condemned each year, from $3\frac{3}{5}$ in 1896 to 1 per cent. in 1900, which is due largely, we think, to the care and good judgment the drovers exercise in selecting their stock, as they report that there are certain sections of some States in which they do not care to buy cattle for this market, owing to the prevalence of tuberculosis.

We believe that if the present quarantine restrictions were removed there would not be such care taken on the part of the drovers, and many diseased animals would be found in Brighton market and also all through the Commonwealth from those districts; therefore we believe the quarantine should be made more stringent along the border lines, and great care taken to protect the citizens and herds of the State from this disease.

It will be seen that, out of a total of 192,257 head of neat stock, 17,669 were released as free from disease; these were nearly all milch cows for the local market; the remaining 174,588 were for slaughter or export.

In addition to the above, there were 636 permits issued and 4,765 dairy cattle were brought into the State, also 16 calves. Of these, 3,120 were tested before shipment and 1,614 after arrival in this State. Some cattle were returned from pasture during the year, and a good many beef cattle were brought in for slaughter, the exact number not being recorded. Of these 1,614 cattle tested after arrival, 22 reacted to the test and were disposed of as follows: 6 were returned to the State from which they came; 15 were killed and found tuberculous; and 1 was killed and paid for, because no lesions were found.

The following extract from a paper, read by the chairman of the Board of Cattle Commissioners at the annual meeting of the American Veterinary Association, at Detroit, last September, will give an idea of the difficulties the commission has met with in enforcing its regulations: —

OBSTACLES TO ENFORCING REGULATIONS REQUIRING THE TUBERCULIN
TEST IN INTER-STATE CATTLE TRAFFIC.

Massachusetts was among the first States, if not the first State, requiring cattle brought within her borders to be kept for dairy or breeding purposes to be subjected to the tuberculin test, although for several years prior to the use of tuberculin as a diagnostic agent Maine had maintained a quarantine against all Massachusetts cattle, because of the prevalence of tuberculosis in the old Bay State.

In 1894 the Massachusetts Legislature passed an act providing that owners should be reimbursed by the State for one-half the value of cattle killed by order of the Cattle Commission as having tuberculosis. In 1895 the law was amended so as to provide that owners should be paid full appraised value for tuberculous cattle up to a limit not exceeding \$60 for any one animal. In 1899 this limit was reduced to \$40, the appraisal to be based upon the actual market value of the animal for milk or beef purposes at the time of condemnation, breeding not being considered. No compensation, however, is allowed for a diseased animal that has not been owned continuously within the State for six months prior to the time of condemnation.

It was during 1894, also, that the Cattle Commission commenced using tuberculin on a large scale as a diagnostic agent, killing all reacting animals. It was at once obvious that, if the State was to undertake the extirpation of bovine tuberculosis, only healthy animals should be brought into the Commonwealth to replace those killed, and that their condition of health must be based upon their standing the tuberculin test. Massachusetts does not raise a great deal of neat stock; the supply of milch cows is brought in largely from without the State, especially at the eastern end, where the milk producers depend almost entirely upon new purchases brought in from other States to keep up their dairy stock. These cows come largely from Maine, New Hampshire and Vermont, quite a number come from New York State and a few from other places.

Every Wednesday a large cattle market is held at Brighton, a suburb of Boston, at which there are often 700 or 800 cows. Of these, 200 to 250 come from Maine, 100 to 125 from New Hampshire, as many more from Vermont and a carload or two from New York State; these are practically all new milch cows. The rest come from Massachusetts, many of them brought in by milkmen to sell because they are farrow, gargetty or otherwise worn out, most of them being sold for cheap beef or bolognas, their

owners replacing them with fresh stock, mainly from the northern New England States.

There are about 20,000 head of cattle from without the State (not counting beeves), mainly milch cows, passing through Brighton market each year; most of them remain in Massachusetts, quite a number go to Rhode Island and a few are taken to Connecticut. The Cattle Commission, therefore, in the autumn of 1894 issued regulations requiring all persons bringing cattle into Massachusetts to have a permit unless brought to the stock yards at Brighton, Watertown or Somerville, which were designated by the Board as quarantine stations, and requiring all cattle, except beeves for immediate slaughter and calves under six months old, to be subjected to the tuberculin test.

Commencing Nov. 21, 1894, the cattle arriving at the stock yards were held in quarantine and tested by the commission, all reacting animals being killed. Of course, under the law there is no compensation for a tuberculous animal that has not been owned in the State for six months; but if an animal killed by order of the commission is found free from disease, the State has to pay its full value to the owner.

Under the method first adopted it was found that quite a number of animals gave an apparent reaction to tuberculin, which when killed showed no lesions of disease, and therefore had to be paid for, making the work quite expensive for the State. This was due to the fact that many cows, as the result of the excitement of transportation and strange surroundings, would have a rise of temperature the day after arriving, that could easily be mistaken for the rise of a tuberculin reaction. The cattle trains arrive early Tuesday morning; the cows are unloaded and given twenty-four hours to rest and bag up, and are placed on the market Wednesday. Wednesday has been market day at Brighton from time immemorial, I was going to say; at least, it probably has been ever since there was a market at Brighton. In order to give the cattle time to rest and recover from the effects of transportation, the Cattle Commission had market day changed to Thursday, the cattle being tested Tuesday evening and temperatures taken Wednesday; even this was not satisfactory.

It was then proposed that the cattle should be brought down a week ahead, — that is, cattle intended for sale one week should be brought down the preceding week and held in quarantine six days, and then tested. This plan would have entailed an extra expense that the drovers could not have stood, as it would have upset their plans and cut into their profits to an extent that would have driven them out of business. After testing the cattle at Brighton from

Nov. 21, 1894, to April 30, 1895, with the drovers fighting, objecting and placing every obstacle in the path of the Cattle Commission that they possibly could, the work was temporarily abandoned. In July, 1895, it was decided that milch cows and breeding stock coming into Massachusetts must be tested, but that each drover could employ a veterinarian to test the cattle before shipment, the examiner to make out a certificate of tuberculin test on blanks furnished by the Cattle Commission. These blanks are made in duplicate, the animal described therein is identified and released by a member of the commission at the stock yards, who gives the owner the original and keeps the duplicate to file away, where it can be referred to at any time if a question concerning a particular cow arises. At the present time each cow is required to have an ear tag (furnished the drovers at cost by the commission), the ear tag number and certificate number having to correspond; this makes the identification of each animal more easy.

The drovers entered readily into this plan, and each arranged to have a veterinarian in his locality test his cattle. The Cattle Commission obtained a list of veterinarians from the commissioners of the other States, whom they considered reliable; the intention at first was to have only veterinary graduates upon it, and only those vouched for by Cattle Commissions of their respective States. In some localities there were no qualified veterinarians, and it was arranged to accept tests of members of the laity who were practical cattlemen, castrators and the like, and who familiarized themselves with the proper methods of applying tuberculin. This work was done honestly, probably, for a few months; then crooked work commenced, and has been carried on to a greater or less extent by some men ever since. (An honest quack is better than a dishonest graduate.)

This plan has been followed now for five years. The animals brought to the stock yards each week need no permit; the cow dealers give the certificates of tuberculin test (often fake ones) to the commissioner having charge of this branch of the work, who identifies and releases the animals. Cattle brought to any other points can come in only on permits, and if over six months old and for dairy or breeding purposes must be tested either before shipment or after arrival at their destination, at the expense and risk of the owner. If any cows are brought to the stock yard quarantine stations untested, they are held and tested in five or six days, in time to go on to the market the next week. Any that react are killed; if slightly diseased, the owner can have what the butcher will allow him for the beef; if badly diseased, the carcass

is tanked. If the commission makes a mistake by killing a healthy animal, it pays for it.

Since 1894 and 1895 many other States have adopted regulations based upon those of the Massachusetts Cattle Commission. The Bureau of Animal Industry of the United States Department of Agriculture requires all cattle held at the government quarantine stations to be tested with tuberculin if over six months old. The Canadian government also requires neat cattle brought into Canada to have a certificate of tuberculin test made by a government veterinarian in the country from which they are shipped; in the absence of this, they are held and tested at the quarantine station at the port of entry.

One would suppose from this that the State of Massachusetts had a right to adopt such rules and regulations as were deemed necessary for the protection of her live stock interests, yet the commission has had a steady fight on its hands for the last six years with the cattle dealers and drovers.

The regulations regarding the cattle traffic in various States differ somewhat. In Massachusetts the law gives the Cattle Commission power to issue all necessary rules and regulations for the protection of the live stock interests of the State; the same is true of Vermont, New Hampshire and Colorado. In some of the other States the governor issues a proclamation upon the recommendation of the live stock sanitary boards; Illinois, Texas, Wisconsin and several other States are examples of this method. In Maine the Board of Cattle Commissioners may issue the necessary rules and regulations, subject to the approval of the governor.

In some States the importation of cattle is regulated by the Public Statutes; examples of this are Rhode Island, Connecticut, New Jersey and Pennsylvania. This legislation may favor the tuberculin test, or may be directly opposed to it, and may even be carried so far as to show a distinct animus against the veterinary profession. The State of Connecticut is the most striking example of this feeling.

Rhode Island has an intelligent and conscientious Cattle Commission, the secretary of agriculture acting as its secretary, with a commissioner from each of the six counties, an appraiser and a consulting veterinarian. Until this year the law of Rhode Island provided as follows: —

[CHAPTER 342, ACTS OF 1896.]

SECTION 2. All persons, corporations or companies intending to ship, transport or drive cattle into the state, must produce a certificate to the effect that the cattle to be so shipped, transported or driven are free from tuberculosis as far as may be determined by physical examination and

the tuberculin test. The certificate shall give a description of each animal brought into the state, sufficiently accurate for identification, and shall also give the date and place of examination, the preparation of tuberculin used, the quantity injected, the temperature immediately before inoculation, the temperature at the eleventh hour and every two hours subsequent thereto, for at least ten hours, or until the reaction is completed. The certificate shall be signed by a veterinarian who is a graduate of a recognized veterinary college, and shall be sent immediately to the secretary of the state board of agriculture, who shall immediately notify a commissioner of the county into which the cattle are to be shipped, transported or driven, and said commissioner shall examine the cattle to identify them. Failure to comply with the law shall be considered a misdemeanor punishable by a fine not to exceed one hundred dollars.

SECTION 3. Complaint for the violations of the provisions of this chapter shall be made to the secretary of the state board of agriculture, and said secretary shall be exempt from giving surety for costs on any complaint made as aforesaid.

From an intelligent stand-point this would seem to be a good law, and one which ought to have been left alone; but the Rhode Island Legislature of 1900 passed the following amendment: —

[CHAPTER 756, ACTS OF 1900.]

SECTION 1. All persons desiring to import cattle into this state or from other states without obtaining the certificate required by section two of chapter three hundred and forty-four of the public laws, shall give written notice to the cattle commissioner of the county into which the cattle are brought within forty-eight hours after the arrival into the state of such cattle; and such notification shall contain a specified list of the cattle so imported, with a full description of age, sex, and such other particulars as may be necessary for the identification of the said cattle and the place where they can be found.

SECTION 2. Immediately upon the receipt of such notification the cattle commissioner of the county into which said cattle are imported shall proceed within seventy-two hours to the place designated and make a physical examination of said cattle; and if upon such examination said cattle shall be deemed free from tuberculosis, it shall be so certified by said cattle commissioner upon a permit, and a duplicate thereof be given to the owner of said cattle, and the cattle shall be released for the use and benefit of the owner.

SECTION 3. If after such examination the cattle commissioner shall be of the opinion that the cattle so examined are afflicted with tuberculosis, he shall require of the importer that the suspected cattle be tested with tuberculin, said test to be applied by a veterinarian of a recognized veterinary college, who shall give to the said commissioner a certificate in writing that such test has been applied, together with a statement of the tuberculin used, quantity injected, temperature of each animal before inoculation and at the eleventh and every two subsequent hours there-

after, for at least ten hours, or until reaction is complete; and a duplicate thereof shall be given to the owner of said cattle, and the original certificate shall be sent by the said commissioner to the secretary of the state board of agriculture. If after such test it shall be proved that such suspected cattle are afflicted with tuberculosis, such diseased cattle shall be immediately slaughtered, upon written order of said commissioner, and the state shall not be required to compensate the owner for their loss, and the owner shall pay for testing such cattle with tuberculin; but if such cattle shall be found free from tuberculosis they shall be released for the use and benefit of the owner. If any of such cattle are slaughtered, and upon post-mortem examination it shall be found that the slaughtered animal was not afflicted with tuberculosis, then the animal so killed shall be paid for by the state at the full appraised value, in accordance with the provisions of section eleven of chapter ninety-nine of the general laws.

SECTION 4. Any person violating any of the provisions of this act shall be deemed guilty of a misdemeanor, and shall be fined not more than one hundred dollars.

SECTION 5. This act shall take effect from and after its passage.

It can be readily seen that this law is intended to counteract that of 1896, and was passed in the face of the opposition of the Rhode Island Cattle Commission and all intelligent argument that could be brought to bear against it. This is another example of obstacles to the tuberculin test on the part of the cattle men.

On the other hand, Pennsylvania and New Jersey have very good statutes for the protection of their live stock interests, providing that all persons and corporations must have permits to bring cattle within their limits, and that cattle for dairy and breeding purposes must be tested with tuberculin before shipment, by reliable veterinarians, or else be held in quarantine and tested after arrival at their destination.

Probably legislation such as has been enacted in Pennsylvania and New Jersey is more efficacious for the protection of the live stock interests of a State than the power to make rules and regulations given to cattle commissions or live stock sanitary boards; because, first, there is more respect for statute law than for the rules and regulations of a commission; and, secondly, the courts will take more interest in enforcing the law than they will in imposing penalties for breaking rules and regulations formulated by a commission.

The Massachusetts Cattle Commission has been impeded and imposed upon in every possible way that many of the drovers could devise. Most of the dealers undoubtedly thought, when these regulations were first adopted, five years ago, that tuberculosis was a fad and a temporary matter, that it was of little importance and that tuberculin did not amount to anything. A

farmer in one of the northern New England States does not like to sell a cow subject to the test, and have her left on his hands if she reacts; the drover does not like to buy a cow out and out, and have her react, because he has to sell her at a loss near home, her value being diminished if she turns out to be an animal he is not allowed to bring into Massachusetts. The result has been that a number of the dealers have done their best to corrupt the veterinarians or alleged veterinarians making the tests, and induce them to make out certificates without using tuberculin at all, and in many instances have succeeded in doing so. When the Massachusetts Cattle Commission finds that a man is doing dishonest work, it refuses to accept his tests, and the drover then has to find a new man, and, if possible, corrupt him. There have been a few exceptions to this rule, when the culprit has acknowledged that he has done wrong, and has promised to turn over a new leaf when the disgrace of his dishonesty has been pointed out to him, and he has been reinstated.

In localities where an occasional carload of cows is shipped into Massachusetts I think that the testing has been in the main properly done; but where the cattle are shipped every week, as they are from certain points in Maine, New Hampshire and Vermont, corrupt methods have developed. Two years ago last spring the Massachusetts Cattle Commission had a list printed of men whose tests it would accept, after dropping a number of names from the old list, and it is now time to prepare a new one; the chief reason for delay is the fact that just when it seems that the names of only reliable men are ready, it is found that another good man has gone wrong.

Another reason for dishonest work, in some instances, is due to competition among the veterinarians, who cut prices in order to obtain a certain drover's patronage, until they reduce the price to such a rate that a man cannot afford to test the cattle and use tuberculin, and so makes out the papers without the formality of a test. This has been a very foolish cause for this kind of work, as there are so few men on the list now that they could all agree to a good price, and obtain it.

Occasionally a tuberculous cow may be honestly tested and fail to react, — that is, she may be tested by a man one week and refused a certificate; and then the owner may have another veterinarian test her the following week without informing him that she has reacted once, and thus obtain a certificate of health because she fails to react when tested the second time; or a drover may have a cow of which he is suspicious, and himself inject her with a heavy dose of tuberculin, and when she recovers have her tested

by the veterinarian. Occasionally a badly diseased cow may fail to react, but these cases ought to be perceptible from the physical condition of the creature; but when a man is testing a large number, and has gotten into the habit of depending entirely on tuberculin, he may overlook such a case. In my experience, a cow's failing to react to a second test made soon after the first one is not as frequent as many persons believe; in the majority of cases an animal that has given a marked reaction once is very likely to react again.

Numerous specific instances of dishonest work might be given. Last autumn an Ontario graduate, supposed to be one of the leading veterinarians of New Hampshire, was called to Dracut, Mass., to test a cow just brought in from across the line, held in quarantine until a certificate of test was sent in. Soon after, suspecting that all was not right, I proceeded to Dracut, and went with the inspector of animals to see about releasing the cow. I asked the owner if she had been tested. He said: "Oh, yes; the man came and stuck the tubule right into her; took it out of his pocket and stuck it in." Asked how long he was there and how many times he called, he said he "only seen him once, and he was only there a few moments." All he had done was to take the cow's temperature, make a physical examination, and then give a certificate of tuberculin test. The cow failed to pass when properly tested later. This veterinarian called to see me, and denied that he ever did such a thing before, but acknowledged his transgression in the case I caught him on, and said he would be very careful in the future. The words were hardly cold from his mouth before he was called upon to test a lot of cows to be sold at auction in southern New Hampshire, some of which might be brought into Massachusetts. A number were brought in with his certificate and held by the commission and tested; several reacted, showing that they either were not tested properly or probably not at all. It is needless to say that his tests will not any longer be accepted by our Board. This is only one example of a number that I might give.

Early in June a large Jersey breeder in Pennsylvania had Dr. Francis Bridge test a number of cattle he intended selling at auction, and sold them with his certificates. A neighbor was going to have an auction of Jersey cattle at about the same time, and he thought it would be a favorable opportunity to have Dr. Bridge test his. I believe there was quite a large number, — over one hundred, if I am correctly informed, — and some twenty odd failed to pass, and Dr. Bridge refused to give certificates. The owner had a local veterinarian test the cattle, who gave certificates

on some, if not all, and they were sold at the auction with the other man's certificate. At the sale the statement was given out that Dr. Bridge did not test all the animals, as quite a little bunch was overlooked until after he had gone, and therefore they had been tested by another doctor. Several cattle from this sale were brought into Massachusetts, but all had been tested by Dr. Bridge. If any tested by the other man had been shipped into the State they would have been held and retested by the Cattle Commission, with, I believe, interesting results.

The Bureau of Animal Industry is in the best position to obtain honest tuberculin tests, as it holds the cattle in quarantine at the port of entry and has its own agents to test them, and therefore knows the work is honestly done.

The greatest obstacle to the enforcement of laws or regulations requiring a tuberculin test in the inter-State cattle traffic is dishonesty.

First, there are the avarice and lack of honesty among some cattle dealers and drovers, which lead them to object to the test, because it interferes with their profits.

Secondly, the dishonesty of certain veterinarians, who disgrace and dishonor a profession which should be a useful and honorable one, by claiming to be members of it.

Possibly there is more excuse for the cattlemen, as many of them think tuberculin is a humbug, that the test is of no value, and that these regulations are a passing fashion,—not come to stay. I do not wish it to be understood that I regard all our cattle dealers and drovers as dishonest or dishonorable, as there are a number of men among them of the strictest integrity and reliability, but it is greatly to be deplored that many of them are not.

The veterinarians ought to know better than to do dishonest work, and should be glad to co-operate with the authorities in any State in diminishing a scourge to the farmer, even though too many farmers are so ignorant and short-sighted as to fail to appreciate what is being done for them. As to the danger to the public health, I think that is a matter that has been overestimated. The attempt to terrorize the community with the dangers of the use of dairy products on account of tuberculosis, by certain veterinarians whom the people have suspected of wanting salaries, has done much to cause a reaction against the work and to lead to a lack of confidence in the profession, such as is so well exemplified in the legislation already alluded to in the State of Connecticut. Much of the trouble seems to be due to a lack of honesty among certain dishonorable members of the profession.

What other remedy there is, except refusing to accept their tests, I do not know. They ought certainly to be expelled from any veterinary associations to which they belong, although most of the offenders belong to a class that do not join associations. Dealers and drovers or breeders who sell cattle with fake tests ought to be prosecuted for obtaining money under false pretences; and a breeder who will do such a thing ought to be expelled from any breeders' association, and his cattle ought to be refused registry in the herd book.

A lack of honesty seems to be a national failing. Parents should bring up their boys to realize that it is a sin and a disgrace to steal, and that "a lie is an abomination to the Lord." Our veterinary schools should lay greater stress on professional integrity than at present; and if some means could be devised for disciplining the rascals, even to revoking their diplomas, if that is possible, it would be a benefit. "Honesty is the best policy;" but my experience with men has been that a man who is not honest as a matter of principle is not very likely to be so as a matter of policy.

Other obstacles to the enforcement of regulations requiring the tuberculin test may be carelessness on the part of railroad companies in seeing that a shipper to a point outside a quarantine station has a permit. It occasionally happens that a freight agent may accept a shipment of cattle from a man who has not secured a permit, without notifying the authorities in the State to which the cattle are shipped. This can be remedied by reporting the local freight agent to the general freight agent of the road, whenever such an instance is heard of; and in time the work will be so perfected as to have no such infringement of the rules, as they are broken more from not understanding them than from any direct intention to disregard the law.

Another obstacle that will always exist on a small scale is the trading back and forth of cattle by farmers in adjoining towns located in different States; but the number of animals exchanged in this way is limited. The necessary rules or laws may be enforced here to a certain extent, but there will always be a number of instances where they will be quietly disregarded.

I have necessarily confined myself chiefly to the condition of affairs in New England, and more especially to Massachusetts, as this is where my personal experience lies; but what I have said will probably apply to a certain extent to other sections, and it may be that the trials we have been called upon to endure may result in making it easier for others later.

Second. — The quarantining of cattle by the local inspectors, because there is reason to believe that the animals are diseased. Most of them were found on the general inspection, although there were a few cases reported at intervals during the year, chiefly upon complaint of the owner to the inspector of animals in his town.

It is provided by section 29, chapter 408, Acts of 1899, as follows: —

It shall be the duty of inspectors, in addition to their inspections of animals for contagious diseases, to examine the barns, stables or other enclosures in which neat cattle are kept, with reference to their situation, cleanliness, light, ventilation and water supply, and the general condition and cleanliness of the said neat cattle, and to make a detailed report, with names and residences of owners, to the board of cattle commissioners, who shall embody the same in its annual report to the legislature.

In accordance with this provision of the law, the following order was issued to each inspector of animals: —

Boston, Oct. 1, 1900.

—, *Inspector of Animals.*

The Board of Cattle Commissioners hereby directs that you shall make a general inspection of the neat stock in your town, and incidentally other farm animals, to commence at once, and to be completed on or before the fifteenth day of November, as required by chapter 408, Acts of 1899. You will be provided with a book to carry out the provisions of section 23 and a book to carry out the provisions of section 29.

Cattle are not to be quarantined as tuberculous unless they show enough evidence of disease to make it possible to condemn them on a physical examination, except where the udder of a milch cow is tuberculous. On no account are cattle to be quarantined simply for the purpose of testing them with tuberculin, when they show no physical signs of disease. The only exception to this rule is, that it is the duty of the inspectors of animals to quarantine all cattle brought into the State without a permit from this Board, until the owner furnishes the Cattle Commission with satisfactory certificates of a tuberculin test. Before quarantining any cattle you should decide upon what cows you are going to quarantine, then send the papers on a number at once, so our agent can see them all on one visit.

As section 29 requires that the results of your inspection shall be incorporated in the annual report of this Board, you will see that it is necessary to have your returns by November 15 in order to prepare them for publication. Your books go forward to-day by express.

AUSTIN PETERS, *Chairman*,
L. F. HERRICK, *Secretary*,
C. A. DENNEN,
Massachusetts Cattle Commission.

The results of the labors of the inspectors in quarantining cattle supposed to be infected with contagious disease, and the disposition made of them by the Cattle Commissioners and their agents, are shown in the following table: —

Result of Work done by Inspectors in quarantining Cattle — Continued.

CITY OR TOWN.	MASSACHUSETTS CATTLE.							CATTLE FROM OUT OF STATE.					
	Number quarantined.	Number released.	Number condemned, and killed and paid for.	Number condemned and killed, no Award, not owned in State, Six Months.	Died in Quarantine, no Award.	Permit to kill, no Award.	Permit to kill, paid for.	Condemned, Warrants in Process of Settlement.	Sent out of State.	Killed, no Award.	Killed and paid for.	Released.	In Quarantine.
Millis,	12	2	10	-	-	-	-	-	-	-	-	-	-
Milton,	7	2	3	-	-	-	-	1	-	-	-	-	-
Monson,	9	5	4	-	-	-	-	-	-	-	-	-	-
Montague,	33	13	13	-	1	-	-	-	-	-	-	-	-
Monterey,	3	1	-	-	1	-	-	-	-	-	-	-	-
Montgomery,	3	1	2	-	-	-	-	-	-	-	-	-	-
Natick,	6	1	2	-	-	-	-	3	-	-	-	-	-
Needham,	2	2	-	-	-	-	-	-	-	-	-	-	-
New Bedford,	4	-	4	-	-	-	-	-	-	-	-	-	-
New Marlborough,	2	1	1	-	-	-	-	-	-	-	-	-	-
New Salem,	3	-	-	-	-	-	-	-	-	-	-	-	-
Newton,	6	-	5	-	1	-	-	1	-	-	2	-	-
Norfolk,	4	-	2	-	-	-	-	-	-	-	-	-	-
North Adams,	1	1	-	-	-	-	-	-	-	-	-	-	-
North Andover,	32	7	16	-	1	-	-	7	-	-	-	-	-
North Attleborough,	5	1	4	-	-	-	-	-	-	-	-	-	-
North Brookfield,	9	2	6	-	-	-	-	1	-	-	-	-	-
North Reading,	7	-	3	-	-	-	-	3	-	-	-	-	-

It will be seen by the foregoing table that during the year the local inspectors quarantined for various causes 3,249 cattle; of these, 1,178 have been killed and paid for as tuberculous; 79 were killed on a permit to kill, 15 of which were too badly infected with tuberculosis to prove fit for beef, and were paid for, the owners taking the hides and carcasses of the other 64 to dispose of for their own benefit; there are also 242 cattle, killed as tuberculous, which have not as yet been paid for. This makes a total of 1,435 head of cattle killed during the year as tuberculous quarantined by the local inspectors, nearly all of which were so badly diseased as to be condemned on a physical examination.

In addition to the animals in the above table, 30 head of cattle were reported as having been condemned as unfit for food at the slaughter house because of tuberculosis, or as having been received at the rendering establishments. One swine was also condemned as unfit for food because of tuberculosis.

Very little tuberculin has been used except for testing the animals held in quarantine at Brighton and other points as coming from without the State, and for 291 animals which were tested at the voluntary request of their owners, who wished to eradicate this disease from their herds.

Whether the bovine and human tubercle bacillus is identical, and whether there is any danger to human beings from the use of milk from cows with tuberculosis, or not, may be a question; but it cannot be denied that cows that are badly diseased or that have tuberculosis in their udders give tubercle bacilli in the milk, and it is a known fact that milk from these animals fed uncooked will produce tuberculosis in pigs, calves, rabbits and guinea pigs, if given to them. Even granting that it is not proved that milk from tuberculous cows is any danger to human beings, no sane person would advocate feeding to children material that will infect calves, pigs and other animals.

Most of the animals killed were sufficiently diseased to present very well-marked lesions, and several had tuberculosis of the udder; such creatures are certainly unfit for a public milk supply in a community where milk is usually used un-

cooked, to say nothing of the danger there is of a badly diseased animal infecting other members of the herd.

Beside examining the animals and quarantining diseased ones, the inspectors in their annual inspection have to examine the premises and water supply, and report upon their condition. An idea of the amount of labor involved in this inspection may be obtained from the following table:—

Inspection of Animals, Stables, etc.

CITY OR TOWN.	Number of Herds Inspected.	Number of Cows Inspected.	Number of Bulls Inspected.	Number of Oxen Inspected.	Number of Young Cattle Inspected.	Total Number of Cattle Inspected.	Number of Sheep Inspected.	Number of Swine Inspected.	Number of Stables Inspected.	Number of Stables Improved since Last Report.
Abington,	180	268	6	-	34	308	-	125	130	2
Acton,	131	1,129	29	2	135	1,295	1	108	131	27
Acushnet,	126	446	14	-	119	579	29	417	126	4
Adams,	74	651	28	-	331	1,010	-	348	74	2
Agawam,	121	1,087	37	5	396	1,525	-	288	121	9
Alford,	51	367	17	-	98	482	176	116	51	3
Amesbury,	180	462	13	10	136	621	-	152	130	5
Amherst,	102	1,178	49	4	344	1,575	65	188	102	13
Andover,	129	1,018	28	6	231	1,283	26	852	129	6
Arlington,	100	252	1	-	12	265	-	1,144	100	5
Ashburnham,	129	397	11	-	241	649	42	180	129	18
Ashfield,	98	747	50	-	587	1,384	1,079	308	98	2
Ashby,	131	502	9	-	73	584	19	94	131	7
Ashland,	88	373	10	-	131	505	6	181	88	5
Athol,	162	479	16	14	213	722	21	204	162	3
Attleborough,	138	760	14	2	95	871	-	280	138	22
Avon,	49	133	2	-	25	160	-	81	49	2
Ayer,	31	84	-	-	13	97	2	9	31	2
Auburn,	74	670	30	-	154	854	5	102	74	1
Barnstable,	222	390	17	15	219	641	27	509	222	2
Barre,	93	1,089	43	13	482	1,627	7	102	93	8
Becket,	117	436	55	44	547	1,082	342	196	117	1

Bedford,	70	436	25	-	210	671	-	402	70	2
Belchertown,	329	2,254	129	20	1,036	3,439	-	679	329	15
Bellingham,	120	542	15	-	144	701	6	115	120	12
Belmont,	51	213	4	-	14	231	-	87	51	2
Berkley,	95	275	11	-	79	365	16	178	95	3
Berlin,	94	491	21	4	153	669	-	71	94	1
Bernardston,	89	542	17	6	325	890	416	290	89	2
Beverly,	14	233	5	3	18	259	-	10	14	3
Billerica,	88	685	22	1	161	869	24	187	88	1
Blackstone,	21	153	6	4	24	187	-	27	21	5
Blandford,	141	842	74	57	675	1,648	382	538	141	1
Bolton,	96	740	23	17	194	974	53	194	96	6
Boston,	15	265	10	-	29	304	-	977	15	2
Bourne,	52	115	7	1	53	176	-	192	52	1
Boxborough,	53	391	36	-	314	741	14	55	53	2
Boylston,	69	614	19	4	158	795	1	116	69	2
Boxford,	90	545	24	8	197	774	24	22	90	2
Braintree,	59	337	7	-	36	380	-	343	59	2
Brewster,	97	123	4	5	64	196	-	91	97	5
Bridgewater,	173	532	15	26	144	717	87	286	173	2
Brimfield,	128	928	47	29	400	1,404	176	210	128	4
Brookton,	113	771	19	2	91	883	-	83	113	3
Brookfield,	153	615	24	14	309	962	-	55	153	9
Brookline,	22	154	4	-	30	188	-	4	22	2
Buckland,	135	741	22	29	326	1,118	454	283	135	-
Burlington,	43	436	5	2	72	515	-	2,103	43	-
Cambridge,	21	123	-	-	-	123	-	-	21	2
Canton,	129	451	14	6	110	581	-	-	129	2
Carlisle,	66	505	14	-	94	613	-	157	66	9
Carver,	71	107	3	1	35	146	19	110	71	2
Charlmont,	93	628	37	2	174	841	430	208	93	1

Inspection of Animals, Stables, etc. — Continued.

CITY OR TOWN.	Number of Herds Inspected.	Number of Cows Inspected.	Number of Bulls Inspected.	Number of Oxen Inspected.	Number of Young Cattle Inspected.	Total Number of Cattle Inspected.	Number of Sheep Inspected.	Number of Swine Inspected.	Number of Stables Inspected.	Number of Stables Improved since Last Report.
Charlton,	198	1,179	61	24	709	1,978	18	461	198	-
Chatham,	82	151	6	-	30	187	-	115	82	1
Chelmsford,	46	522	17	-	98	637	-	83	46	4
Chelsea,	26	162	2	-	3	167	-	-	26	10
Cheshire,	95	868	31	-	382	1,281	-	329	95	5
Chester,	174	533	86	40	592	1,201	343	169	174	5
Chesterfield,	103	577	39	40	502	1,158	85	141	103	6
Chicopee,	107	666	21	-	235	922	19	252	107	9
Chilmark,	45	98	8	2	87	195	1,559	56	45	7
Clarksburg,	91	352	11	-	162	525	-	231	91	6
Clinton,	13	35	1	-	9	45	-	4	13	1
Cohasset,	118	260	6	9	58	333	-	67	118	4
Colrain,	185	1,181	61	24	786	2,052	1,293	464	185	7
Concord,	140	1,906	62	-	206	2,174	-	1,999	140	72
Conway,	96	1,030	48	24	722	1,824	571	54	96	7
Cottage City,	35	104	3	-	17	124	43	109	35	2
Cunnington,	46	336	15	8	148	507	36	57	46	1
Dalton,	85	496	24	2	138	660	505	119	85	2
Dana,	57	198	12	4	131	345	3	75	57	2
Danvers,	73	828	11	4	22	865	-	121	73	1
Dartmouth,	238	1,507	40	24	260	1,831	21	558	238	4
Dedham,	94	565	11	-	24	600	-	245	94	1

Deerfield,	68	511	12	-	163	696	80	189	68	2
Dennis,	41	77	-	-	11	88	-	32	41	4
Dighton,	110	361	3	4	102	470	-	271	110	8
Douglas,	106	231	10	4	118	363	-	160	106	2
Dover,	88	784	22	-	100	856	3	537	88	2
Dracut,	150	1,190	16	8	64	1,278	-	1,376	150	15
Dudley,	94	773	33	9	187	1,002	36	193	94	8
Dunstable,	69	468	20	-	229	707	12	135	69	3
Duxbury,	124	287	15	3	17	322	20	232	124	3
East Bridgewater,	187	657	14	4	111	786	-	159	187	3
East Longmeadow,	102	471	-	-	350	821	-	132	102	23
Eastham,	65	103	5	1	38	147	-	12	65	2
Easthampton,	137	699	18	5	71	793	-	254	137	6
Easton,	199	663	17	10	154	844	-	97	199	2
Edgartown,	67	243	6	4	80	333	1,009	137	67	2
Egremont,	99	979	40	-	225	1,244	361	119	99	2
Enfield,	79	379	3	16	184	582	21	159	79	11
Erving,	35	138	13	-	70	216	-	78	35	3
Essex,	62	437	8	2	91	543	4	77	62	2
Everett,	25	214	5	-	3	222	-	-	25	3
Fairhaven,	113	393	4	-	72	469	-	138	113	2
Fall River,	187	718	10	3	80	811	47	375	187	6
Falmouth,	164	344	9	2	114	469	17	326	164	3
Fitchburg,	139	706	30	12	210	958	18	255	139	2
Florida,	71	284	44	2	222	552	192	247	71	2
Foxborough,	136	362	11	-	111	484	-	214	136	4
Framingham,	19	372	15	-	56	443	13	44	19	3
Franklin,	150	852	19	2	193	1,066	11	61	150	1
Freetown,	122	216	10	12	108	346	28	167	122	8
Gardner,	43	506	18	2	59	585	20	167	43	9
Gay Head,	23	21	9	18	41	89	11	11	23	2

Inspection of Animals, Stables, etc. — Continued.

CITY OR TOWN.	Number of Herds Inspected.	Number of Cows Inspected.	Number of Bulls Inspected.	Number of Oxen Inspected.	Number of Young Cattle Inspected.	Total Number of Cattle Inspected.	Number of Sheep Inspected.	Number of Swine Inspected.	Number of Stables Inspected.	Number of Stables improved since Last Report.
Georgetown,	86	214	8	8	136	366	41	168	86	1
Gill,	69	632	33	—	275	926	89	325	69	3
Gloucester,	145	674	13	—	139	826	3	300	145	1
Goshen,	48	244	18	6	287	555	55	138	48	—
Gosnold,	12	34	4	—	11	49	2,199	15	12	—
Grafton,	141	1,095	41	6	361	1,503	173	171	141	2
Granby,	125	1,194	31	—	134	1,359	139	168	125	4
Granville,	142	600	46	40	470	1,156	95	11	142	4
Great Barrington,	65	566	29	2	208	805	34	271	65	3
Greenfield,	63	641	16	6	289	952	1,735	322	63	1
Greenwich,	64	313	16	—	122	451	—	85	64	2
Groton,	149	798	45	4	323	1,170	75	210	149	9
Groveland,	69	244	9	8	90	351	13	134	69	3
Hadley,	185	1,019	21	6	128	1,174	42	461	185	7
Halifax,	64	124	4	5	39	172	2	95	64	2
Hamilton,	64	311	13	6	93	423	187	143	64	2
Hampden,	97	512	21	4	275	812	13	146	97	—
Hancock,	57	546	37	2	236	821	1,179	70	57	2
Hanover,	116	240	5	4	56	305	5	172	116	7
Hanson,	92	149	1	—	51	201	10	263	92	2
Hardwick,	130	1,536	87	24	681	2,328	71	135	130	4
Harvard,	174	1,059	40	1	579	1,699	62	148	174	3

Harwich,	144	204	3	5	52	264	5	116	144	2
Hatfield,	136	81	10	19	152	262	—	—	136	4
Haverhill,	197	1,050	28	21	192	1,291	27	406	197	18
Hawley,	86	567	46	22	380	1,015	374	234	86	3
Heath,	83	612	23	4	501	1,140	349	245	83	3
Hingham,	179	622	32	1	146	801	47	130	179	4
Hinsdale,	106	576	27	2	317	922	56	270	106	3
Holden,	186	957	27	—	375	1,339	—	168	186	3
Holbrook,	80	145	3	3	14	165	4	235	80	2
Holland,	36	104	12	2	109	227	60	59	36	2
Holliston,	121	572	22	4	127	725	12	87	121	4
Holyoke,	78	558	14	4	175	751	2	117	78	4
Hopedale,	33	102	2	10	32	146	—	65	33	3
Hopkinton,	128	171	7	—	81	259	—	112	128	4
Hubbardston,	57	550	37	35	197	819	65	79	57	2
Hudson,	34	186	9	—	97	292	—	19	34	2
Hull,	21	55	—	12	—	67	—	19	21	5
Huntington,	106	424	26	12	397	859	198	96	106	2
Hyde Park,	18	121	4	—	2	127	—	13	18	1
Ipswich,	150	684	23	14	191	912	22	372	150	3
Kingston,	85	245	15	6	148	414	—	184	85	2
Lakeville,	97	262	33	6	142	443	16	131	97	12
Lancaster,	96	457	25	—	213	695	—	19	96	6
Lanesborough,	112	860	49	4	383	1,296	—	303	112	2
Lawrence,	11	79	4	—	20	103	—	69	11	—
Lee,	179	611	17	12	353	993	162	230	179	4
Leicester,	8	49	1	—	14	64	—	2	8	1
Lenox,	31	341	21	—	138	500	456	179	31	1
Leominster,	88	370	18	3	187	578	29	58	88	2
Leverett,	97	378	13	10	199	600	66	208	97	2
Lexington,	55	990	21	—	119	1,180	8	295	55	7

Inspection of Animals, Stables, etc. — Continued.

CITY OR TOWN.	Number of Herds Inspected.	Number of Cows Inspected.	Number of Bulls Inspected.	Number of Oxen Inspected.	Number of Young Cattle Inspected.	Total Number of Cattle Inspected.	Number of Sheep Inspected.	Number of Swine Inspected.	Number of Stables Inspected.	Number of Stables Improved since Last Report.
Leyden,	66	381	14	4	395	794	458	257	66	5
Lincoln,	101	818	26	—	194	1,038	13	385	101	2
Littleton,	100	1,550	41	—	53	1,644	6	99	100	5
Longmeadow,	46	225	11	—	116	352	—	452	46	2
Lowell,	58	261	4	2	30	297	2	244	58	2
Ludlow,	132	883	23	30	81	1,017	60	195	132	3
Lunenburg,	138	857	32	2	277	1,168	4	565	138	2
Lynn,	96	337	4	—	57	398	—	53	96	4
Lynnfield,	34	307	13	—	48	368	8	56	34	1
Malden,	13	105	—	—	2	107	—	1	13	—
Manchester,	21	80	1	—	—	81	—	1	21	2
Mansfield,	87	197	4	4	87	292	—	64	87	2
Marblehead,	47	309	6	—	46	361	2	64	47	11
Marion,	32	87	1	—	25	113	4	76	32	2
Marlborough,	147	796	24	4	214	1,038	—	569	147	1
Marshfield,	141	573	12	—	157	742	8	150	141	8
Mashpee,	20	18	—	—	14	32	—	67	20	1
Mattapoisett,	65	209	3	—	29	241	—	130	65	—
Maynard,	20	179	7	—	8	194	1	13	20	1
Medfield,	67	512	16	—	93	621	—	413	67	1
Medford,	62	355	5	—	9	369	—	27	62	2
Medway,	64	323	14	4	125	466	—	46	64	2

Melrose,	47	204	2	—	5	211	—	8	47	3
Mendon,	98	445	14	8	149	616	—	12	98	4
Merrimac,	64	255	9	9	99	372	—	77	64	2
Methuen,	155	1,136	18	—	205	1,359	—	517	155	6
Middleborough,	166	485	19	21	164	689	10	151	166	4
Middlefield,	47	364	20	4	303	691	312	85	47	—
Middleton,	65	228	8	—	38	274	—	86	65	1
Millford,	148	409	8	—	74	491	—	301	148	6
Millbury,	84	650	24	—	230	904	62	186	84	3
Millis,	65	388	15	—	140	543	—	35	65	3
Milton,	93	740	14	—	19	773	11	55	93	2
Monroe,	25	109	13	4	91	217	51	78	25	3
Monson,	157	1,060	49	42	585	1,736	44	234	157	4
Montague,	135	695	27	4	415	1,141	—	202	135	9
Monterey,	63	396	31	—	282	709	136	197	63	2
Montgomery,	44	311	6	20	102	439	74	60	44	2
Mount Washington,	20	77	5	—	34	116	92	44	20	3
Nahant,	13	36	—	—	1	37	—	—	13	1
Nantucket,	85	396	16	4	229	645	136	27	85	2
Natick,	54	368	11	—	22	401	—	276	54	—
Needham,	36	1,250	29	—	76	1,355	—	—	36	—
New Ashford,	23	136	14	—	96	246	444	57	23	—
New Bedford,	84	538	15	4	70	627	8	168	84	5
New Braintree,*	—	—	—	—	—	—	—	—	—	—
New Marlborough,	133	1,296	66	14	79	1,455	222	242	133	4
New Salem,	114	308	21	8	—	337	17	208	114	3
Newbury,	87	912	40	—	411	1,363	88	140	87	2
Newburyport,	114	371	8	—	126	505	—	365	114	7
Newton,	265	1,206	18	—	39	1,263	—	—	265	4
Norfolk,	69	305	9	6	121	441	—	156	69	2

* No report.

Inspection of Animals, Stables, etc. — Continued.

CITY OR TOWN.	Number of Herds Inspected.	Number of Cows Inspected.	Number of Bulls Inspected.	Number of Oxen Inspected.	Number of Young Cattle Inspected.	Total Number of Cattle Inspected.	Number of Sheep Inspected.	Number of Swine Inspected.	Number of Stables Inspected.	Number of Stables Improved since Last Report.
North Adams,	45	587	28	—	120	735	—	223	45	3
North Andover,	72	968	29	10	134	1,141	15	96	72	2
North Attleborough,	109	559	11	—	90	660	—	136	109	19
North Brookfield,	180	900	42	—	649	1,591	37	369	180	12
North Reading,	76	362	5	2	81	450	15	58	76	3
Northampton,	54	561	22	—	228	811	18	127	54	1
Northborough,	97	741	23	2	279	1,045	—	468	97	2
Northbridge,	46	325	13	6	106	450	—	94	46	1
Northfield,	173	745	40	4	357	1,146	201	453	173	15
Norton,	147	315	13	6	112	446	—	248	147	4
Norwell,	110	188	7	4	36	235	59	94	110	2
Norwood,	68	321	12	—	18	351	—	40	68	—
Oakham,	62	538	19	4	207	768	—	77	62	1
Orange,	201	981	34	7	317	1,339	77	370	201	6
Orleans,	79	118	5	—	54	177	—	38	79	1
Otis,	122	352	23	56	324	755	299	198	122	3
Oxford,	120	572	20	2	193	787	—	23	120	8
Palmer,	95	587	27	6	222	842	—	2	95	2
Paxton,	61	397	16	—	210	623	—	58	61	2
Peabody,	56	670	20	—	75	765	—	1,022	56	5
Pelham,	72	183	15	11	70	279	—	83	72	2
Pembroke,	106	134	14	2	73	223	51	153	106	3

Pepperell,	180	669	17	4	286	926	12	290	180
Peru,	55	330	30	5	302	667	48	-	55
Petersham,	97	458	18	16	331	823	25	222	97
Phillipston,	73	336	13	6	203	558	18	134	73
Pittsfield,	68	953	34	32	281	1,300	66	187	68
Plainfield,	88	522	60	14	487	1,083	537	223	88
Plymouth,	115	280	10	2	52	344	-	357	115
Plympton,	64	99	2	6	76	183	-	28	64
Prescott,	74	330	25	18	277	650	300	52	74
Princeton,	87	944	44	10	345	1,343	667	33	87
Provincetown,	14	62	2	-	19	83	53	-	14
Quincy,	119	642	9	-	33	684	-	87	119
Randolph,	83	246	5	-	35	286	-	2,079	83
Raynham,	70	314	15	8	89	426	-	152	70
Reading,	70	359	9	-	57	425	-	32	70
Rehoboth,	245	1,330	38	11	447	1,826	12	462	245
Revere,	29	130	3	-	3	136	-	856	29
Richmond,	110	400	16	-	216	632	1,186	285	110
Rochester,	42	136	5	4	65	210	-	79	42
Rockland,*	-	-	-	-	-	-	-	-	-
Rockport,	55	207	6	-	28	241	-	40	55
Rowe,	74	362	29	12	210	613	154	77	74
Rowley,	77	337	17	6	218	598	10	145	77
Royalston,	89	459	26	12	224	721	25	90	89
Russell,	54	133	6	8	88	255	158	102	54
Rutland,	118	849	36	10	411	1,306	25	126	118
Salisbury,	91	239	1	18	114	432	32	117	91
Salem,	11	216	7	1	5	229	-	61	11
Sandisfield,	147	607	50	65	493	1,215	356	211	147
Sandwich,	87	170	6	-	49	225	42	70	87

* No report.

Inspection of Animals, Stables, etc. — Continued.

CITY OR TOWN.	Number of Herds Inspected.	Number of Cows Inspected.	Number of Bulls Inspected.	Number of Oxen Inspected.	Number of Young Cattle Inspected.	Total Number of Cattle Inspected.	Number of Sheep Inspected.	Number of Swine Inspected.	Number of Stables Inspected.	Number of Stables Improved since Last Report.
Saugus,	58	781	12	-	25	818	7	151	58	1
Savoy,	122	526	41	7	297	871	62	132	122	4
Scituate,	141	250	3	4	86	343	1	141	141	5
Seekonk,	139	1,027	40	18	248	1,333	29	922	139	6
Sharon,	70	299	4	-	38	341	5	46	70	5
Sheffield,	197	1,497	94	3	669	2,263	116	268	197	15
Shelburne,	101	902	45	12	1,182	2,141	912	327	101	3
Shutesbury,	53	122	6	10	61	199	27	81	53	-
Sherborn,	96	506	23	4	165	788	6	233	96	3
Shirley,	63	299	22	35	39	395	9	39	63	3
Shrewsbury,	145	1,056	47	2	291	1,396	-	415	145	14
Somerset,	70	455	7	2	96	560	-	173	70	3
Somerville,	67	280	1	-	5	236	2	42	67	27
South Hadley,	137	1,443	53	-	609	2,105	1	422	137	1
Southampton,	147	839	-	-	4	843	-	18	147	4
Southborough,	58	1,039	22	2	197	1,260	16	16	58	3
Southbridge,	79	495	24	27	315	861	44	156	79	2
Southwick,	136	764	37	4	348	1,153	306	394	136	10
Spencer,	126	950	55	44	570	1,619	30	336	126	5
Springfield,	97	330	8	1	67	406	27	690	97	2
Sterling,	148	1,393	39	10	308	1,750	32	189	148	2
Stockbridge,	116	691	31	4	407	1,133	418	425	116	14

Stoneham,	240	4	-	23	267	-	69	52	1
Stoughton,	304	10	-	66	380	-	87	71	1
Stow,	718	37	-	428	1,183	-	77	90	1
Sturbridge,	152	7	6	83	248	20	52	22	-
Sudbury,	1,113	49	4	300	1,466	-	115	117	1
Sunderland,	603	-	-	180	783	31	308	78	3
Sutton,	829	47	19	477	1,372	33	237	174	5
Swampscott,	136	5	-	27	168	1	32	32	-
Swansea,	870	24	2	234	1,130	-	576	145	5
Taunton,	749	18	16	135	918	-	525	76	2
Templeton,	321	14	12	90	437	20	96	67	2
Tewksbury,	646	17	8	171	842	1	621	137	3
Tisbury,	60	2	-	5	67	-	75	20	2
Tolland,	212	9	28	302	551	48	93	50	2
Topsfield,	551	19	8	81	659	-	-	54	1
Townsend,	347	14	-	124	485	-	-	133	9
Truro,	202	5	-	45	252	-	-	68	5
Tyngsborough,	364	9	-	87	460	28	12	35	1
Tyringham,	475	26	8	257	766	260	75	60	2
Upton,	345	17	10	185	557	6	196	108	3
Uxbridge,	568	40	31	243	882	1	45	141	3
Wakefield,	398	5	3	25	431	77	-	86	12
Wales,	232	16	12	140	400	71	-	61	3
Walpole,	296	12	-	90	398	14	461	131	3
Waltham,	630	8	19	33	690	-	534	31	-
Ware,	714	29	8	383	1,134	-	276	145	5
Wareham,	212	7	4	35	258	26	125	86	2
Warren,	1,365	47	30	643	2,085	29	287	141	6
Warwick,*	-	-	-	-	-	-	-	-	-
Washington,	425	53	4	439	921	409	150	69	2

* No report.

Inspection of Animals, Stables, etc. — Concluded.

CITY OR TOWN.	Number of Herds Inspected.	Number of Cows Inspected.	Number of Bulls Inspected.	Number of Oxen Inspected.	Number of Young Cattle Inspected.	Total Number of Cattle Inspected.	Number of Sheep Inspected.	Number of Swine Inspected.	Number of Stables Inspected.	Number of Stables Improved since Last Report.
Watertown,	62	392	4	-	11	407	-	185	62	3
Wayland,*	-	-	-	-	-	-	-	-	-	1
Webster,	54	244	8	2	58	312	-	81	54	1
Wellesley,	13	203	7	-	16	226	-	-	13	1
Wellfleet,	43	75	-	-	39	114	-	78	43	2
Wendell,	67	158	10	3	191	362	24	154	67	3
Wrentham,	57	318	5	5	31	359	-	88	57	1
West Boylston,	79	651	15	126	484	1,276	-	230	79	2
West Bridgewater,	50	590	27	5	110	732	-	172	50	6
West Brookfield,	93	942	37	32	657	1,668	33	142	93	7
West Newbury,	106	731	35	6	318	1,090	24	198	106	2
West Springfield,	108	765	19	5	243	1,032	-	378	108	3
West Stockbridge,	126	323	6	4	161	490	379	333	126	2
West Tisbury,	61	156	4	-	56	220	1,373	90	61	3
Westborough,	144	1,495	58	12	687	2,252	-	1,029	144	4
Westfield,	265	1,051	30	3	531	1,615	53	48	265	6
Westford,	252	1,350	43	4	426	1,823	6	233	252	3
Westhampton,	88	447	19	4	226	696	32	115	88	3
Westminster,	96	357	16	-	65	438	4	9	96	2
Weston,	27	247	5	-	13	265	16	17	27	2
Westport,	182	556	9	42	154	761	16	224	182	101
Westwood,	52	519	16	2	57	594	-	56	52	1

Weymouth,	199	539	11	2	117	669	1	350	199	-
Whately,	111	490	20	6	-	516	-	331	111	114
Whitman,	91	326	4	36	307	673	-	116	91	4
Wilbraham,	162	1,077	80	4	648	1,809	33	231	162	2
Williamsburg,	81	477	34	13	271	795	-	100	81	2
Williamstown,	162	1,242	51	4	461	1,758	1,330	310	162	9
Wilmington,	93	280	8	2	-	290	220	114	93	5
Winchendon,	160	478	16	6	123	623	59	355	160	38
Winchester,	32	200	2	-	8	210	-	2	32	3
Windsor,	99	637	60	11	476	1,184	181	162	99	4
Winthrop,	19	51	-	-	1	52	-	-	19	2
Woburn,	117	360	7	-	27	394	6	2,486	117	2
Worcester,	263	1,842	45	2	436	2,325	45	366	263	7
Worthington,	115	699	36	18	498	1,251	150	305	115	12
Wrentham,	191	515	19	4	247	785	1	425	191	11
Yarmouth,	70	126	7	-	50	183	-	11	70	4
Totals,	33,000	181,105	6,912	2,399	64,852	258,268	32,411	74,031	33,020	1,662

* No report.

Summary.

Number of herds inspected,	33,000
Number of cows inspected,	181,105
Number of bulls inspected,	6,912
Number of oxen inspected,	2,399
Number of young cattle inspected,	64,852
Total number of cattle inspected,	258,268
Number of sheep inspected,	32,411
Number of swine inspected,	74,031
Number of stables inspected,	33,020
Number of stables improved since last report,	1,662
No report furnished: New Braintree, Rockland, Warwick and Wayland.	

The above summary shows the tremendous amount of work accomplished in the aggregate by the inspectors, and, while the improvements noted are not many, yet there seems to be a continual tendency toward a better condition both in the care of live stock and premises.

Many letters were received from the inspectors after completing their annual inspection, showing that the work is a benefit, although many of them complain that it is very difficult to make a complete inspection in the autumn, when so many of the cattle are at pasture, and they think a more thorough one could be made in the spring, before the animals are turned out. This is undoubtedly true. It would also require more money, as more diseased cattle would be found after being housed all winter than can be detected after the creatures have led an out-door life for several months. This is also an argument for more sunshine, fresh air and out-door exercise. A spring inspection would require a liberal appropriation, and it would be necessary to have it available early in the legislative session.

When it is considered that the summer of 1900 was very dry and the pastures were consequently poor, it is gratifying to hear that neat stock looked so well. This is no doubt in a measure due to the mild weather in the fall, permitting the cattle to run at pasture until late, and the good pasturage resulting from the autumn rains after the long drought was broken, but the inspectors seem to think it is in part due to the annual inspection leading owners to take better care of

their cattle, and the weeding out of the diseased and unthrifty members of herds.

The following letters from inspectors will give an idea of the benefits derived from this work, and also illustrate the difficulties of a fall inspection: —

NORTH ATTLEBOROUGH, MASS., NOV. 15, 1900.

AUSTIN PETERS, Esq., *Chairman, Cattle Commission.*

MY DEAR SIR: — I send you to-night by express my report of the inspection for this year. I trust it will prove satisfactory. I have been surprised and gratified at the marked improvement seen everywhere in the care and cleanliness of the animals and the apparent absence of anything indicating tuberculosis. I have answered the question, "What improvements," etc., invariably "None," supposing that the improvements related to the barns or sheds in which the animals were housed. With but few exceptions all are sheltered satisfactorily; the supply of water from well, spring, river and the town water works is pure and abundant; the appearance of the cattle indicate that they are well fed and groomed.

For the encouragement of the Cattle Commissioners I would state that very general praise has been expressed by the cattle owners at the marked efficiency displayed in the management of the commission, with the wish that they may be satisfactorily supported by the Legislature this session in their recommendations and appropriations desired for a continuance of the work.

Mr. H. P. Wilmarth has a very large and prolific goat farm in the New Boston district, so called, of this town. On my visit there I found 350 goats, in excellent condition. The farm is well conducted, and the owner states that this industry is steadily growing, and profitable. I have not included this inspection in my report.

Yours respectfully,

W. HENRY KLING.

WRENTHAM, MASS., DEC. 3, 1900.

State Cattle Commission.

GENTLEMEN: — Having injured my hand, have had my report copied, and trust it will meet with your approval. I send same by express to-day. I have inspected all of the neat stock in town, with the exception of 8 two-year-old heifers that broke pasture and are running wild. This inspection has been very gratifying; the hard-headed ones, who at first said it would not

amount to anything, and some other things, now say, "There has been good work done." I find a big improvement in the stock, and many farmers are paying more attention to cleanliness and sanitation, the latter as far as they can.

Respectfully,

E. M. BRASTOW.

NEWBURYPORT, MASS., NOV. 13, 1900.

DR. AUSTIN PETERS, *Chairman, Cattle Commission.*

DEAR SIR: — I send by American express the result of my general inspection. It has been very difficult to accomplish, as the cattle were out in the pastures, and I had to go early and late to find them, and often twice; however, I have succeeded in making a full canvass of my district. I have never seen the cattle in such good, healthy condition as they are this season. A great improvement has been made, and all parties are anxious to have the commission continue in this good work.

Many barns where small herds are kept I have not mentioned, as they are as perfect as can be for comfort.

Yours respectfully,

GEO. M. KNIGHT.

WEBSTER, MASS., NOV. 19, 1900.

DR. AUSTIN PETERS, *Chairman, Cattle Commission.*

DEAR SIR: — I forward you to-day the report of my inspection, and am pleased to be able to inform you that I have not been able to detect a single suspicious case of tuberculosis or any other contagious disease, and have found them all in good condition. I also find that the people are paying more attention to the source of water supply; also to light and ventilation.

I have delayed my inspection on account of the unusually mild weather, the cattle being in fields.

Very respectfully yours,

L. H. PAQUIN.

DANA, MASS., DEC. 4, 1900.

Cattle Commission.

GENTLEMEN: — I find cattle in better condition this year than I ever have before.

Respectfully yours,

A. W. DOANE.

LUDLOW, MASS., NOV. 15, 1900.

DR. AUSTIN PETERS, *Chairman, Cattle Commission.*

DEAR SIR: — I am sending by express my report of inspection of neat cattle, etc. There were some cattle out at pasture that could not readily be found, which are not included. Most of the

work has been done in the early morning and evening, so as to find the cattle that are at home in the stables.

There is a marked improvement in the condition of cattle and stables. If the conditions were such that the inspection could be made in the winter months, we could do better work, as we could examine all the cattle closely if necessary, and could judge better as to the condition of the stables.

Respectfully submitted,

A. L. BENNETT.

WENDELL, MASS., Nov. 16, 1900.

To the Honorable Board of Cattle Commissioners.

GENTLEMEN: — I return in this mail the report of inspections. Found hard work to induce people to bring the stock in from the mountain pastures, and impossible to get near them in the pasture.

Have inspected 299 head of cattle, 149 swine and 24 sheep, against 290 cattle, 121 swine and 14 sheep last year.

Some of the stables where I found tuberculosis have been torn out and rebuilt, others cleansed. Have found it at the slaughter houses to some extent, and have notified you of same in each case.

Trusting I meet your approval, I am, very respectfully,

GEO. A. LEWIS.

NORTHAMPTON, MASS., Dec. 6, 1900.

Dr. AUSTIN PETERS.

DEAR SIR: — I send by to-day's mail my report of inspection for the last year. I have reported all places containing over 2 head of cattle and have visited besides 153 places containing 1 and 2 head, kept as family cows, kept generally in horse stable or in small stable by themselves, and have found them in good condition and surroundings generally healthy.

The work of the Cattle Commissioners is appreciated very much by the people in this part of the State.

Yours truly,

J. H. ROBERTS.

MIDDLEFIELD, MASS., Dec. 1, 1900.

Board of Cattle Commissioners.

GENTLEMEN: — I have completed the inspection of live stock in town. I find no evidence of tuberculosis or other contagious disease. With the exception of 15 animals in different parts of the town that had injured themselves by eating too many apples, I find animals in an unusually healthy and thrifty condition. The increased value of live stock has a tendency toward the better care and feeding of animals.

Respectfully yours,

J. T. BRYAN.

Third.—That portion of the work coming under the third classification is the testing of entire herds at the request of the owners, for the purpose of eradicating tuberculosis from them. This has been necessarily done upon a very limited scale, as the commission felt that most of the money would be required to carry on its regular duties, and that work of this character could not well be undertaken unless there was a surplus from the appropriation that could be devoted to this purpose.

In order to make the expense of herd tests as light as possible for the State, and also to put part of the burden of expense upon the owner, in order to make him understand that it was important for him to properly disinfect his premises and buy only tested cattle to replace those killed, he has been required to sign the following conditions, before the commission would test the herd:—

1900.

I _____, in asking to have my herd tested at the expense of the State, do hereby agree to the following conditions:—

That all reacting animals shall be killed; those that are so badly diseased that they will not pass as fit for beef the State is to pay full appraised value for, up to a limit of \$40, according to law; for animals that react, and are so slightly diseased as to prove fit for beef, I will take what the butcher will allow, and not expect payment from the State.

I furthermore agree to disinfect my buildings in such manner as the Cattle Commission shall prescribe.

I also agree to only buy cattle that have passed the tuberculin test to replace those that are killed.

(Signed) _____ .

Witness, _____ .

Under this arrangement the commission furnishes the veterinarian to do the testing, the tuberculin, and pays for the badly diseased animals, the owner taking what the butcher will allow for those that are so slightly infected as to pass as fit for beef.

No farmer will agree to these conditions unless he is sincere in his purpose to eradicate tuberculosis from his herd, as under them there is no incentive to have his herd tested

for the purpose of selling diseased animals to the State as a matter of speculation.

Under the conditions named, the following herds have been tested:—

DATE.	Name.	City or Town.	No. tested.	Released.	Killed and paid for.	Sold for Beef.	No Lesions found.
1900.							
Feb. 7,	F. R., . . .	Milton, . . .	2	1	-	-	1
March 9,	M. V. T., . . .	Westwood, . . .	48	36	5	7	-
March 9,	J. S., . . .	Lenox, . . .	25	24	1	-	1
April 17,	J. S., . . .	Lenox, . . .	5	5	-	-	-
April 10,	H. W. C., . . .	Westwood, . . .	5	5	-	-	-
April 14,	N. M., . . .	Hamilton, . . .	1	1	-	-	-
April 24,	J. B., . . .	Wakefield, . . .	41	30	5	6	-
May 1,	J. B., . . .	Wakefield, . . .	3	3	-	-	-
April 24,	A. A. S., . . .	Colrain, . . .	24	9	13	2	-
June 7,	W. E. C., . . .	Brookline, . . .	6	6	-	-	-
June 7,	E. G., . . .	Winchester, . . .	2	1	-	-	-
June 15,	E. G., . . .	Winchester, . . .	1	1	-	-	-
June 21,	B. L. C., . . .	Colrain, . . .	7	3	2	2	-
June 28,	B. C. N., . . .	Rowe, . . .	36	35	1	-	1
July 23,	J. H. G., . . .	Worcester, . . .	1	-	1	-	-
Aug. 23,	Town farm, . . .	Salem, . . .	5	4	-	1	1
Sept. 4,	C. W., . . .	Waltham, . . .	53	51	1	1	-
Sept. 12,	J. C., . . .	Colrain, . . .	5	-	5	-	-
Dec. 4,	S. E. W., . . .	Leicester, . . .	4	3	Unsettled	-	-
Dec. 10,	J. L., . . .	Groton, . . .	17	9	Unsettled	-	-
			291	227	34	19	4

In addition to this, several persons have made applications for herd tests; two, however, withdrew theirs when they understood the conditions imposed upon them if the tests were made; the other requests are still upon file in the office of the commission. If funds were available for more work of this kind, it is thought more rapid advances in diminishing bovine tuberculosis could be made, especially if it could be combined with better ventilation, sanitation, and breeding animals with more vigorous and stronger constitutions.

An improvement in the way of testing the cattle brought in from without the State is also highly important, in order

to be certain that only healthy animals are brought in to replace those that are destroyed as tuberculous, or that are disposed of for other purposes.

GLANDERS.

Glanders and farcy have continued to prevail during the past year to an alarming extent, entailing a serious financial loss upon the horse owners of the Commonwealth, to say nothing of its menace to human life and health. More cases, or suspected cases, of this disease have been reported to the Cattle Commission than in any previous year in its history. In 1899 more cases were reported to the Board than ever before, but in 1900 the number has been far in excess of the preceding year.

While the methods for securing reports of cases and of calling the attention of the commission to suspected cases of this malady have had much to do with securing more information concerning the occurrence of this disorder than was formerly obtained, at the same time it seems to have increased somewhat, — at least, that is the opinion of some of the leading veterinarians and renderers who have been consulted in regard to the matter. Not only is there an increase in the number of cases reported during 1900 over any previous year, but it is reported as occurring in more cities and towns. In 1899 cases were reported from only 101 places, while in 1900 the disease was reported from 128 cities and towns.

The following table gives the distribution and prevalence of this malady in various localities throughout the State: —

CITY OR TOWN.	Killed.	Released.	CITY OR TOWN.	Killed.	Released.
Abington,	1	-	Barre,	1	-
Acton,	-	3	Bedford,	4	1
Acushnet,	1	-	Belmont,	4	1
Adams,	2	-	Beverly,	1	-
Andover,	1	-	Billerica,	-	1
Arlington,	8	2	Blackstone,	1	-
Ashby,	2	2	Bolton,	1	1
Ashland,	-	1	Boston,	192	-
Auburn,	1	-	Boylston,	1	1
Avon,	2	-	Brockton,	6	2
Barnstable,	-	1	Brookline,	4	1

CITY OR TOWN.	Killed.	Released.	CITY OR TOWN.	Killed.	Released.
Burlington,	1	—	Medford,	4	2
Cambridge,	49	8*	Medway,	—	1
Carlisle,	—	2	Melrose,	2	1
Charlton,	1	—	Milford,	3	—
Chelsea,	24	—	Millbury,	2	—
Cheshire,	—	1	Milton,	1	—
Chicopee,	2	1	Natick,	2	1
Clinton,	7	5	Needham,	6	1
Cohasset,	2	—	New Bedford,	11	1
Concord,	1	1	Newburyport,	—	1
Danvers,	—	1	Newton,	12	2
Dartmouth,	1	—	North Reading,	1	1
Dedham,	2	—	Norwell,	2	1
Dover,	8	1	Norwood,	1	—
East Longmeadow,	1	—	Palmer,	1	—
Easton,	5	—	Peabody,	2	—
Enfield,	1	—	Pittsfield,	1	2
Erving,	1	—	Plymouth,	—	—
Everett,	19	—	Princeton,	1	1
Fall River,	37	3	Quincy,	5	—
Fitchburg,	24	13	Reading,	4	1
Foxborough,	1	—	Revere,	5	—
Gardner,	2	1	Rockland,	1	1
Gloucester,	1	1	Salem,	1	—
Goshen,	2	—	Salisbury,	—	1
Grafton,	2	1	Saugus,	1	1
Greenwich,	1	—	Somerville,	39	7
Groton,	—	1	Springfield,	9	3
Groveland,	1	—	Sterling,	7	3
Hanover,	1	3	Stoneham,	7	—
Haverhill,	1	—	Swampscott,	1	—
Hingham,	3	1	Swansea,	3	—
Holden,	—	1	Templeton,	—	1
Holliston,	1	—	Tisbury,	—	1
Hubbardston,	1	—	Wakefield,	3	—
Hudson,	1	—	Walpole,	2	—
Hull,	—	1	Waltham,	7	5
Hyde Park,	1	—	Watertown,	2	1
Ipswich,	—	4	Wellesley,	4	2
Lawrence,	4	1	West Springfield,	—	1
Lee,	—	1	Westborough,	—	1
Lunenburg,	—	1	Westminster,	2	—
Leicester,	3	2	Westport,	—	1
Leominster,	4	1	Weymouth,	5	—
Lexington,	7	3	Whitman,	1	—
Lincoln,	3	2	Winchester,	2	—
Littleton,	1	—	Winthrop,	3	—
Longmeadow,	—	1	Woburn,	1	—
Lowell,	1	2	Worcester,	37	13
Lynn,	6	3	Wrentham,	2	—
Malden,	19	6	Westwood,	4	—
Mansfield,	—	1	Unknown,	1	—
Marblehead,	1	—			
Marlborough,	—	1			
Medfield,	1	—	Total,	699	150

* One still in quarantine, undecided.

It will be seen by this table that 699 animals have been destroyed as having glanders or farcy between Dec. 15, 1899, and Dec. 15, 1900. Of these, 697 were horses and 2 were mules. There were 149 animals released from quarantine after careful examination, as free from disease, and 1 is still an undecided case, being under observation at the time of preparing this report.

Three of the horses killed will have to be paid for by the Commonwealth, as being free from a contagious disease. In two of these cases guinea pigs inoculated with some of the nasal discharge developed glanders; the horses were killed, and upon post-mortem examination no lesions of glanders could be found; the owners agreed to a reasonable valuation, and will have to be recompensed. It is impossible to produce glanders in guinea pigs without having the germs of glanders present in the material used; and, as this work was carefully done, it seems certain that the micro-organisms of the disease must have been present, yet no lesions were found in the horses killed. It seems possible, then, that animals may carry the germs of disease for a while before appreciable gross lesions develop, and may be a source of danger to others while apparently in a fair state of health themselves, aside from a nasal catarrh or some similar disturbance, in the same manner that a person apparently free from disease can carry the bacillus of diphtheria in the throat, infecting other persons while apparently in health himself.

It is much better to occasionally kill and pay for such an animal, than it would be to err in the opposite direction, and allow a suspicious case to run at large, spreading the disease wherever it went, because it is not certain that it is infected.

The third horse was owned in Salem. He had a discharge from the left nostril, erosions on the mucous membrane in the nose and a very much enlarged sub-maxillary gland on the left side. Because of these symptoms he was ordered killed by a member of the commission, and an autopsy held, at which a number of veterinary surgeons were present. The animal was found to be suffering from a cancer of the palate, the bones in the roof of the mouth on the near side

being diseased, the five upper back molars loosened, a cancerous growth in the nasal cavity, and the enlarged sub-maxillary lymphatic gland was due to a secondary cancerous growth, instead of glanders. Such an animal is practically worthless; but, as the owner wanted an exorbitant price, which the commission declined to pay, he has resorted to the courts, where the damages will have to be assessed. The commission does not deny that the horse was free from a contagious disease,—it only refuses to pay more than the animal was worth at the time of slaughter.

Compared with the report of the previous year, there appears to have been a decrease in Worcester and Springfield; there is also less in the Merrimac valley than formerly. There was less in Clinton in 1900 than for two or three years, the disease having practically disappeared among the horses owned by the citizens of the town, the horses killed in Clinton, Sterling and Boylston having been in nearly every case the property of contractors employed upon the metropolitan water works. There were more cases found in Fall River in 1900 than in 1899, but the increase may be partly due to a more efficient inspector having been appointed for 1900 than in the previous year. There has also been quite an outbreak in Fitchburg, 24 horses having been killed there in 1900, against 9 in 1899.

Aside from the increases referred to, the greater and most alarming has been in Boston and the surrounding towns, Boston acting as a centre of infection, and the sufferers outside being in many cases farmers, milkmen, expressmen and teamsters, whose business requires them to make long daily trips from their homes to the city, their teams often having to draw heavy loads both ways, hard work lowering the horses' condition and making them more susceptible to disease. The nature of the work also leads to an extensive use of the public watering troughs on the road. The loss here falls very heavily, as the men who own these animals are those who can very illy afford to lose their live stock.

The past year was the first during which reports were received from the renderers of the State throughout the entire year; and a portion of the increase in the number of cases reported to the commission must be credited to them,

as undoubtedly quite a number of horses would be killed and rendered that the Cattle Commission would never hear of if it were not for these renderers' reports. Whenever a case is reported by one of the rendering establishments as occurring outside of the city of Boston (in Boston the Board of Health has charge of all matters pertaining to glanders and farcy, it having been placed outside of the jurisdiction of the Cattle Commission in this city), that has not already been called to the attention of the commission, the inspector of animals for the city or town where the case occurs is at once instructed to see that the premises from which the horse came have been properly disinfected, and, if any other horses are stabled there, to see that they are free from contagion. In this way it is believed that much good has been accomplished.

Reports have been made by 9 rendering companies, the total number received being 168, including 439 animals supposed to have been suffering from glanders or farcy; of these, 172 occurred in the city of Boston, leaving 267 which came under the jurisdiction of the Board. Of these 267 cases, 209 were previously reported in other ways, leaving 58 to which official attention would not have been called had it not been for these returns.

A few of these cases, not over half a dozen, may not have been glanders or farcy; on the other hand, occasionally an animal infected with this disease may not have been reported. It is therefore probable that the numbers given may be less rather than more than the cases which actually occurred.

The following table will give an idea of the results of the renderers' reports:—

	Number of Reports.	Number of Cases.	Number in Boston.	Number outside of Boston.	Number of Cases outside of Boston not reported to Cattle Commission except by Renderers.
N. Ward Company, Boston,	51	197	153	44	3
Muller Bros., North Cambridge,	39	103	3	100	19
Butchers Slaughtering and Melting Association, Brighton.	37	76	16	60	18
Guy N. Barnes Rendering Company, Fall River.	12	31	-	31	9
New Bedford Product Company, New Bedford.	7	10	-	10	4
Parmenter & Polsey, Peabody,	4	4	-	4	-
Jos. E. McGovern, Lawrence,	7	5	-	5	-
Lowe Bros., Fitchburg,	4	6	-	6	1
Bartlett & Holmes, Springfield,	7	7	-	7	4
Totals,	168	439	172	267	58

This does not include the reports from Bartlett's rendering works in Worcester, as Mr. Bartlett reports directly to Commissioner Herrick whenever he receives an animal with a contagious disease.

The importance and necessity of doing all that is possible to eradicate glanders from the community has been emphasized more strongly than in any previous year by the loss of human life it has occasioned. Three and possibly four persons have been sacrificed to this malady during the past season.

Two deaths in man occurred in Fitchburg, a father and son both dying from disease contracted by caring for a sick horse. One of the staff of the Sixth Regiment, M. V. M., hired a mare from a Mr. A. of Fitchburg to ride at the annual tour of duty at Framingham in June. Two or three days after returning home she appeared to be ailing, and a few days later a veterinarian was called, who treated her for bronchitis; she died Sunday, July 8. The veterinarian was not satisfied with his diagnosis, made a post-mortem examination of the mare, and reported to the Cattle Commission that he believed she had died of glan-

ders. About the date of the mare's death Mr. A. and his son became ill with a sickness which at first puzzled the physicians; the veterinarian told one of them that he believed the animal died of glanders, and suggested the possibility of the men having contracted the disease. This was found to be the case, Mr. A. dying of glanders two weeks later and the son about ten days after Mr. A. This occurrence was particularly sad, as the boy was an only child, the widow being doubly bereaved by the loss of her husband and son so near together.

The case in the mare was one of those obscure cases where the lesions occurred chiefly in the lungs, and the usual enlarged glands in the sub-maxillary region; nasal discharge and chancres on the septum nasi were wanting. She undoubtedly had lesions of glanders in her lungs when taken to camp, and the change of surroundings and work caused it to develop in an acute pulmonary form soon after the return to Fitchburg. There is ample reason for believing this to be the fact, because two more horses owned by Mr. A. were killed by order of the commission July 23, and another one owned by his estate November 3, there being every reason to believe that some of these animals were diseased prior to the mare being let to go to Framingham. Furthermore, a list was obtained of all the horses ridden by officers of the Sixth Regiment at camp in June, and an agent of the board or the inspector in the towns where they were kept examined them all, some seventeen or eighteen in number, and they were found to be free from disease. Only one was not seen, as it had been sent out of the State, but there is no reason to suspect that it was unhealthy. No trouble has as yet been reported from any of these horses.

In addition to the animals killed, eight others kept in Mr. A.'s stables were quarantined and kept under observation, permission being given to use them, but not to sell them. The eight remaining horses were finally released from quarantine November 26, all having been tested with mallein and failing to react, showing no physical signs of disease at that time, and the stables having been thoroughly disinfected.

The last day of October, E. M., a hostler, employed in a stable in Milford, was admitted to the Framingham hospital as a suspected case of small-pox, he being broken out with an eruptive disease of some kind. He died Wednesday evening, November 14. Wednesday, a few hours before his death, Dr. Shea, one of the physicians of the Boston Board of Health, saw the man and said there were symptoms present that did not coincide with small-pox, and, upon asking the man's occupation, suggested that it might be glanders. After his death guinea pigs were inoculated with material from some of the lesions at the laboratory of the Boston Board of Health, and also by Dr. Langdon Frothingham for the Massachusetts Cattle Commission, and in both instances these little animals developed glanders, — proof positive that the man who died was infected with this disease.

An agent of the Cattle Commission was at once sent to Milford, to investigate matters at the stable where E. M. had been employed. Here it was learned that a horse was killed the previous Tuesday, November 13, which the owner had been treating for pneumonia, but, as it did not seem to be improving, he had it killed and buried. Monday, November 19, the carcass was exhumed and examined, and found to have been a case of glanders and farcy. Two other horses were killed in Milford by order of the commission, one during the summer and the other November 20, because of their having glanders, both of which were formerly kept in this stable. The man who died is thus easily connected with the care of glandered horses.

Another possible case of glanders in man has been reported to the Board as occurring in Chelsea last spring. M. F. was told by a physician that he had glanders; he later became an out-patient at the Massachusetts General Hospital, where it does not appear any definite diagnosis was made; he afterward was under the care of another physician in Chelsea, and died, his death certificate being made out as a case of cancer of the throat. It is not unlikely that occasional cases of glanders may occur in man which are not reported as such, because the disease in humans is so uncommon that it is not recognized by the

physicians, and other diagnoses are made. It has been diagnosed as typhoid fever, pneumonia, pleurisy, pericarditis, inflammatory rheumatism, pyæmia, small-pox, and possibly as cancer of the throat. Considering, therefore, the great prevalence of this disease among horses, it is not unlikely that there may be, once in a great while, a case in man which is never correctly diagnosed.

An instance illustrating the difficulty of eradicating this malady, on account of its slow development in some cases, and the possibility of an animal being a bearer of disease for some time before definite symptoms develop, is demonstrated in a case killed by order of the commission in Ashby last October. This animal was a four-year-old colt, apparently in very good condition, plump and sleek, yet with well-marked symptoms of glanders. This colt was at pasture with a glandered horse in the summer of 1899, killed in July of that year; the colt's owner said that it had a cough when he brought it home the previous autumn, — a slight, dry cough, which disappeared when it commenced to run at the nose, about six weeks before it was killed. It is possible for the colt to have contracted the disease in some other way, but it is not at all improbable that it was infected fifteen months previous to the time of killing, and, being young and vigorous, it held the disease in check for a long time.

As to the spread of the infection, there are various ways in which the disorder is disseminated. The Board is of the opinion, as it has said in previous reports, that public watering troughs are one cause, and that in many instances they are misplaced charities. Blacksmith shops, hitching posts, baiting stables, where a healthy horse may be put in a stall previously occupied by a diseased one, and the actual contact of diseased with healthy horses either at home or on the street, are all factors in the extension of glanders, some of course much more important than others.

In the last annual report a condition of affairs was referred to in Melrose, near the lines of Malden and Saugus, where there are men who buy old horses to kill, the refuse and offal being fed to pigs, and the meat sold either to dog

biscuit manufacturers or fertilizer factories. These men pay a little more for a horse to kill than the renderers will ; hence a good many worthless horses are sold to them, and among these animals there are some suffering from glanders. These animals are led out over the highway often by irresponsible persons, who may water them at the public watering troughs on the way out, or even sell a horse with glanders to some other person than the killer, if they can get a dollar or two more by so doing.

No one would believe, who had not been out there, that such a condition of affairs could exist, or such a community be found, within ten or twelve miles of the State House, and it reflects anything but credit upon the city whose board of health allows it to continue. There seems to be no legislation to reach these horse killers. It would be wise to enact a law that all persons engaged in the occupation of killing horses shall have a license from the board of health of the city or town where such business is carried on, that such a license shall not be granted to any person or firm which has not a suitable rendering plant, and wagon for removing dead horses from owner's premises, a penalty to be provided for any person or firm not having such a license, and they should also be required by law to report all cases of contagious disease, among animals received at their establishments, to the Board of Cattle Commissioners.

It might also be well to provide that any person who knowingly buys a horse with glanders or farcy shall be liable to the same penalty as the person who knowingly sells such an animal, as now provided for in the law, — the only exception being that a licensed renderer may purchase such an animal for slaughter, if he wishes.

Whether remunerating owners of glandered horses for animals killed by the State would help to diminish the number of cases or not is an open question. If such a policy were decided upon, it would require an annual appropriation of \$50,000 to \$60,000 for some time. Certain it is that the present condition of affairs is very serious, and the most stringent measures for its eradication will be none too severe. The Cattle Commission has done all in its power to mitigate

the evil, and it has certainly been able to show the true condition of affairs the last year as it never has before, and hopes that its labors may also have accomplished some good results.

BLACKLEG, OR SYMPTOMATIC ANTHRAX.

During the summer of 1900, a disease resembling blackleg in many ways has caused a number of deaths among young cattle at pasture in some parts of Worcester County. Hubbardston was the town where the disease prevailed most extensively and where the chief losses occurred, but similar outbreaks of a more limited extent occurred in surrounding towns, and also in towns at some distance from Hubbardston. Cases were reported from Barre, Princeton, Templeton, Rutland, Greenwich, Prescott, Grafton and Ashby, and possibly Westminster. In the latter town there was a rumor of trouble, but it was not investigated, as it was over before the Board heard of it. The cattle found dead in Westminster were thought to have been chased to death by dogs, but it is barely possible it may have been the same malady met with in the other towns.

The attention of the Cattle Commission was first called to the presence of the disease by Dr. A. S. Cleaves of Gardner, who telephoned to Boston, July 31, reporting an outbreak of a disorder similar to anthrax or blackleg in the town of Hubbardston. Commissioner Herrick was immediately telephoned at Worcester, and on the same afternoon visited the scene of trouble with Dr. Cleaves and Mr. A. W. Clarke, a veterinary student, who was at his home in Hubbardston for his summer vacation.

The following report from Dr. Cleaves and Mr. Clarke gives a very good history of the Hubbardston outbreak, as well as of one case in Princeton, occurring in a young cow owned by N. B. Reed; the animal was pastured on Little Wachusett Mountain. The description of the symptoms given below and the gross post-mortem appearances are so good that it is not necessary to attempt to detail them further; and the post-mortem conditions found in animals dying in other localities, where autopsies were made, were found to be similar in most cases to those existing among the young cattle in Hubbardston.

John Adams's pasture, lying in the southern part of Hubbardston and adjoining Rutland, owned or rented by C. C. Colby of Hubbardston, containing eleven head of cattle, from one to two years old, owned as follows: —

C. C. Colby, Hubbardston,	5
C. F. Rugg, Hubbardston,	2
— Adams, Hubbardston,	1
S. M. Stone, Hubbardston,	3
—	
Total,	11

On visiting the pasture, July 22, one of Mr. Rugg's heifers was found dead and in a badly decomposed state; was left lying where she was found. Pasture was next visited July 29, and one of Stone's and two of Colby's were found dead; these were in good condition, their skins were removed and carcasses left lying on top of the ground.

The seven remaining alive were driven to the respective owners' places, except one of Mr. Stone's, which was driven to Mr. Colby's and turned out with his herd of milch cows, some ten in number. Mr. Rugg also turned out his with his herd of milch cows, while Mr. Adams's was kept completely isolated in a small field, and Stone's was partially isolated, being tied several rods from several other young calves in an orchard.

Mr. Colby found the Stone heifer dead in his pasture July 30, and skinned and buried the carcass where it lay, notifying Clarke of Hubbardston next day that his remaining heifers did not appear well. Notice was sent to Boston and Worcester that morning, July 31, and Mr. Herrick held post-mortem on the carcass buried July 30, for purpose of getting pathological specimens, if possible. Carcass was again buried, and directions left for lime to be thoroughly worked into the earth around about the spot of burial and death.

The three heifers left at Colby's had the following temperatures: black two-year-old heifer, in splendid physical condition, $106\frac{2}{5}$; Jersey, eighteen months, fawn heifer, $102\frac{2}{5}$; brown yearling, $101\frac{4}{5}$.

August 1, black heifer,	$106\frac{4}{5}$
August 1, Jersey heifer,	102
August 1, brown heifer,	102
August 2, black heifer,	$107\frac{2}{5}$
August 2, Jersey heifer,	$101\frac{4}{5}$
August 2, brown heifer,	$102\frac{3}{5}$

The two-year-old black heifer was killed on the afternoon of August 2. Temperature immediately before death registered $106\frac{1}{2}$, having dropped from $107\frac{2}{3}$ in the morning. Symptoms were distressed breathing, bloodshot eyes, local œdematous swelling in the sub-maxillary space and about the larynx and pharynx, pulse 100, and evidence of much pain in the throat; tongue protruding and black, and an inclination to drink water, but unable to do so. This heifer and the Jersey and brown one had been removed from the main herd into a small enclosure across the road. Post-mortem revealed lesions entirely localized in the larynx, pharynx, roots of tongue and surrounding muscles and tissues, except the blood had a peculiar black appearance, and left a dark cherry stain on the hands; mucous membrane at base of tongue very black, and tremendous amount of œdema, extending clear through to the skin.

The temperatures of the brown and Jersey ran as follows: —

August 3, brown heifer,	103 $\frac{2}{3}$
August 3, Jersey heifer,	102
August 4, brown heifer,	104
August 4, Jersey heifer,	104 $\frac{1}{2}$
August 5, brown heifer,	{ (A.M.) 107 $\frac{1}{5}$
	{ (P.M.) 108 $\frac{2}{3}$
August 5, Jersey heifer,	101 $\frac{2}{3}$

In the afternoon of August 5 the brown heifer commenced breathing in a labored sort of way, pulse very weak, eyes bloodshot, and blood commenced oozing out around the ears, neck and both shoulders. She died some time before 6 A.M. August 6, and the post-mortem revealed hemorrhagic spots entirely dotting the folds of serous membranes in both the abdominal and pleural cavities, about the size of twenty-five and fifty cent pieces; no lesions in the throat visible.

A record was made of the temperature of the four remaining heifers until August 29, as follows: —

	Colby's Jersey.	Rugg's Jersey.	Adams's Black and White.	Stone's Brown.
August 7,	101	—	1021	1021
August 8,	101	102 ²	102	101
August 9,	102	102	101	102
August 10,	102	102 ²	102	103
August 12,	101 ²	102	101	101
August 14,	100	102	101	100
August 16,	101	102	102	102
August 19,	100	102	101 ¹	101
August 20,	100	104 ⁴	101	101
August 21,	101	102	101	101
August 23,	100 ⁴	101 ⁴	101	101
August 25,	101	102	101	101
August 27,	101 ¹	102	102	102
August 29,	100	—	101 ⁴	101 ⁴

Mr. Rugg's heifer, August 20, developed quick respiration, bloodshot eyes, quick pulse, vomited in the morning of August 20, and commenced to improve until she was evidently normal.

In the Bennett pasture, located in the north-west part of Hubbardston, near the Templeton line, containing thirty-eight head of young cattle, July 28, a bull two years old was found dead. He was partially buried where he died; he belonged to Blanche Bennett of Hubbardston. August 2, L. S. Moore found one of his two-year-old heifers dead; she was also partially buried up. August 6, an eighteen-months-old heifer, belonging to L. S. Moore, was found dead. When the pasture was visited the previous day the three men there were unable to catch this heifer, though they were sure she had a clearly developed enlargement about the lower jaws. Ante-mortem showed œdematous condition about the larynx and pharynx and sub-maxillary space; heifer was found lying in the ferns, and no evidence whatever of any struggling before death. Post-mortem revealed lesions entirely localized in the region of the larynx, pharynx and sub-maxillary muscles, apparently identical with the black Colby heifer. August 9, Frank Hayes found one of his eighteen-months-old heifers dead in this same pasture. All of these carcasses were finally thoroughly burned in this and all the other pastures.

August 8, in the John H. Lackey pasture, located in the south part of the town, and about two miles from the Adams pasture, John Collar found one of his two-year-old heifers dead. This pasture contained three head.

D. P. Ford, living in the western part of the town, having three

heifers and one cow, found one of his yearlings dead, August 4, apparently all right the day before. August 12, a two-year-old was taken sick and was left in the barn; had profuse bloody diarrhoea, œdema of throat and right side; temperature $105\frac{1}{4}$. Died some time during the night, and was dragged across the yard to the road, along this some two hundred yards, then down into the woods, where both carcasses were eventually burned.

Mr. Prentiss, Hubbardston, in charge of a pasture in the eastern part of the town, containing twenty-six head, young and old, belonging to Mr. L. W. Newton, Southborough, found one of the two-year-olds dead August 16 and one eighteen months old August 17. Both carcasses were burned. Another three-year-old, ear tag No. 213, seemed to wish to isolate herself from the others, and no inclination to eat; temperature 104, pulse 90. August 18, she resumed eating, and temperature was normal.

August 27, heifer No. 70 was found dead. A three-year-old was isolating herself from the others, ears lopped, eyes dull and sunken, pulse 95 and temperature 106; August 28, temperature $104\frac{2}{5}$, same physical symptoms; August 29, temperature 104, same physical symptoms, with the addition of bleeding at the nose; in the afternoon, temperature $105\frac{2}{5}$. Killed for post-mortem and pathological specimens. Lesions were found in the pharynx, and in both the serous and mucous membranes in the abdominal cavity. The lesion in the pharynx immediately about the glottis consisted of almost total destruction of the mucous membrane, and œdema extending into the surrounding muscles, slightly discolored at the base of the tongue. All the serous membranes were affected with hemorrhagic spots about the size of quarters and fifty-cent pieces, while on the mucous surfaces immediately in opposition were spots much resembling small ulcers leading one to suggest that the lesion originally started from this surface. These carcasses were all disposed of by burning.

D. V. Meaney, living in Williamsville, directly west of Hubbardston, on August 17 noticed, in a pasture containing ten head of young cattle, that one of his two-year-olds was ill, evinced labored breathing, eyes dull, weak pulse, bloody discharge from rectum and temperature $105\frac{1}{4}$; died some time during the night. Post-mortem held in the afternoon of August 18, and lesions localized in the throat; mucous membrane was dark in color at base of tongue and in pharynx slight œdema; carcass was burned. Mr. Meaney found a yearling dead some ten days before this.

Mr. N. B. Reed, Princeton, had four heifers turned out in a pasture in the north part of the town. August 13 he noticed that

a four-year-old Devon was not feeling well; she was taken to his barn in the village and placed in the cellar; she would try to eat and drink, but seemed unable to do so. August 16, temperature 104 $\frac{3}{4}$, pulse 98, eyes bloodshot, respiration 7, comatose in character; swelling in throat and evidence of pain; drooling profusely from mouth; inclined to lie down a good deal. August 18, symptoms much the same, except respiration was quite rapid, temperature 105 and pulse 100; killed for autopsy. Post-mortem showed lesions entirely localized in the pharynx and immediate surroundings. The mucous membrane was entirely broken down and quite black, considerable œdema of the pharyngeal muscles and ligaments.

September 5, Mr. Morgan, living in the east part of Hubbardston, noticed one of his two-year-old Jersey heifers with profuse diarrhœa. September 6, she would not eat, seemed very dull and inclined to lie down; died that same evening. Post-mortem revealed hemorrhagic spots on the serous surface in the abdominal cavity and black discoloration at base of tongue; bloody fœces in rectum and floating color. This heifer was in milk and running with four others, all but one being milch cows, and the exception was a heifer about thirty months old, in milk. Carcass was burned.

Summary.

PASTURES OWNED BY—	Number of Head.	Died.
Mr. Adams,	11	7
Mr. Bennett,	38	4
Mr. Lackey,	3	1
Mr. Ford,	4	2
Mr. Newton,	26	4
Mr. Meaney,	10	2
Mr. Morgan,	5	1
Mr. Reed,	4	1
Totals,	101	22*

* Percentage, 21.78.

Respectfully submitted,

A. S. CLEAVES.

A. W. CLARK.

There was a report circulating in the town that this was not the first or largest outbreak of this sort in the town, but upon investigation it was found that the only recent deaths in pastures were in 1897. In the Wm. Hartwell pasture, located in the southern part of the town, about two miles from the Adams pasturè, H. Clarke found four of his yearlings dead, and Edgar Tilton found three of his dead in a pasture about two miles from these other two pastures.

A. S. CLEAVES.

As already stated above, Mr. Herrick visited the John Adams pasture with Dr. Cleaves and Mr. Clarke, July 31.

August 4, Dr. Peters, Mr. Herrick, Dr. Cleaves, Mr. Clarke and Mr. J. H. Burtch, inspector of animals of Hubbardston, visited the Adams pasture and the surviving animals that had been removed from it, and also the Bennett pasture.

August 18, Dr. Theobald Smith accompanied Dr. Peters, Mr. Herrick and Dr. Cleaves to Hubbardston. On the way from Gardner to Hubbardston a Mr. Le Claire of Templeton informed the party that he had just found two yearlings dead in his pasture. Time did not permit of a visit to his premises, but from his description the heifers died from a similar malady to that occurring in Hubbardston. Upon arriving in Hubbardston, the pasture of David Meaney was first visited, and an autopsy made upon a heifer that died the night before; but decomposition had been so rapid that no specimens were taken, as they were valueless for scientific investigation. The Newton pasture was next visited, but no new cases were found there on this date. From the Newton pasture the party drove to Princeton and went to Mr. N. B. Reed's, where the four-year-old Devon cow, mentioned in Dr. Cleaves' report, was in quarantine. The animal was killed, and specimens taken from the local lesion in the throat and various viscera for examination by Dr. Smith.

August 29, Dr. Langdon Frothingham visited the Newton pasture with Dr. Cleaves, when a three-year-old heifer which was sick was killed for autopsy and specimens taken for scientific study. September 6, autopsy on Morgan heifer was made by Dr. Cleaves, Mr. Herrick being with him.

From the report made by Dr. Cleaves and Mr. Clarke, it would appear that some animals were affected with the disease in a light form, and after being slightly sick for a few days recovered; others seemed to have enjoyed an immunity from it; and about twenty per cent. suffered from a severe form, which was rapidly fatal, an animal that was ailing one day frequently being found dead the day following.

After September 10 the disease subsided, and, as no new cases were reported, the quarantines on the infected pastures were raised September 17 by advice of Mr. Herrick (who went to Hubbardston September 14), except on Paul B. Morgan's pasture, which was removed October 2.

August 6, a yearling heifer was quarantined by Perley Goddard, the inspector in Grafton, owned by Albert Bradish, as having anthrax. A post-mortem examination, made August 7 by Mr. Herrick and Dr. C. H. Perry, revealed a similar condition to that found in the Hubbardston cattle. Portions of lung, kidney, spleen, stomach, intestine and tongue were sent to the Harvard Medical School, and examined by Dr. John N. Coolidge, who found a micro-organism of the same character as that found in specimens taken from the Hubbardston cattle, which will be described later. Another yearling owned by Mr. Bradish was found dead in the pasture a few days before Mr. Herrick's visit, and was buried. A cow kept with them remained healthy. This is the only outbreak reported in Grafton.

August 18, Dr. Chas. Paquin, the inspector in Barre, quarantined the cattle in two pastures because of the appearance of a disease similar to that occurring in the adjoining town of Hubbardston. One contained fifty-six head of young cattle, the other fifteen head; several died in each pasture. No new cases occurred in these pastures after September 20; the quarantines were therefore removed October 1.

September 6, a letter and quarantine dated September 3 was received from W. H. Glazier, the inspector of Greenwich, the animal quarantined being a small gray yearling heifer owned by Fred L. Edson. Dr. Cleaves was at once sent to investigate the case. He went to Greenwich September 7, and reports as follows:—

WEST GARDNER, MASS., Sept. 8, 1900.

DR. AUSTIN PETERS.

DEAR DOCTOR:—The heifer in quarantine died September 6, the day before I arrived in Greenwich, and was buried when I got there. Mr. Edson was away, but the hired man gave me a very intelligent history of the outbreak. It seems that Mr. Edson and Gray of Greenwich hired a pasture in Prescott of Mr. Chas. Abbott, and turned in fourteen head. Edson owned seven, Gray five, Ezra Alden and Chas. Manley, both of Greenwich, each owned one. Four weeks ago they found three heifers dead in the pasture, one each of Edson's, Alden's and Manley's. They had evidently been dead several days; "they were buried about three feet deep, at great trouble to the diggers."

Mr. Gray immediately drove his five head into a pasture adjoining the Abbott pasture, where they have since remained perfectly well, apparently. Mr. Edson drove his home, and turned them with his milch cows in a hill-side pasture near his house, excepting one which he left at Mr. Felton's to have pastured. About August 3 or 4 one of the heifers, about fifteen months old, refused to eat. She grew very emaciated, bled at the nose, had bloody diarrhœa the day before she died, which was August 18; would seem to try to eat for a while, but could not; also drink. Buried her in a sand bank.

The quarantined heifer was about a year old, and they first noticed her August 30, when she would not eat; a considerable amount of swelling around her throat, gritting of the teeth, evidence of some pain, and the day of death bloody diarrhœa and blood exuding through the skin around the head and shoulders. She died September 6, and was buried in a sand bank.

Mr. Glazier had gone to Springfield, but I waited to see him, and advised him to quarantine the Edson farm and any others if they should show evidence of an outbreak. I also told the Edson's to use lime by working it into the earth all about the graves of each animal, and Mr. Glazier said he would see that it was done. The pasture being in Prescott, I suppose you will have to communicate with the inspector there. It certainly appears to be the same thing that is occurring in Hubbardston.

Yours truly,

A. S. CLEAVES.

Upon receiving this report, Mr. Henry N. Grover, inspector of animals for Prescott, was written to, telling him to quarantine the pastures where the disease occurred.

September 14 he quarantined two pastures owned by Charles J. Abbott. No new cases being reported from these pastures, the quarantines were ordered removed October 11.

There was an outbreak of blackleg in one pasture in Ashby, probably of a similar character to those appearing in other places; the following correspondence will give a sufficient history of it:—

ASHBY, MASS., Aug. 14, 1900.

DR. PETERS.

DEAR SIR:—I was called this morning to make an autopsy on a heifer that was found dead in the pasture. On making inquiries, I find that this is the third one within the same number of weeks. The heifer was very badly decomposed, but I made the autopsy as best I could, and found it was blackleg or symptomatic anthrax. I did not know before that the commission had anything to do with that disease, but read in your report that you came up here two years ago to see some cattle belonging to a John Wright in Ashburnham. I thought I would let you know, and you can do as you like about it. I examined the rest of the cattle in the pasture, of which there were thirty-three, and found them all right; part of them are young stock. As the carcass was in such a condition, I had it burned.

I have forgotten to say that these cattle are in the pasture belonging to Mr. Woodard of Ashby.

Yours in haste,

C. B. SHAW.

Dr. H. D. Clark of Fitchburg was telephoned to investigate this trouble, and Dr. Shaw was written to that this had been done. The following letters are reports of Dr. Clark's visits:—

FITCHBURG, MASS., Aug. 16, 1900.

DR. AUSTIN PETERS.

DEAR SIR:—I went to Ashby yesterday, and saw Dr. Shaw. Dr. Shaw told me there were no new cases of sickness or death among Mrs. Woodard's cattle, and that all those that had died had been buried or burned. The only one Dr. Shaw saw had been dead three days, so he could not make much of an examination.

I drove over to Mrs. Woodard's pasture this afternoon, and saw the cattle, thirty-two of them, and all well. The cattle are to be seen every day, and if there is further trouble Dr. Shaw will be

notified; and I suggested that he telephone me, and together we would make as careful an examination as we could, and send a specimen to you.

Yours truly,

H. D. CLARK.

FITCHBURG, MASS., Sept. 1, 1900.

Dr. AUSTIN PETERS.

DEAR SIR: — Dr. Shaw of Ashby telephoned me this morning that another heifer had died in Mrs. Woodard's pasture. I went up there, hoping to make a good examination of the carcass and get a specimen to send you, but found the heifer had been dead several days, and was so badly decayed that I could not make a satisfactory examination. I noticed the skin was wrinkled and cracked open just back of right fore leg and on inside of left thigh; the right leg and thigh had a bloated appearance. I opened the abdominal cavity, but found the maggots working there in such enormous numbers that I could not make much of an examination. There was a spot on right side of the body, about fifteen by six inches, where the hair was all gone and the skin seemed dry and hard, while the skin as well as the muscles on other parts of the body was very soft. The neck was nearly half eaten off by maggots a few inches back of head.

There was one heifer that Mrs. Woodard thought did not act quite natural (the animal had a scaly skin eruption), and I had the animal with a few others shut off in a small part of the pasture, where she can be better watched.

Yours truly,

H. D. CLARK.

The disease seems to have disappeared here during September, as it did in the other towns. A few cases were said to have occurred in Rutland, but these were not officially reported to the Board. Mr. Herriek was informed that there is a large pasture in the western part of Princeton where young cattle are said to die every year, and that trouble has existed there for many years, perhaps as many as thirty or forty. It is said that a few young cattle died in this pasture early in the summer of 1900, but these cases were not reported to the commission, and there was no opportunity for an investigation.

Reports were received from more distant parts of the State of deaths among young cattle in Chester and Monroe, and agents of the commission were sent to investigate

them. The results of the investigations do not show the trouble to have been blackleg; but, in view of the cases elsewhere, it is not impossible that this disease was present in these pastures, and that it had subsided when the agents made their visits.

The following correspondence is sufficiently explanatory:—

Aug. 13, 1900.

Cattle Commissioners, Boston, Mass.

DEAR SIRs:—As I have been losing cattle for two weeks past, five in all dying, I reported it to the cattle inspector of Becket, Mass., as that is the town that I live in, but I got no satisfaction from him, as he did not come to see them. It is reported around here that it is a contagious disease that is causing them to drop off. The last two died last Friday and were buried Saturday. My next neighbor lost three in the same manner.

I live between Middlefield and Chester. Trusting that you will give this your attention, and oblige me greatly.

Yours very truly,

A. T. BOYD.

PITTSFIELD, MASS., Aug. 17, 1900.

DEAR DR. PETERS:—In accordance with your instructions, I went to Chester to-day and investigated the trouble among the cattle on the pasture of Archibald T. Boyd, and have to report as follows:—

Five weeks ago there were in Boyd's pasture seventeen animals; of these, eleven two-year-old heifers and steers were the property of Boyd, while six animals (a mature bull and five two-year-old creatures) were owned by Mr. Farnham, the neighbor mentioned in Boyd's letter. Five weeks ago one of Boyd's young cattle was found dead in the pasture, and, as there had been a thunder storm the day before, the cause of death was supposed to have been lightning stroke. No more animals died until the latter part of July and the first ten days in this month, during which time four more of the young stock of Boyd and the bull belonging to Farnham died, the last death having occurred Friday, August 10. On August 6, Mr. Farnham removed his five young cattle from the Boyd pasture and turned them into a lot further up the road. These animals were not seen until the following Sunday, August 12, when it was found that three were alive and two were dead. The condition of the carcasses when found led the owner to think that the animals probably died within one or two days from the time they

were removed from the Boyd pasture and put into the new one; further, Boyd thinks they were sick before they were taken from his pasture.

August 10 all the remaining cattle were taken out of the Boyd pasture, since when there have been no more deaths, and all the animals are noticeably improving.

As to the pasture, the land where the seventeen animals had been summering comprises about twenty-four acres, and is of oblong shape, about two-thirds of it open and comparatively level, while one-third is partly wooded and partly brush, sloping down into a lake. The whole is extremely rough and barren. Of the actual surface of the open land, at least one-third is rock and stone, and as I saw it to-day, after having been vacated of stock for a week and after our recent rains, there is positively hardly a spear of grass that an animal could pull, excepting in a few hollow places where there is rank vegetation which the cattle seem to have entirely refused. The wooded and scrub part bordering the lake bears a few tall trees of maple, hemlock and black pine, with a very dense undergrowth of alders, wild rhododendron and laurel, and more especially the latter. Of distinctly poisonous vegetables or trees I did not recognize any.

The last of the dead animals having been buried for over a week, and being described as having been in a bad state of decomposition before burial, I did not think a post-mortem examination under the circumstances would be of any value, and consequently I did not exhume any of them.

As to the nature and cause of the trouble, I am of the opinion that it is all a question of insufficient pasture. The land has never been under cultivation, and the vegetation, in addition to being wild, would at the best be very scanty. Considering the nature of the land, it was overstocked, and this is more especially true when we consider the prolonged period of extremely hot and dry weather which we had until ten days ago. The result was that two-thirds of the available surface was absolutely devoid of anything the animals could eat. The only thing left for them was the coarse, indigestible brush around the margin of the lake, and this, in my opinion, acted as an irritant, causing inflammation of the stomach and resulting in death. The symptoms described would bear out this idea, the animals being noticed dull and walking with a staggering gait one day, and found dead soon after, usually within a day. I would say that towards the north end of the lake was the part where nearly all the dead animals were found, and, judging from the way the ground was tramped and

from the amount of droppings, it must have been the rendezvous of the herd. It was also the part where the rhododendron and laurel were most plentiful, the latter making a dense, continuous brush.

I anticipate that, with change to fresh pastures and with accession of cooler weather and rains, there will not be any more trouble with the herd.

Very truly,

GEORGE N. KINNELL.

MONROE BRIDGE, Sept. 22, 1900.

Cattle Commissioners.

DEAR SIR:— I have just returned from inspecting a dead yearling heifer of Geo. Brown's. H. C. Shippee has had two die, which I did not see, as I did not know of it for several days; but Mr. Brown found his last night, and notified me. Upon opening it, I found the throat near the windpipe black and putrid; the heart black, with no blood in it,— a little nasty water; the lungs of an ink color, a thin fluid flowing from them when cut into; the paunch discharging quite a quantity of very offensive watery matter. I think the case requires an investigation by some one of more experience. If one of your board will come, will meet you at Monroe Bridge, upon notice when you will be there.

Very truly yours,

D. H. SHERMAN, *Inspector.*

GREENFIELD, MASS., Oct. 3, 1900.

Dr. AUSTIN PETERS, *Boston, Mass.*

DEAR SIR:— I wrote D. H. Sherman, inspector, Monroe Bridge, and made a date to meet him, but, owing to its being so very mountainous, I did not reach Monroe Bridge on time, and he had gone. I then drove to Geo. Brown's place. Mr. Sherman had been there that day. There has not been any more deaths. Mr. Brown's yearling is the only death in this town of Monroe. Mr. Shippee, who lost two animals, lives in Vermont, so I did not visit him.

The post-mortem that Mr. Sherman held on Mr. Brown's yearling was not for twenty-four hours or more after it died, and, as these deaths were over ten days ago, I think probably the Brown cow did not die of a contagious disease.

Yours truly,

M. L. MINER.

The inspector of Salem reported some deaths among cows pastured near a tannery, but, as the animals had been removed and rendered before he reported to the commis-

sion, it is not known whether these animals died from being poisoned by some chemicals used in the process of tanning, or from an infectious disease introduced in the hides. His report is herewith given : —

SALEM, MASS., Aug. 8, 1900.

DEAR DOCTOR: — I have made post-mortem examination upon four cows that have died suddenly in pastures of Salem, and found the same condition in all four, namely extensive gastro-enteritis, also discovered tuberculosis of the lung in one. I understand there have been in all thirteen die that have been in this pasture; the board of health are investigating. There is drainage from a tannery that runs through this field. Please advise me.

Yours truly,

F. SAUNDERS.

The first cattle to die in Hubbardston were left to decay on the ground, after being skinned; later, those that died were buried, until the commission took charge; after this, all animals that died were ordered to be cremated wherever it was practicable, and the ground where they lay was burned over. This may have helped to limit the disease; whether it did or not, the percentage of mortality in the Adams pasture, where the first case reported occurred, was much greater than it was later, when all the carcasses were either buried with quicklime or burned.

This concludes the history of these outbreaks, so far as a study in the field is concerned. The results of the laboratory work undertaken for the Board of Cattle Commissioners will next be considered.

July 31, Mr. Herrick and Dr. Cleaves made an autopsy on a heifer that died in the Adams pasture during the night of Sunday, July 29. She was very much decomposed, but specimens were taken from the lungs, liver, spleen, third stomach and mesenteric lymphatic glands, which were sent to the Harvard Medical School, where they were examined by Dr. J. N. Coolidge. These arrived in very much decomposed condition. August 2, upon examination, Dr. Coolidge found a bacillus which resembled the bacillus of anthrax; in addition, there were many putrefactive bacteria of various kinds. Further study by means of cultures and inoculation experiments on guinea pigs showed that it was not the bacillus of anthrax, but a bacillus resembling the

bacillus of malignant œdema, and also resembling the bacillus of blackleg. Extracts from Dr. J. N. Coolidge's report follow :—

August 3, specimens received from a two-year-old heifer kept in the same pasture, from lungs, liver, posterior pharyngeal, mediastinal and mesenteric lymphatic glands, tongue, larynx and pharynx, showed the same bacillus as in the specimens received August 2. Further investigation showed this to be an anaerobic bacillus. Inoculated guinea pigs died in less than forty-eight hours, and showed much œdema.

The bacilli were not found in the guinea pig's blood before death. There were no microscopic changes in their organs. Bacilli were found in small numbers in their blood after death, and in the spleen. They were spore-producing; sometimes were in filaments, and in rather long, narrow chains. They decolorized by Gram's method. They grew in anaerobic conditions [*i.e.*, they grew when cultivated in the absence of oxygen]. Smears from the peritoneum showed filamentous forms.

August 7, specimens received from Mr. Colby. The results were the same; the organs sent were the same.

August 8, specimens from Grafton; same organs, same results.

August 30, material brought by Dr. Langdon Frothingham from Hubbardston. Very little found in smears. Inoculation experiments not conclusive. Guinea pigs died in five days; rabbits not affected. I have not tried to draw conclusions.

The material taken August 18 from the four-year-old Devon cow, owned by N. B. Reed of Princeton, included specimens from the throat, lungs, spleen and liver. The lungs contained a few small foci of pneumonia, which may have been mechanical, as the result of taking minute particles of food into them, due to an inability to swallow properly on account of the throat lesions. Dr. Smith, however, was able to isolate from the throat lesions, liver and spleen an anaerobic spore-bearing bacillus, similar to the one described by Dr. Coolidge. A streptococcus and other bacteria were found which were not studied further. Inoculation tests upon guinea pigs proved equally fatal; it also killed mice.

A healthy two-year-old heifer, brought down from Pepperell by Commissioner Dennen, was inoculated August 24

with a culture made from the liver of the Princeton cow, in bouillon, August 21. Four cubic centimeters of this culture were injected into the subcutaneous connective tissue on the right shoulder. In twenty-four hours there was a swelling at the seat of inoculation the size of half a hen's egg, which was hard and very painful on pressure. The heifer's temperature arose to 103° F., where it remained four or five days, when it gradually subsided to normal. There was very little loss of appetite; the animal fed sparingly for two or three days, and then fed as usual. The swelling remained for some time, becoming less painful, and had not entirely disappeared when she was disposed of three weeks later.

Whether this inoculation would protect the heifer if she had been introduced into an infected pasture, is a question; it very probably would. Furthermore, would the germ introduced into the subcutaneous tissue of the shoulder act in all cases as it did with this animal, or, if tried on a larger scale, would it act fatally in some cases? A single experiment proves nothing, beyond suggesting the importance and necessity of further study, and experimentation upon a sufficiently large scale to lay a foundation upon which to base correct conclusions.

Kitt is quoted, in Freidberger and Fröhner's "Pathology and Therapeutics of the Domestic Animals," fourth German edition, Vol. 2, page 416, as saying that animals inoculated with cultures of the blackleg bacillus are given immunity from natural infection; but it would require further study of the behavior of the bacillus separated from the Worcester County disease before it could be decided that this was the case there.

In the fifteenth annual report of the Bureau of Animal Industry, 1898, there is a very interesting report upon blackleg by Dr. Victor A. Nörsgaard, in which he gives an account of its history, geographical distribution, distribution in the United States, symptoms, post-mortem appearances and prevention, to which the reader is referred for more detailed information. Nörsgaard says that in ninety-nine per cent. of all the cases the tumors develop on the surface of the body; and this would seem to indicate that the

infection takes place through the skin; in fact, deeper-seated muscles, such as the diaphragm or tenderloin, are very rarely affected. He says: "It is doubtful if infection ever takes place through ingestion. In any case it has proved exceedingly difficult to produce the disease, even by feeding enormous doses of highly virulent material to susceptible animals."

The name of the disease, blackleg, is a popular one, based upon its symptoms and lesions. It has been known as quarter-evil as well as blackleg, because it usually attacks one quarter of the animal, causing a swelling, with formation of gas under the skin, which causes it to crackle on pressure; the surrounding tissues are infiltrated with blood or bloody serum, and the adjacent muscles are dark brown or black, and easily torn. Comparing these appearances with most of those described as occurring among the young cattle of Worcester County, it would seem that, if the disease there was blackleg, it was certainly a peculiar form. In the majority of cases where post-mortem examinations were made the lesions were chiefly in the throat, in the walls of the pharynx, the roof of the tongue, the glottis and surrounding tissues. These lesions were quite constant in the animals that died within a day or two of being taken sick; in animals that lived several days the lesions were then found in other parts of the alimentary canal, and the patients presented symptoms of generally sick animals, having a high temperature and loss of appetite, but no swellings upon the surface of the body or legs, as described as being among the symptoms of blackleg.

The one inoculation experiment upon a heifer did not produce the results that might be expected from the hypodermic injection of a large quantity of the bacillus of blackleg, but a single experiment of this kind is not conclusive.

The disease is spoken of as blackleg in this report because the bacillus found by Drs. Smith and Coolidge resembles so closely the blackleg bacillus; but, if it is the same, it seems to be a modified form, having an affinity for the digestive tract instead of a tendency to produce its lesions in the muscles near the surface of the body and the subcutaneous connective tissue.

It is possible infection took place through injuries from coarse food, instead of through punctured wounds of the skin, which Nörgaard suggests may be the usual mode of infection.

The United States Bureau of Animal Industry furnishes an inoculating outfit and an attenuated blackleg virus for the protective inoculation of young cattle upon farms where blackleg exists, and the results have been very gratifying in diminishing the ravages of this disease. The Bureau of Animal Industry about the first of September sent one of these outfits to Mr. Herrick, upon application from the Board of Cattle Commissioners. Mr. Herrick notified the farmers of Hubbardston and vicinity that he was prepared to furnish the protective inoculation, at their risk if they desired it, but that occasionally an animal inoculated might die. As the disease had commenced to subside by that time, no one availed himself of this offer. It may be as well that none of the farmers cared to avail themselves of this opportunity, as there is a possibility that their pastures might have been infected through this means with a different form of the disease than that already there, or even that true blackleg and the disease occurring in Worcester County may be totally distinct, and thus the pastures might have become contaminated with another disease, in addition to the one already there.

The last two summers have been excessively dry, and the summer of 1900 was one of not only great drought, but great heat as well. It may be that these unusual meteorological conditions were conducive to the production and development of a germ which will disappear under more normal conditions, or it may be that these pastures may become permanently infected. In the latter case, it will become incumbent upon the Cattle Commissioners to devise some method of prophylaxis for the protection of the young cattle in these districts.

Owing to the scarcity of forage during the last season, the young animals may have been driven to eating coarse grasses, sedges, briars and similar material, which might cause scratches and abrasions in the mouth and throat, by which germs might gain access to deeper tissues and pro-

duce disease ; while in ordinary years food of a more succulent character would be eaten, which would not injure the mouth or throat, and thus these germs would produce no bad results, even if a few were present in the food.

How the disease spread is an interesting question. Where the animals were kept unburied, as they were at first, it could be seen that foxes had been working at the remains, eating them and pulling them about. It is possible that foxes or birds might carry the disease from one pasture to another, voiding the bacilli and spores in their excrement, even although these germs were harmless to their bearers. Certain it is that when the Cattle Commission insisted upon having the carcasses burned or carefully buried the disease commenced to diminish.

This disease is certainly one worthy of further investigation and experimentation, and, if it should become of a permanent character, no doubt it will be possible to determine upon some means for its prevention. It is the opinion of Dr. Theobald Smith that it would be better to attempt to prepare a virus for protective inoculation from the germ already there than to blindly adopt the use of the material for the prevention of blackleg furnished by the Bureau of Animal Industry, until it is proved that the disease in Worcester County is identical with blackleg, and not a different form of the malady, or possibly a distinct disease. In fact, it cannot be too strongly emphasized that it would be a very unwise plan to use a blackleg preventive vaccine, for fear of infecting the pastures with another disease, until it is conclusively proven that true blackleg and the disorder described here are identical.

TEXAS FEVER.

There has been no Texas fever in Massachusetts during the summer of 1900, neither has there been for several years. The commission has taken the usual precautions ; that is, cattle brought in during the summer months from infected districts can only be brought in for immediate slaughter, and must be unloaded at the slaughter house and not driven into pens or over streets that are used for northern cattle. The regulations of the United States Bureau

of Animal Industry relating to Texas fever are an additional safeguard. The cars having cattle from localities where Texas fever exists are placarded; that is, a placard is tacked upon them, stating that the cattle are from quarantine districts, and that they cannot be yarded in pens used for northern cattle, or driven over runways or roads upon which northern cattle are likely to be driven. These regulations have had the effect of reducing the danger to Massachusetts cattle from Texas fever very much, compared to several years ago.

RABIES.

Very few cases of rabies have been reported to the Cattle Commission during the last year. Rabbits were inoculated with material from the brains of three dogs, sent in during the autumn of 1899, which did not develop any symptoms of rabies at the expiration of three months after the beginning of last year; these three dogs, therefore, were not rabid.

The head of a dog owned in Newton was sent in January 8. The dog had bitten two children, and was killed; it was thought advisable to be sure that he was not rabid. A rabbit and guinea pig inoculated January 9 were still healthy April 28; the dog, therefore, was free from this disease.

There were but two other cases of supposed rabies reported, and neither of these was verified by inoculating rabbits or guinea pigs. One was reported from Fall River, the other from Weston. It does not seem improbable now that the Weston case may have been one of rabies, as, at the time of preparing this report, an outbreak of rabies was reported among dogs in Watertown, Waltham and Belmont. The Cattle Commission hoped rabies had been practically eradicated from among the dogs in this Commonwealth, as such an interval had elapsed since the occurrence of an authentic case. The last one which was proved to have been true rabies was in March, 1899. It is, therefore, a disappointment to hear of the new outbreak to which we have just alluded.

SWINE DISEASES.

During the past year eleven outbreaks of hog cholera, or diseases supposed to be hog cholera, have been reported among swine. In addition to these, one case of tuberculosis was reported in a pig in Townsend, which was ordered killed by the Board, and was found to have this disease.

When an outbreak of hog cholera occurs, all it seems possible for the commission to do is to quarantine the premises, and forbid owners to buy or sell any swine until the disease has disappeared. This is usually accomplished by killing the badly diseased, waiting until the sick ones have recovered and no new cases appear, then disinfect the pens. Occasionally where there is a bad outbreak an owner prefers to kill all his swine, disinfect the pens and restock with healthy animals.

Outbreaks of hog cholera have been reported from Colrain, Lee, Brockton, Greenfield, Brookline, Medfield, Westfield, Stockbridge and Sterling.

The outbreak in Sterling was found to be due to pneumonia late in the fall, as a result of not housing the swine properly. These reports involve 523 animals; 420 were released, the others having died or been killed. Those released were the animals left after the outbreaks had subsided.

Where hog cholera appears in a herd of swine, if the animals are large and ready for market, perhaps the best course to pursue is to kill all of them for pork, when all that are found to be free from disease can be utilized and the others sent to the renderers. In a number of cases there seems to be no doubt that hog cholera or swine plague may be caused by feeding swill that has been kept some little time, and not cooked. The germs of hog cholera may perhaps be obtained from uncooked swill, as a result of throwing refuse from western pork into it. Swine plague may be produced by the germs of the disease developing in the putrefying swill. The swill from large public institutions, and city swill, seems to be especially dangerous, and should always be cooked before being fed. Small quantities of house swill fed fresh daily to pigs kept at home is less dangerous.

An agent of the Society for the Prevention of Cruelty to Animals telephoned September 13, reporting a disease in pigs in Agawam resembling mange. An agent of the Board was sent to Springfield September 15, and proceeded to Agawam. He reported that, in his opinion, the pigs had eczema; that they were in a dirty, dusty pen, and the dust collected upon them, making thick scabs after the eczema appeared. He advised a change of food, as they were then getting distillery slops, and also advocated letting them run in the fields, where they could get some green food, and where it would not be so dusty. Nothing has been heard of this trouble further, so it is hoped that the change of food and care was beneficial.

MISCELLANEOUS.

February 23, Dr. C. H. Playdon of Reading reported what he thought might be a contagious disease among cattle on a farm in Saugus. The chairman of the Board and Dr. Langdon Frothingham visited the farm February 24, and found five cows had died and five more were sick; eleven cows and one bull were healthy. The animals that were sick seemed to be grinding their teeth, leaning forward in the stanchions, and those that were very sick would get down and seem unable to rise before death took place. Post-mortems were made on some of the animals that were dead, and the blood was black and tarry, and some of them showed little patches of broncho-pneumonia, but not all. Cultures were taken by Dr. Frothingham from the blood and various organs, but he did not succeed in finding any pathogenic germs. One peculiar thing in this case was that there was no rise in temperature; the sick animals did not seem to be feverish, their temperatures remaining normal. The food seemed to be of the usual quality: salt marsh hay, English hay, Chicago gluten meal, bran, corn meal and a little steamed linseed meal. The water supply came from a well a little distance from the barn, and seemed to be of good quality. The second visit was made by the chairman and Mr. Dennen, March 1, when the eleven cows and the bull, which were quarantined February 24, were released, as they remained healthy. Four quarantined cows that

were sick were killed by a butcher, who bought the hides and carcasses to be sold to a renderer. Mr. Dennen suggested that the animals showed symptoms of lead poisoning, and thought, if some of the organs had been analyzed, instead of examined for bacteria, lead might have been found. In this instance ten animals out of twenty-two died.

Boston, April 5, Dr. C. A. Keene of Fitchburg notified the Cattle Commission of a supposed outbreak of a contagious disease in Westminster. The chairman of the Board at once went to Fitchburg, and with Dr. Keene visited the farm where the sick animals were. Six cattle had died, four were sick and eight were in a lane back of the barn, apparently well. These animals presented much the same symptoms as those in Saugus; there was no rise in temperature, the animals staggered and stood pressing forward in the stanchions, and finally seemed unable to stand, fell down and could not rise again. Post-mortems were made on three, but no well-marked lesions were found. One animal, which was nearly dead, was killed, and specimens were taken, consisting of a bit of heart muscle, bit of liver, bit of kidney and a piece of the spleen, and were sent to Dr. Frothingham for examination. Remembering the suggestion that the animals in Saugus might have lead poisoning, part of the contents of the third and fourth stomachs, bit of small intestine and a portion of the lungs were taken from the one that was killed and the one that died in the morning, and sent to Dr. Chas. Harrington of Boston, to be analyzed, in order to see whether the animals had been poisoned in any way. Dr. Harrington was unable to detect any of the common poisons in the specimens sent him, and Dr. Frothingham found no pathogenic germs in the material sent him. The causes of these two outbreaks of disease, which appeared to be identical in character, are, therefore, mysterious. If any similar cases are reported another winter or spring, it is hoped that some reason for their occurrence may be discovered.

July 30, a farmer in Weston found a cow dead in the pasture, and on the 31st two died in another pasture. The chairman of the Board made post-mortems on the two that died July 31, but all that could be found was an inflammation of

the small intestine in one and of the small and large intestines in the other; in each cow the interior surface of the small intestines were covered by a purulent mucus. Specimens from the spleen, liver, kidney, heart and small intestines from one cow were taken to Dr. Theobald Smith, who could not find any germs of disease. Some of the portions of the intestines, lungs and kidneys were also taken to Dr. Chas. Harrington for analysis, and he reported that he could not find any of the common irritant poisons. It seems that these cases must have been the result of the cows eating something that disagreed with them, causing acute inflammation of the intestines. As it was hot weather, it is possible that some toxic substance was produced, as a result of the decomposition of some of the food, which may have produced fatal results.

Respectfully submitted,

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Board of Cattle Commissioners.



