

# MAINE STATE LEGISLATURE

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PUBLIC DOCUMENTS OF MAINE:

BEING THE

ANNUAL REPORTS

OF THE VARIOUS

DEPARTMENTS  INSTITUTIONS

FOR THE YEAR

1901

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VOLUME II.

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AUGUSTA  
KENNEBEC JOURNAL PRINT  
1901

REPORT OF COMMISSIONERS

ON

CONTAGIOUS DISEASES

OF

ANIMALS

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Under the Law of 1887, Chapter 138, of Public Laws of Maine.

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HON. F. O. BEAL, BANGOR, President.

HON. JOHN M. DEERING, SACO, Secretary.

HON. F. S. ADAMS, BOWDOIN.

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AUGUSTA  
KENNEBEC JOURNAL PRINT  
1901



# REPORT.

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*To His Excellency, the Governor of Maine:*

We present our 1899 and 1900 report of the year closing December 31, 1900, with an account of our appraisals of horses and cattle destroyed under the provision of the law of 1887, chapter 177, relating to the contagious diseases of this State and amended in 1892, chapter 194.

## STATEMENT OF CATTLE COMMISSIONERS 1899 AND 1900.

SACO, ME., December 31, 1900.

Total amount of expenses incurred for destroying cattle and horses and other expenses during the year 1899.....	\$5,666 94
Received from State .....	3,000 00
Amount paid by F. O. Beal, treasurer, to June 1, 1899.....	2,024 33
Whole amount received .....	5,024 33
Amount unpaid .....	642 61
Amount paid for cattle and other expenses during 1900.....	4,352 69
Amount not paid for.....	3,480 25
Total amount of business done during the year.....	7,832 94
Amount received from State treasurer.....	5,000 00
Total amount due for cattle and other expenses during the year of 1900.....	2,832 94
Amount of bills not paid during the year of 1899.....	642 61
Total amount of deficiency.....	3,475 55

## UNPAID BILLS.

SACO, ME., December 31, 1900.

F. S. Adams, bill for October.....	\$20 95
F. S. Adams, bill for November.....	43 60
F. S. Adams, bill for December.....	33 25
C. L. Blakley.....	5 00

W. L. West.....		5 00	
Geo. H. Bailey, bill for August and September.....		30 40	
D. D. Winslow.....		36 00	
F. O. Beals, bills for September, October, December.....		275 75	
Geo. H. Bailey, bill for October, November.....		100 37	
John M. Deering, bill for September.....		28 50	
John M. Deering, bill for November.....		71 00	
John M. Deering, bill for October.....		23 00	
John M. Deering, bill for December.....		47 35	
Bill for auditing and typewriting.....		2 63	
F. S. Adams, balance on September bill.....		16 70	
			<hr/>
Total amount .....		\$739 50	
Cattle destroyed during year 1900 not paid for.....		2,740 75	
			<hr/>
Total amount .....		\$3,480 25	
Cash in treasury .....		4 70	
			<hr/>
Total deficiency .....		\$3,475 55	
			<hr/>
Total amount of business done during the years 1899 and 1900 .....			\$13,499 88
Total amount of appraisals for the years 1899 and 1900 .....	\$15,294 50		
One-half of this amount to be paid by the State, .....	\$7,637 25		
Total amount of expenses during the years 1899 and 1900 .....	\$5,862 64		\$13,499 88
			<hr/>
Amount received by J. M. Deering during the years 1899 and 1900.....		\$8,000 00	
Amount received and paid by F. O. Beal, treasurer, from Jan. 1, 1899, to June 1, 1899.....		2,024 34	
			<hr/>
		\$10,024 33	
Deficiency .....		3,475 75	
			<hr/>
			\$13,499 88

There seems to be an increased confidence among the live stock owners in the work of the Board.

The Cattle Commissioner's Report for 1898 gives number of cattle condemned and destroyed as 48, at an appraisal of \$1,520.00, and 34 horses at an appraisal of \$1,420.00, the total appraisals for the year being \$2,940.00.

There has been during the years 1899 and 1900, 363 animals destroyed, including cattle and horses; 114 cows and

hogs during 1899, 165 cows during year 1900; 38 horses during 1899, 46 horses during 1900, making the total for two years 363 head at a total appraisal of \$15,294.50, one-half of which to be paid by the State, \$7,637.25, or \$21.04 per head.

The report shows a large increase in the business within the last two years over the year 1898.

This state of affairs can only be explained by the fact that cattle owners have become better educated to the existing disease and better realize the financial loss to them if diseased cattle are allowed to remain in their herds.

The prejudice against having their herds examined is passing away, and there is a growing sentiment among the live stock owners in favor of suppressing tuberculosis in our State.

It is fortunate for us to be able to report that of the several contagious diseases that afflict domestic animals the commissioners have had only two to deal with, namely tuberculosis and glanders.

Anthrax, foot and mouth disease, hog cholera and several other diseases that are considered contagious that afflict animals in other states have not made their appearance in in Maine during the year.

Tuberculosis exists among cattle in all the thickly populated countries upon the globe. It exists to the greatest extent in the United States along the Atlantic coast. Prairie and mountainous sections are practically free from it. Every state in our country has its sanitary laws, and nearly every state has a direct law in relation to contagious diseases among cattle, and it is well to note that those who have the work in charge are carrying it on practically upon the same lines.

#### HOW THE WORK IS DONE.

The commissioners make examination only upon written application of the owner or boards of health or veterinarians.

It would be impossible to do more under the financial limitation of the Board. It is the sense of the Board that

compulsory measures do not enlist co-operation of the owners of live stock and without co-operation the measures directed against tuberculosis cannot be successful. We believe that the most essential agency necessary to obtain the co-operation that is needed is to more generally disseminate knowledge of the facts in regard to the disease and to prove to the owners that they are fairly treated by the State.

Frequently owners complain that they are obliged to lose one-half of the appraisal according to the law. The commissioners are led to believe that the owners of condemned animals receive as much and even more than owners do in other states where the appraisals are made upon what the animals look to be worth at the time of destruction. In Maine animals are appraised upon the value of what they would be worth if they were healthy.

The state of Massachusetts pays the full appraisal, and the average price paid to the owners of six hundred cattle destroyed during the last six months of 1899 was \$21.60 per head.

The limit of appraisements in Pennsylvania is for unregistered stock \$25.00 and for registered stock \$50.00, just one-half what the limit is in our State. Yet it occasionally seems to be a hardship where cattle are subjected to the tuberculin test, as the test will call out mild cases as well as the bad ones, yet upon the whole we think there is no reason for complaint on this line.

#### TUBERCULIN TEST.

The Board does not test cattle themselves; they consider that it is the veterinaries' business and they are the proper agents through which this work should be done. Neither do they order tests to be made. Testing is only done by the owners employing veterinaries on their own account, and occasionally by the advice of the commissioners, and then only by the owner's consent, the owner agreeing to pay for all animals proving to be sound and the State paying for all those diseased.



Public opinion seems to be crystalizing about the leading facts in relation to tuberculin tests. There have been many extravagant statements made, some of them coming from sources that are looked upon as reliable. Now the facts in regard to tuberculosis are important, and it is detrimental to the public and also to our live stock interests, to exaggerate them. It is also injurious to minimize them.

It is a recognized fact that tuberculin is not infallible, but in the hands of careful men its mistakes or errors are few. Yet in cases where tuberculosis has existed in a herd for years, the owner occasionally losing an animal, living in the herd all through the different stages of the disease, the only method to be pursued to clean up the herd and stamp out the disease upon the premises is by the tuberculin test. The commissioners have recently cleaned up a herd under these same conditions. The owner employed a veterinary to test five cows, all of which reacted and were condemned. The post-mortem disclosed the following results: two showed the disease to a very marked degree, two to a marked degree and one to a very slight degree. This caused the owner to complain and object to the tuberculin test. Two more cows of the same herd were tested and both reacted and were condemned. The post-mortem of these two cows converted the owner, and five young cattle were tested. Three reacted and were destroyed. This consisted of the entire herd. The ones that did not react were cattle recently brought in from outside herds. This is only one case with many others that have come under the observation of the commissioners.

Tuberculin is not infallible but it is far reaching. It is a firmly established fact that it is the most successful means of detecting tuberculosis among cattle that is at present available, if handled by careful and experienced men.

It was conceded by the Cattle Commissioners of Massachusetts, Connecticut and Rhode Island at the New England Cattle Commissioners' Conference held at Boston on December 8, 1899, that Maine cattle were freer from tuberculosis than cattle from any other New England state. This record

should be gratifying to the breeders and dairymen of our State, coming as it does from such a reliable source. This knowledge was obtained on account of Maine being a seller of dairy stock and the three named states purchasers.

Nearly 25,000 cows have been shipped out of Maine into the markets of these states during the years of 1899 and 1900, selling upon an average of \$40 each, bringing to the farmers of our State nearly one million of dollars. This, in connection with nearly eight millions of dollars worth of dairy products produced from our dairy herds this last two years and nearly all sold in the New England markets, should stimulate the farmers of our State to a higher appreciation of our dairy interests and to realize the fact that no higher qualification could be stamped upon our dairy products than for the consumers to know that they are produced from healthy herds.

What remedies can be applied to hold in check or eradicate tuberculosis among our herds? When we take into consideration that we have at present only 2 1-2 or 3 per cent diseased, it seems almost insignificant, yet it is far too many when we take into account the importance of our live stock interests and the value of a reputation that our herds are above suspicion. The importance of the work of the Maine Cattle Commissioners should be expressed by every good citizen, whether he be producer or consumer.

The total valuation of our domestic animals at the present time is nearly \$12,000,000, and it is an interest well worthy of being taken care of and there is no one so responsible for the health of our live stock as the owners themselves, hence it becomes the duty of every breeder and owner of domestic animals to throw around them all the safeguards possible and always be on the watch. It would be unwise for us to say that an animal in an advanced stage of tuberculosis could be cured. She cannot, and as soon as discovered should be removed from the herd. Sunlight, pure air and cleanliness are enemies to tuberculosis, and the more sunlight, the better ventilation and the more care is taken in keeping stables whitewashed, clean and pure, the less liable we are to have

a case of tuberculosis developed in our herd. And in order to retain the good name of our State we advise as good remedies for tuberculosis: First, close examination; second, the removing of all suspicious animals from the herd; third, an abundance of sunlight and sufficient exercise, good ventilation and clean habitation, and co-operation with the Cattle Commissioners.

#### GLANDERS.

During the past year there have been eighty-four horses condemned and destroyed, diseased with glanders. This seems too many, to be in proportion to the number of horses in our State as compared with some of our neighboring states.

The disease has been found in different sections of the State, and does not seem to be confined to any breed or class of horses. The veterinarians of the State should be quick to recognize this insidious disease and prompt to report it to the commissioners. The public should be alive to the importance of eradicating it, it being considered more dangerous to man than tuberculosis, and at least not give it a chance to spread.

It is the public sympathy and co-operation that all sanitary measures need in order that the work may be carried on with efficiency and economy.

Our quarantine law is still in force and while no cattle are allowed to enter our State without a permit from the commissioners, yet there are some smuggled in against the law, in some cases causing the commissioners some trouble in hunting them up and making examinations. We consider this an important factor in keeping our herds healthy. There is no New England or Middle State at the present time that allows cattle shipped into that State without a certificate of health or being subjected to a critical examination after being brought in. If any State did not require it, it would be the dumping ground for all diseased cattle in the surrounding states.

Disinfecting the stables is considered to be very essential by the Board wherever one or more animals have been found diseased.

There are several different kinds of disinfectants, all good under certain conditions. We find by looking over the report of the Secretary of the State Board of Health, and also by personally consulting with him, that certain disinfectants are only good for certain diseases, and by his advice we recommend the following solution which is considered perfectly harmless, containing no poisonous matter, and is also very reasonable in expense.

Solution of formaldehyde (formalin): Six ounces to one gallon of warm water.

It is the intention of the Board to see to it that in every case where tuberculosis or glanders is found the stall and manger shall be thoroughly disinfected with formaldehyde solution.

In summing up the whole situation in relation to tuberculosis among our herds, we must say that the business is on the increase showing over twice as many cattle and horses destroyed in 1899 as in 1898, and nearly three times more in 1900. These are the facts in the case.

Some one may ask, "Is tuberculosis increasing in our State?" This would be a hard question for the commissioners to answer. There are two reasons that we might give: first, that herd owners are realizing more the importance of keeping their herds clean and healthy. Second, that the owners have become better acquainted with the results derived from tuberculin tests, and are placing more confidence in its use. The testing lies entirely in the hands of the owners themselves, and there has been several large herds tested during the past year. Some proving to be entirely sound, others have proved to be partially diseased, and it is our opinion that Breeders of Registered Stock are becoming more careful in regard to the health of their herds.

Perhaps you may think it proper for the Commissioners to recommend an amount to be appropriated to meet the requirements for the next two years' business.

This must be considered an uncertain business. No one can tell just the amount needed, but by taking into consider-

ation the last two years' business, it would seem as though \$5,000 per year is not sufficient to meet the demands.

It should be taken into consideration that the people know that there is an appropriation made, and expect, if they make an application to the Commissioners to have their herds examined, and diseased animals are destroyed, they expect the amount the State allows them. And in the majority of cases they need the money, to replace the ones destroyed; and it is a hardship for many to wait six or eight months for their pay.

Now it is not for us to say. It is for the Legislation to say how much money it thinks is necessary to appropriate to carry on this work. But it does seem to us when this business is practically and all done by written application, and demands are made upon the Commissioners by the people themselves; they should see to it that there is sufficient funds set aside to pay themselves for their losses sustained. It is not the Commissioner's fault that the State owes for cattle destroyed since last June. It takes time and postage stamps to write to parties and explain to them why they don't get their money.

The commissioners in performing their duties see tuberculosis in all of the different forms and stages of the disease; and in many instances have tracked the ancestors of some diseased cow from some town in Maine back to the Jersey islands or the plains of Holland, proving the fact that the disease is carried along for generations in some families. Once was the time when it was thought by many that the Jerseys were responsible for tuberculosis. To be sure they are not quite as tough and hardy, a little more delicate, yet we have come to the conclusion that whenever an animal is allowed to remain in the herd all through the different stages of the disease, it has no respect for breeds, and in our opinion tuberculosis should be charged to no particular breed, being contracted by animals the same as by the human race, by a chain of circumstances and conditions.

We wish to draw your attention to the rules adopted by the Board at the time of the organization June 1, 1899, which was approved by the Governor, and by being approved became a law. You will notice that the owner of any and all destroyed animals, releases the commissioners from all liabilities on account of killing cattle owned by me, etc.

These rules have been a great help to the commissioners in carrying on the work, for every voucher for animals destroyed the secretary retains a release, signed by the owner, and when vouchers and releases agree, there can be no question raised as to the correctness of the business.

## NOTICE OF QUARANTINE.

RULE 1. The Cattle Commissioners of the State of Maine, having found from recent experience that it has become absolutely necessary to supplement our former notice of quarantine issued January 1, 1892, so that it shall include not only Massachusetts, but all other states, order that no cattle for dairy or breeding purposes shall be brought into this State either by road, water, railroad or other conveyance until further notice; and all such cattle entering our State, without a permit signed by some member of our Board will be subject to quarantine at the owner's expense, and the attention of all persons is directed to chapters 177 and 194 of the Public Laws of Maine of 1889 and 1893 respectively, which will hereafter be rigidly enforced.

RULE 2. Each and every animal brought into this State of Maine for any other purpose than those stated in Rule 1 shall be subject to the same restrictions, except western cattle for slaughtering purposes. And all owners of such animals shall secure a written permit for transporting such animals into the State, which permit shall be signed by one or more members of the State Board of Cattle Commissioners, now existing.

## QUARANTINE STATION.

RULE 3. There will be three quarantine stations provided, one at Saco, near the Eastern Division Railroad Station, the other at Brunswick, on the line of the Maine Central Railroad, also one at Westbrook Junction.

RULE 4. The style of permit shall in each instance be as follows:

No. ....

## STATE OF MAINE.

## BOARD OF CATTLE COMMISSIONERS.

F. O. Beal, Bangor, President.

John M. Deering, Saco, Secretary.

Frank S. Adams, Bowdoinham.

## LIVE STOCK PERMIT.

.....1899.

Permission is hereby granted Mr. .... of..... to bring into the State of Maine from ....., ....head of neat stock. This permit is valid on any transportation company, railroad or steamship, if used within thirty days from its date.

(Signed)

RULE 5. In case any animal is found diseased, and is therefore condemned and killed by the Cattle Commissioners, the owner of such animal at the time of its killing shall give a release to the Board of Cattle Commissioners, and shall declare in the said release his acceptance of the appraisal. Said release shall read as follows :

## STATE OF MAINE.

BOARD OF CATTLE COMMISSIONERS.

F. O. Beal, Bangor, President.

John M. Deering, Saco, Secretary.

Frank S. Adams, Bowdoinham.

## CONDEMNED LIVE STOCK RELEASE.

.....1899.

I hereby release the Board of Cattle Commissioners from all liability or action on account of killing..... owned by me, found diseased by....., under the provisions of chapter 177 of the Public Laws of 1889, as amended by chapter 194 of the Public Laws of 1893. I also hereby agree to accept the appraisal of .....in full compensation for said condemned animal.

RULE 6. If any person owning animals suspected of being diseased, makes lawful application to the Cattle Commissioners



for an examination of such animals, and the symptoms of the suspected animal are not sufficiently developed to warrant the destruction of the animal, the Commissioner or his agent making the examination may make an agreement with the owner to the effect that if said animal reacts under the tuberculin test, the State shall pay for such testing, otherwise the owner shall pay the expenses incurred.

**RULE 7.** Upon application of the Boards of Health, municipal offices, or citizens and tax payers of the several cities and towns within the State, the Commissioners stand ready to promptly investigate and examine such cases as are reported to them. The Commissioners are to be regarded as the examiners or judges of suspected animals, and consider it the duty of Boards of Health, and any others who may be interested or affected by diseased animals, to notify them of any and all cases which may be dangerous to the health of the community.

**RULE 8.** There shall be a meeting of the Board of Cattle Commissioners on the first Wednesday of January, April, July and October respectively, for the purpose of auditing bills incurred in the preceding three months, and all such bills shall then be paid, provided there are sufficient funds in the State treasury therefor.

Rules adopted by the Maine Cattle Commissioners June 27, 1899.

F. O. BEAL,  
JOHN M. DEERING,  
FRANK S. ADAMS.

Augusta, June 27, 1899.

The foregoing rules are approved by me.

LLEWELLYN POWERS,  
Governor of Maine.

## TUBERCULOSIS.

The Pennsylvania Plan for Controlling Tuberculosis of Cattle and a  
Summary Review of the Reasons upon which it is Based.

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By LEONARD PEARSON, State Veterinarian.

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“Although the general subject of tuberculosis of cattle has been discussed in so many papers and at so many meetings during the past few years, I feel that the magnitude and importance of the question justify its frequent consideration until there is greater crystallization of opinion and union of effort in regard to the main points of the situation. And perhaps a brief review of an actual endeavor to check the progress of this disease may not be entirely without value.

If no exact observations were recorded in regard to tuberculosis, if no careful scientific inquiries and investigations as to the multitudinous bearings of this disease were being made and reported and if no effort to repress tuberculosis were actually under way, it would be possible for the theorizers and disputants to wrangle endlessly over these questions. But when the established facts in relation to tuberculosis are held in clear view, and are used to measure individual opinions and recommendations as they are put forth, only those that rest on premises that have stood the most searching tests that the scientist and economist can apply can continue to receive earnest attention. It is, therefore, of the highest importance that the main points in regard to tuberculosis, and especially those upon which repressive measures must depend, shall be presented as clearly and distributed as widely as possible. Although many of these points are established beyond controversy and are accepted by all who have studied the subject, they are still not as generally appreciated as they should be. This need not surprise us when

we recall that but a few years have elapsed since Koch's epoch making discovery of the tubercle bacillus and the establishment of the identity of the human and animal tuberculosis. And when we recall the further fact that not a decade has passed since the discovery of tuberculin and that most of our knowledge as to the extent to which tuberculosis is distributed among animals has been obtained during this period, it no longer appears strange that the public fails to recognize facts that were unknown to the specialist such a short time ago.

"The importance of the cattle tuberculosis problem is two-fold: First, tuberculosis is meat producing and dairy cattle constitutes a menace to public health, and, second, the cattle industry suffers seriously on account of the extensive prevalence of this disease.

"(1) As to the first point, there is no lack of observations to show that the products of animals in certain stages of tuberculosis contain tubercle bacilli and it has been shown by the observation of numerous cases under natural conditions, as well as by definitely controlled experiments, that the ingestion of such material by animals may be followed by the development of tuberculosis. It is also known from accidental inoculations sustained by men that the tubercle germs from cattle may produce tuberculosis in a fatal form in man. Moreover, there are instances in which people who have consumed the milk from tubercular cows have contracted tuberculosis when no other source of the disease was apparent, and all of the history pointed to infection from milk.

"Most powerful evidence of the existence of this danger and the operation of this cause of mortality is furnished by the records of the General Register Office of England, as published by the last Royal Commission on Tuberculosis in 1898. It is shown by these records that the deaths from all forms of tubercular disease in England and Wales have diminished 39.1 per cent. in the last thirty-five years, a period of great sanitary advance in respect, especially, to habitations in towns and cities. The greater portion of this very gratifying diminution was in the lung form of tuberculosis or phthisis. On the other hand, the diminution in the intestinal form, or tabes mesenterica, has, in the same period, been but 8.5 per cent. and at one period of

life, before the end of the first year, there has been an actual increase in this disease of no less than 27.7 per cent. If infants derive tubercular infection only from their associates and attendants, or, at any rate, from other persons, it is fair to expect the diminution in prevalence to be in proportion to that among their elders. As this is not the case, and as there is actually a large increase in mortality from tubercular disease during the period when milk constitutes the chief article of diet, this food is thus, in the opinion of the members of the Royal Tuberculosis Commission, placed under the strongest suspicion.

“(2) As to the direct injury to the cattle industry and the monetary loss caused by tuberculosis, these, as the danger alluded to above are in direct ratio to the prevalence of the disease. Unfortunately, no accurate statistics are available as to the general distribution of tuberculosis among cattle of the United States. We have, however, the reports on a vast number of tests of scattered herds, the slaughter house records of the Bureau of Animal Industry, a few reports from slaughter houses under local control, and the estimates of a number of veterinarians who have had long experience with this disease in large districts. It is not possible to go into the details of these reports in this summary, but it may be said that tuberculosis prevails most extensively among cattle near the Atlantic seaboard and in the old dairy districts. It becomes less prevalent towards the west and is almost unknown on the prairie farms of the far west and among the range cattle of the plains and the mountainous country beyond. The extent of prevalence in the old dairy sections of the east appears to be in direct proportion to the activity of cattle traffic. If it is the practice of herd owners to buy their cattle, or if, in breeding herds, there has been a considerable interchange of cattle with other herds, tuberculosis abounds. If, on the other hand, it is the practice as in many large sections, to rear dairy cows on the farms on which they are used and the current of the cattle trade is outward rather than inward, tuberculosis does not exist or it is a rare disease.

“To illustrate this point, I may refer to a large Jersey herd near Philadelphia. This herd was established about twenty-five years ago and consists of more than one hundred cattle. It is in a county in which there is as much tuberculosis as in any

county in Pennsylvania. The herd is increased by breeding and not by purchase, excepting a bull occasionally, and, as has been shown by a tuberculin test, it is entirely free from tuberculosis.

"In many of the interior valleys of Pennsylvania a large number of herds have been tested without finding a single tubercular cow. These valleys are breeding districts, their cattle are principally of stock that was brought in by the early settlers many years ago, and the trade in cattle is outward. In other sections in Pennsylvania and in other eastern states, tuberculosis is very common; some herds have been almost completely exterminated by it and in certain restricted localities it exists on almost every farm. Notwithstanding the extent to which it prevails in some sections and the fact that it has brought ruin to many farmers, I do not think that the distribution among all of the cattle of Pennsylvania exceeds about 2.25 per cent.

"Tuberculosis has spread very rapidly among cattle in this country during recent years. Of this I am convinced by the statements of veterinarians, butchers and stockmen of many years' experience. While it is necessary to recognize the fact that much of this testimony is inaccurate, it cannot be denied that much of it is of value and that practically all of it points in the same direction. Moreover, I have myself been able to trace the infection of numerous herds to a single source in localities recently infected. In one instance, the infection of seven herds in widely separated places in Pennsylvania, including three districts in which tuberculosis was previously unknown, was traced to a famous herd of cattle that was broken up and sold at auction. It was afterwards ascertained that this herd was almost saturated with tuberculosis.

"It is natural that tuberculosis should spread at a constantly increasing rate as the centers of infection multiply, unless active measures are taken to check it. As proof of this, we have the experience of the countries of Europe. The slaughter-house records of France, Holland and Germany show that tuberculosis of cattle and swine has increased enormously in the past ten years, and in some places from 30 to 40 per cent. of all cattle killed are tuberculous. Denmark is one of the few European countries where, thanks to the valuable, original methods of Prof. Bang, the disease is actually being repressed.

“Unless this cancer in our herds is to be permitted to develop until the annual losses occasioned by it are increased many fold and the conditions that now exist in Europe and in many parts of this country become common, *something must be done*. As to *who* shall take whatever action is authorized, there can be no doubt that under present conditions the bulk of the work will fall upon State officials rather than upon those connected with the federal or with the local governments.

“The federal government is doing very effective work in this connection by keeping tuberculous cattle out of the country, in assisting in the control of interstate shipments and in conducting careful meat inspection in many places, but it has not yet taken active part in the suppression of tuberculosis in already infected herds. Nor have local governments, other than New York City, Philadelphia, and, perhaps, a few other municipalities, taken up this work seriously. Under the conditions prevailing and in view of the precedents already established, it is probable that this work must be looked upon as State work for some time to come, although it is to be hoped that the Bureau of Animal Industry can eventually assume more of the responsibility for the examination of cattle, or at least of dairy cows and cattle for breeding purposes, shipped from one State to another.

“Certain objections have been raised to public action in relation to tuberculosis and these may be formulated as follows:

“A. Objections to all public measures.

1. It is alleged that they are unnecessary.
2. It is alleged that they cannot succeed.

“B. Objection to certain measures.

1. To the use of the tuberculin test on the alleged grounds, *a*, that it will injure healthy cattle; *b*, that it is not infallible, and, *c*, that it is too searching.
2. To the payment of indemnity for animals condemned and destroyed.

“A. 1. As to the first point, there are some writers and speakers who deny that tuberculosis is anywhere a wide-spread or even a serious disease among cattle. The tuberculosis question has now been discussed so much that such statements can be accounted for only by the assumption that their authors wilfully disregard knowledge that they may easily acquire and in this case, it is useless to discuss the subject with them.

“Another objection, but a sincere one, that falls under the same heading, is based on the belief of some that tuberculosis of man and of cattle are distinct diseases or, perhaps, such distinct varieties of the same disease that there is no danger that this affection may be transmitted from cattle to man. Quite recently this argument has been taken up in force by writers in agricultural papers as a result of the expression of an opinion before the legislative committee appointed to inquire into the tuberculosis question in New York State. This opinion is to the effect that there is no danger that tuberculosis of man may result from the ingestion of the milk of tuberculosis cows, and is supplemented by the statements of several gentlemen who had owned tuberculous cows, had used the milk in their families, and otherwise, and had observed no bad results. If the matter were only one of opinion it would be sufficient to arrange the opposing opinions in two sets and weigh one set against the other, having due regard for the standing attainments and experience of those responsible for them, somewhat after the manner of a French court-martial. If this were done, there can be no doubt that the weight of evidence, as is shown by the expressions at the recent tuberculosis congresses in Paris and Berlin, would support the doctrine of transmissibility. But the question is not one of opinion, it is one of fact, and opinions count only as they have facts to support them. In this connection, we must remember that a positive observation records a fact and is worth innumerable negative observations. If a man should say, for example, that he and many of his friends had traveled without injury on railroads for years and that he did not believe in railroad accidents, there would be little consolation in this statement to the man whose child was killed in a railroad wreck, no matter how many endorsements the opinion might have. Thousands have been exposed to cholera and yellow fever without injury. Does this prove that these diseases are not contagious?

“When it is said that if tuberculosis was carried by the milk of tubercular cows there would be far more tuberculosis among milk consumers than there is, we must bear in mind that the great majority of cows are not tubercular and that only a certain percentage of the tubercular ones furnish milk that contains tubercle bacilli. And we must not forget that tuberculosis is

extremely prevalent among the people and that while it kills from one-eighth to one-seventh of mankind it is even more prevalent than these figures indicate for tubercular lesions exist in many people who die from other causes. If there are those who hesitate to believe that tuberculous milk may cause tuberculosis on account of the alleged limited prevalence of this disease among people, how many people would have to become tubercular to convince them? At present, tuberculosis is the most widespread and fatal disease of man—a veritable scourge.

“As to the identity of the tubercle bacilli from tubercular men and cattle, the observations on this phase of our subject cannot here be reviewed in detail, and it is perhaps sufficient to say that they were declared to be the same in 1882 by Koch, their discoverer, and that since that time this view has been held by almost all bacteriologists, and no points of difference have been pointed out by any one who has studied these germs in any part of the world that are even as great as those observed between the germs of many diseases that are confined to but one species of animals.\* Such comparative observations and experiments as to virulence as have been made with tubercle bacilli from cattle and man indicate that, as a rule, the former are the more virulent. The germs of tuberculosis of cattle have been transmitted by either intentional or accidental inoculation to, and have produced fatal tuberculosis in horses, donkeys, swine, cats, dogs, sheep, goats, rabbits, guinea pigs and man. The milk from tubercular cows has been the cause of tuberculosis in numerous feeding experiments performed on calves, swine, dogs, cats, colts and other animals. The type of lesions produced in such cases have been observed in children and in others that have consumed milk from tubercular cows, and in many of these cases no other source of the disease was evident. To those who ask for further proof of the transmission of tuberculosis from cattle to man there can be but one convincing demonstration, and as that could be obtained only by a deliberate feeding experiment on a person known to be free from tuberculosis and protected from all sources of infection excepting through the food, it is needless to say that this piece of evidence will not be adduced.

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\* Observe the morphological and cultural differences that may be found in the bacilli of diphtheria from different cases, and in the germs of hog cholera, glanders and actinomycosis.



"It is generally believed that usually people who contract tuberculosis are infected by way of the respiratory tract and that infection by food is rare among infants and invalids. It is undoubtedly true that in a large measure the general health of a person determines his resistance to the attacks of the tubercle bacilli when introduced into the digestive or respiratory passages. It is natural, therefore, that as houses and workshops are improved in respect to lighting, ventilating, heating and cleanliness, and as the contagious nature of tuberculosis is recognized more and more, the disease should become less prevalent—and this has actually happened during the past twenty-five years and to a marked degree. In the meantime, tuberculosis of cattle has been on the increase. Does this, as is frequently claimed, show the fallacy of the view that tuberculosis of cattle has some causal relation to tuberculosis of man? Evidently not, unless it is held that tuberculosis of cattle is the principal cause of tuberculosis of man. If the reserve fund of a bank is constantly falling, does this show that a particular depositor has reduced patronage? Since there are more productive causes of tuberculosis in man than the milk from tubercular cows, is this a reason why this source of disease should not be removed?

"2. In reference to the objection to all public action on the ground that it cannot be successful, it is well to consider the reasons upon which this allegation is based. It is claimed, for example, that tuberculosis is produced by bad conditions as to stabling and herd management or that these conditions are indispensable to its development and progress and that, therefore, the disease cannot be held in check until what the advocates of this view term "the root of the trouble" is cut off. That is, until farmers have clean, well lighted and ventilated barns and keep their cattle in a "natural" way it is useless to attempt to limit this disease. This view is carried so far by some that they hold that tuberculosis may originate *de novo* when the conditions as to stabling are bad.

"This ground has been gone over so often since 1882 that it is useless to cover it at length here. As sufficient proof that these views will not stand a test, I have only to call your attention to the well known fact that many of the most extensively tuberculosis herds have been kept in the best possible barns and subject to conditions that, in the light of our present knowledge,

must be looked upon as perfect with the exception that tubercular animals were not rigidly excluded by the application of the tuberculin test when the herds were established. As a recent notable example of such an incident, I may cite the case of the Queen's dairy herd at Windsor. As a matter of fact, tuberculosis may spread under the best practicable stabling conditions.

"On the other hand, the tuberculosis test has been applied to a large number of herds in Pennsylvania that are kept under the worst conditions and has, in many instances, failed to disclose the presence of a single tubercular cow. As coming under such bad conditions I may mention continuous stabulation for six months each year; close, dark and filthy stables and high and stimulating feeding on mill feeds and ensilage. Where herds kept in this way are sound, it is because it has not happened that a tubercular cow has been added to them.

"Another objection of this class is that no matter how thoroughly tuberculosis is eradicated among cattle it will soon return unless they are excluded from direct or indirect contact with tubercular people, tubercular dogs, cats, rats, swine, horses, etc., etc. As a matter of fact, though there are very many recorded instances in which tuberculosis has undoubtedly passed from cattle to other animals, and there is abundant proof that tubercular cattle are the chief source of tuberculosis in other animals which consumed their milk or tubercular tissues, I have not found one reported case in which it was even suspected that tubercular disease had passed in the opposite direction. While the theoretical possibility of such transmission cannot be denied, cattle are not exposed to infection from other animals, first, because, they do not consume their products and, second, because they do not associate with them closely, as with their own kind, and are thus not exposed to more than a very few of the tubercle bacilli emanating from them. Again, the comparative rarity of tuberculosis in animals other than cattle, and swine that have been fed on the milk from tuberculosis herds, reduces this alleged danger to such insignificant proportions that it may be safely disregarded in all cases excepting those in which there are obvious reasons for considering it.

"As to the danger of transmission of tuberculosis from men to cattle, the recent experimental work of Dr. Theobald Smith and Dr. Langdon Frothingham, and, in addition, numerous

inoculations and feedings of calves with sputum from consumptives, at the laboratory of the Pennsylvania State Live Stock Sanitary Board, have shown that tubercular sputum from man usually possesses but a low degree of virulence for cattle. Then, too, in some places, as Nantucket, Cape Cod and Saranac, there is much tuberculosis among people and little among cattle. This condition also prevailed in Japan until recently.

"Indeed, there is as little danger that cattle may become infected with tuberculosis from other animals as that a flood may be caused in the Mississippi river by discharge of water from a bayou fed from it.

"B. 1. Objections to the use of tuberculin are becoming rarer and rarer. It was natural that there should have been much objection to its use in the beginning when its method of manufacture and properties were unknown and when special attempts were made to use it against the wishes of the owners of cattle. Reference to the records of thousands of animals that have been tested with tuberculin show that there is no ground to fear that it will injure healthy cattle. That it is not infallible has not been claimed, so far as I am aware. There is nothing in the science of medicine that is infallible and all that is claimed for tuberculin is that it is exceedingly reliable and gives far more accurate results than have ever been obtained without it. Where an animal reacts in a characteristic manner to tuberculin that animal is tubercular in almost every instance. In the work of the State Live Stock Sanitary Board of Pennsylvania tubercular lesions have not been found in six animals condemned by the use of tuberculin, and this out of 4,561 cattle destroyed. The errors, therefore, in this direction, are infinitesimal.

"As to how many animals that are actually diseased are overlooked upon physical examination, and also fail to respond to the tuberculin test, there has been but little opportunity in this country to obtain knowledge. The fact that tuberculosis has been eradicated from so many herds by the use of tuberculin and that herds have remained free from tuberculosis during the several years that they have continued under observations, shows that have been well inspected. There are, however, a few cases, some of which have occurred under my own observation, in which, for some unknown reason, infecting cows that could not

be detected clinically have failed to respond to the injection of tuberculin and have not been detected until after they have conveyed disease to some of their associates. For example, in one instance all of the reacting animals were removed from a herd and it was supposed that the herd had been placed on a healthy basis. Subsequent testing, after an interval of a year, showed the presence of several reacting cows. All of these were removed, and the herd was again tested after six months and more reacting cattle were found. At the last test, among others, a cow that had been in the herd for several years responded and was destroyed and was found to contain advanced lesions of tuberculosis. Since that time the herd has been twice tested and has been kept under the most careful observations and no more cases have appeared. Why this infecting cow failed twice to respond to tuberculin is unknown. The case is mentioned here to emphasize the fact that tuberculin is not infallible and that it must be used carefully and with judgment and that in herds extensively infected the test must be repeated. This case and its occasional counterparts cannot be used to support an argument against tuberculin because they are distinctly exceptional cases, and against such exceptional cases there may be arrayed hundreds in which the trustworthiness of the test is shown. No one can deny that tuberculin is the most accurate diagnostic known. It is not perfect, it is only the best.

“A more popular objection to the use of tuberculin than that it fails to disclose the presence of existing disease is, that it is too searching and indicates, by producing a reaction, that animals are tubercular, when such animals are frequently infected to such a slight extent as to be of no consequence. It is true that a large number of early cases of tuberculosis are detected by the use of tuberculin. Many of these animals, it is alleged, would recover from tuberculosis, if not interfered with. Perhaps from one-fourth to one-third of the animals that are found to be tubercular by the use of tuberculin are not excreting tubercle bacilli at that time, and it may be that in the case of a few of them the lesions would become encysted and calcareous, constituting practical recovery. There is no reason to doubt that a large portion of the reacting cows that are not excreting tubercle bacilli when tested will, sooner or later, reach a point where they will become infecting.

*"If this disease is to be eradicated from a herd, it is not only important that the cows that are actually spreading tubercle bacilli shall be removed from contact with healthy cows, but also that the animals shall be removed that are almost sure to be capable of spreading disease in the future.*

"I have heard the remark made when a cow has been killed that showed slight lesions of tuberculosis, that the condemnation of such an animal is unwarranted, because the disease is of such slight extent that the animal would recover or remain harmless for several years. Such statements express bold opinions for which there is no warrant. Cows that are most extensively diseased and in which the disease has pursued a rapid course were at first infected in but one small place and the lesions were as slight as in the cases so alluded to. No one can tell from the appearance of a fresh tubercle whether, if the natural progress of the disease had not been interfered with, it would have terminated in generalized tuberculosis or whether it would have progressed to a certain extent and then have remained stationary. If the outcome of the disease cannot be anticipated where the diseased part is thus exposed to the eye and can be subjected to examination in the laboratory, how much more difficult it is to prophesy what course the disease will follow in a reacting cow that is infected to an unknown extent and *may* harbor extensive lesions!

*"it is of the highest importance that tubercular animals shall be detected before they have reached the infecting state.* When an animal in this condition is removed from the herd the expense is slight, but if this animal is allowed to remain in the herd until it has commenced to sow the seeds of disease among its associates, it becomes necessary not only to remove this individual, but also the others that have become infected from it.

"2. The payment of indemnity for tubercular animals condemned and destroyed is sometimes objected to on the ground that such animals have no value and it is unjust to tax the public to pay for them. It is also held that a tubercular animal is a public nuisance and should be disposed of at the expense of the owner as some other public nuisances are allayed.

"The claim that a tubercular cow has no value cannot be sustained **excepting** in the case of a cow in an advanced stage of

disease. A tubercular cow unless extensively diseased can produce a healthy calf that will remain healthy if certain precautions are observed. Moreover, a tubercular cow produces milk that is perfectly wholesome after it is cooked, and the same may be said as to the flesh of a tubercular animal. Therefore, if the public demands that tubercular cattle shall be killed, it demands the confiscation of valuable private property for the welfare of the public, and even the State has no right to confiscate a man's lawful property without indemnity.

“The payment of indemnity for tubercular animals is in the line of good business policy. If tuberculosis is to be suppressed among cattle, tubercular cattle must be discovered. If they are not discovered and reported by their owners, it will be necessary to employ an army of inspectors to hunt for them. If the discovery of a tubercular cow would bring loss to its owner, attempts would be made to dispose of it as quickly as possible, thus distributing disease widely, or to conceal it. Such an inspection and method of control would be unpopular and its enforcement would be exceedingly difficult, if not impossible. It is far cheaper to make each herd owner an inspector of his own cattle, to discover and report suspicious cases among his own animals.

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“There is now consensus of opinion to the effect that some control should be exercised over tubercular cattle. The growth of public opinion on this question is interesting and instructive. At first there was violent opposition to any action on this question and it was denied that tuberculosis of cattle was a disease of any consequence. Then, when the tuberculin test came into use it was objected to most strenuously and all sorts of unfounded objections to it were made, and the most dismal prophecies as to the results of its use were published. At the same time there appeared a demand on the part of health boards and people in cities that their meat and milk should be protected from contamination with tubercle bacilli. Active controversies were instituted between the consuming public, represented by the daily papers and some sanitarians, on one side, and the producers, represented by the agricultural press, on the other. On

one hand, the dangers from tuberculous meat and milk were set forth and were sometimes highly colored and exaggerated, while on the other hand they were minimized and facts concerning them were suppressed.

“The Bureau of Animal Industry, the experiment stations and veterinarians generally have kept a middle ground, and the position of veterinarians during this controversy has been somewhat uncomfortable. They have been berated by some for not doing what was pointed out as their duty and at once examining, quarantining and destroying all of the tubercular cattle to be found. By the other party, they were accused of gross exaggeration and misrepresentation, of doing too much and interfering with old established customs and conditions and with private property and personal rights that were held to be of no consequence to the public. During this controversy, and before much accurate information was readily available upon this question, some writers stated so many things that are now known to be untrue that, even if they so desire, they find some difficulty in assuming an unbiased position at the present stage of the discussion. This is shown in a very amusing manner by the tendency of such writers to set up and knock down men of straw. They have ceased to say that tuberculosis of cattle is a disease of no importance and that it may be produced by tuberculin or that abortion or permanent loss of condition will follow the use of this diagnostic agent. They no longer say that the milk from tubercular cows is harmless and may be used with impunity, no matter how extensive the disease.

“That the attitude of some agricultural papers is not yet altogether fair is shown by their fondness for publishing misleading and unsubstantiated reports of alleged instances in which many healthy cattle have been condemned and killed and other items calculated to discourage efforts to repress tuberculosis of cattle. Moreover, there is an inclination to publish observations and opinions that tend to minimize the importance of this subject and to refrain from publishing carefully digested facts in regard to it. This is illustrated by a recent instance: the last Royal Commission on Tuberculosis that was appointed by the English Parliament was a body of prominent men selected on account of their special ability to care-

fully weigh and consider this subject and to recommend the administrative measure necessary to repress tuberculosis. This commission called before it and obtained evidence from farmers, dairymen, butchers, cattle shippers and many of the most eminent veterinarians, pathologists, bacteriologists and the most experienced health officers in England. Nearly two years was devoted to this inquiry and it was conducted in a most exhaustive manner. The extensive and valuable report of this commission has scarcely been noticed by the agricultural papers of the United States. On the other hand, a certain professor in an agricultural college in England, a man who has no special knowledge of the diseases of animals, and does not claim to have, recently expressed his individual opinion in regard to tuberculosis in a most intemperate and unreasoning way and this statement has been printed and copied and reprinted and quoted by our own agricultural papers and writers to a remarkable extent.

“As against this attitude of active and passive opposition to the acquirement of a fair knowledge of the facts in regard to this question, that has been manifested by some papers, there are some notable exceptions, and these papers deserve praise and confidence.

“But the situation is gradually being made clear and at this time the most pressing question is not—Shall tuberculosis of cattle be suppressed? but is—How shall tuberculosis of cattle be suppressed? But before deciding upon a plan it is necessary to review some of the facts in regard to the method by which tuberculosis is distributed among cattle and the methods that have been suggested to check this distribution.

“In the first place, we must recognize that tuberculosis is a contagious disease that may be propagated by cohabitation of tubercular with healthy animals and to a certain degree by feeding the products of animals that are tubercular. Calves usually acquire tuberculosis by feeding upon the milk of tubercular cows. Older cattle usually acquire the disease by cohabitation. We must not disregard the fact that tuberculosis is sometimes congenital, although this method of transmission is rare and is likely to occur only from cows that are extensively diseased. It is necessary to at once recognize the inefficiency of suppressive measures directed wholly along the line of improved methods of



breeding, housing and feeding. Tuberculosis is not a respecter of any breed or cross, it is not produced and cannot be prevented by any method of feeding, and it occurs in stables that are of the best construction, and among cattle that are handled in the most rational way.

"It is also necessary to bear in mind that tuberculosis is frequently extensively developed in animals that show no external signs of disease and among animals that appear to be and are believed, until tested, to be in perfect health, and that such animals may excrete and scatter tubercle bacilli. Most of the infectious material that is distributed by cattle comes from animals visibly diseased, but much tuberculous material, and enough to propagate the disease indefinitely, is excreted by animals that are not visibly diseased.

"In view of these facts, we may conclude that if tuberculosis is to be suppressed among cattle, it is necessary to prevent the use of infectious food and contact with infected animals and objects contaminated by them; and if these measures are to be enforced, their value will be in proportion to the thoroughness of separation (and this depends on the accuracy of the method of diagnosis that is employed), and upon the efficiency of the disinfection that follows the removal of infected animals.

"Since the tuberculin test is by far the most accurate diagnostic that is at present available, it should enter into every plan for the suppression of tuberculosis.

"If we accept the above as a basis upon which a plan for the suppression of tuberculosis should begin, and proceed from this to the formulation of a practical measure, we are at once confronted by several difficulties which may be classified as follows:

1. As to the selection of herds for inspection.
2. As to the treatment of reacting animals.
3. As to the prevention of the re-infection of inspected herds.
4. As to the expense.

"Each of our states contains so many herds in which so many people, so much capital and so many interests are involved that the matter as to the selection of herds for examination should be carefully considered. All the herds in a state may be tested or all the herds in certain districts where tuberculosis is believed to prevail most extensively; or, the herds for testing may be

selected by physical examiners who examine all the herds in the state or in certain districts. All herds supplying milk for shipment or for consumption as milk or herds reported as probably diseased may be tested.

“The selection for compulsory examination of a part of the herds is sure to occasion friction and opposition. Many herds will be tested that do not need testing (useless expense) and many herds will be overlooked that should be examined.

“The other method is to allow the herd owners themselves to select herds for examination. Every herd owner who appreciates the facts in regard to tuberculosis, will desire to rid his herd of this disease, provided the immediate loss is not greater than he can stand, and provided the conditions he must observe are not more onerous than the presence of the disease.

“In regard to disposing of reacting animals, this can be done by requiring that they shall be slaughtered at once or that all or that a portion of them, depending upon the stage of disease, may be kept in quarantine for a limited or for an indefinite period. The method of treating the animals after testing will depend upon their value and upon the character of dairying in the districts in which they are found and upon the condition of public sentiment in that district.

“When the animals are slaughtered, the carcasses may be destroyed or used for technical purposes, or, if killed in slaughterhouses, the meat of some may be used for food depending, again, on the stage of the disease. It is only in advanced or generalized cases that tubercle bacilli enter the blood and infect the meat. This condition can be recognized by competent inspection and harmful meat kept from the market. Moreover, cooking meat sterilizes it. The disposition of the carcasses of reacting animals will depend upon the extent to which the public is informed on this question.

“The matter of expense is a local one and the work of each state must be regulated in accordance with the funds that are available for this purpose. Where reacting cattle are killed at once and paid for the expense is very great. Where the carcasses that are suitable for food are sold for this purpose the expense is materially reduced.

“According to the method of selecting herds for treatment, the various methods for controlling tuberculosis may be divided

into those that are compulsory, those that are voluntary, and those that are compulsory in some respects and voluntary in others.

“The most extreme example of the compulsory method is the one that was instituted some years ago in Massachusetts. The general features of this measure are well known, and it is only necessary to say here that it did not succeed, and for the reason that it did not enlist the support of the public. A somewhat similar but less vigorous method was adopted in Belgium, in January, 1896, and this, also, has been materially modified, because it became evident that it was too onerous and too expensive. Massachusetts and Belgium are both small, rich states, with comparatively small dairy interests. The failure of these methods under such conditions means that they can scarcely be expected to succeed elsewhere.

“A method of compulsory control that was proposed by Professor Siedamgrotzky at the meeting of the International Veterinary Congress, held in Baden Baden last month, is based on the pre-existence of a general system of meat inspection covering all animals killed for food, and the compulsory insurance of cattle against tuberculosis. Under this method, herds from which tubercular cattle are reported by meat inspectors shall be examined and measures taken for the suppression of the disease at the expense of the state. The tubercular cattle shall, when killed, be used for food if suitable. If they are condemned or parts condemned, 75 per cent. to 80 per cent. of the loss shall be made good; one-third of this amount being contributed from public funds, and two-thirds, or approximately one-half the entire loss, to be paid from the insurance funds. The owner would then sustain one-fourth of the entire loss.

“In France, the laws of 1888 and 1898 provide that animals discovered to be tubercular shall be quarantined and sold only to be killed, and, if the meat is condemned, the owners are reimbursed to the extent of one-half the value if the disease is generalized, and three-fourths of the value if the disease is localized.

“As voluntary methods of control, we may consider those that are independent and not assessed directly by the State, and those that are encouraged and supported by the State. The first

of these will succeed in proportion to the desire of herd owners that the disease shall be suppressed, and to their ability to undertake the measures that are necessary. It will succeed best in districts characterized by the greatest intelligence and wealth of the rural population. It cannot be expected to succeed as a general measure. But when the system is supported by the state, its application will be wider. The extent to which any voluntary system will cover the herds of a state will depend largely on the proportion of the expense and loss that the state will bear. Every voluntary system must include, as one of its integral parts, a plan for distributing information on the general subject, and information as to the part that the state will assume of the burden of suppressing tuberculosis.

“In Denmark, under the leadership of Professor Bang, a most successful struggle is being waged against tuberculosis. The plan there is largely voluntary. Upon application, tuberculosis herds are examined and tested. Tuberculin and veterinary services are furnished by the state. Tubercular cattle must be destroyed if the udder is affected, or if the disease is advanced. The other cattle may be kept and used under regulations requiring them to be kept apart from healthy cattle, the removal of the calves from infected cows and the rearing of them on pasteurized milk, or milk from healthy cows. It is the almost universal practice in Denmark to pasteurize the cream used for making butter, and creameries are now required by law to heat skim milk before it is returned to the farm and to burn the separator sediment. In addition, the prompt destruction, with partial indemnity, of udder cases is now required.

“In Norway a plan for controlling tuberculosis has been developed and operated by Dr. Malm, and this plan appears to work smoothly and to produce good results. It is similar to the Danish system.

“In reference now to the Pennsylvania plan for suppressing tuberculosis: Pennsylvania has an area of 45,000 square miles, about 6,000,000 inhabitants and about 2,000,000 cattle. As no census has been taken for nine years, these figures must be approximated until after the census of 1900.

“The agriculture of Pennsylvania is mixed and the dairy industry is well developed. Many herds are devoted to the production of milk for shipment to Philadelphia, New York,

Pittsburg, Baltimore and the other, lesser cities. Much butter is made at the 800 creameries scattered over the state. The farmers in the eastern counties purchase many of their cows, about 20,000 each year, from outside of the state, and probably twice as many from the central, western and southern counties. There are also some districts in which many steers are fed. The steers come from the western part of the state, from the stock yards at Chicago, Buffalo and Pittsburg, and from West Virginia. One county, Lancaster, feeds from 20,000 to 25,000 steers each winter.

"As stated above, there is much differences as to the extent to which tuberculosis prevails in different parts of Pennsylvania. It is most common in the old dairy districts. Some herds are infected to the extent of 30 to 100 per cent., other herds contain few infected animals, and others—the great majority—are free from tuberculosis. Of all of the cattle in the state the number of those infected appears to be between 2 and 3 per cent.

"In 1895 a law was enacted creating the State Live Stock Sanitary Board and defining its duties. This board is organized to suppress, control, or eradicate dangerous, contagious or infectious diseases of animals; it is composed of the Governor, the Secretary of Agriculture, the Dairy and Food Commissioner, and the State Veterinarian. The Governor is President, the Secretary of Agriculture is Vice-President, the Dairy and Food Commissioner is Treasurer, and the State Veterinarian is Secretary of the Board. This Board has authority within certain limits, to make its own rules and regulations and to enforce them. The board has received a grant of \$40,000 per year for the support of its field work in relation to all diseases of animals; anthrax, glanders, rabies, etc., as well as tuberculosis. In addition, it has a small grant used for the support of a laboratory for making the tuberculin, mallein and anthrax vaccine needed by the board, and for research work.

"The work of the State Live Stock Sanitary Board did not begin until 1896. Up to that time the state had rendered herd owners no assistance in the suppression of tuberculosis, excepting in the case of a few herds examined under the authority of the Secretary of the State Board of Agriculture. It was evident at that time that the herd owners were generally interested in freeing their herds from infection and that if a satisfactory plan

for co-operation were prepared, it would be accepted by many. It was evident that there was not money enough available to justify any scheme for the examination of all herds, and it was realized that if sufficient money were available the success that would probably attend such an effort would not justify either the expenditure, or the interference with commerce and with farming operations.

“To examine all of the herds in one district, and to neglect those in others would be unjust and would be to excite opposition and invite defeat. While it was undoubtedly desirable to do away as promptly as possible with all advanced and udder cases, it was realized that to do this alone would be to permit the disease to continue indefinitely and that this would not reduce the distribution of tuberculosis. To purchase at good prices advanced and udder cases alone and not free the herd from infection and disinfect the premises, would be to transform a work that should have permanent sanitary value into a free live stock insurance operation. If a herd owner is not himself interested in suppressing tuberculosis among his cattle, the work can only be done by the application of force and the use of a system of veterinary sanitary police that is not available in Pennsylvania.

“Since so many herd owners did wish to eradicate tuberculosis, it was arranged that these should have held first and that no herds should be tested with tuberculin excepting upon application from the owner. Application is made by signing a printed form which is also a contract under which the owner agrees to dispose of his reacting cattle in accordance with the rules of the board, to disinfect, to correct faulty sanitary conditions and to do all that he can to keep his herd free from tuberculosis in the future. After test, the reacting animals are separated and the owner is permitted to keep alive those that show no clinical signs of tuberculosis if they are housed and cared for apart from the rest of the herd, if their calves are removed from the premises occupied by the cows as soon as born and if the milk will not be used without pasteurization. Or, the reacting animal may be killed at once after appraisal. The limit of appraisement for cattle is \$25 for unregistered animals and \$50 for registered animals. The law provides that animals shall be appraised according to

their actual value and condition at the time of the appraisement, but not to exceed these limits. An animal in an advanced state of disease is considered to have lost its value except for fertilizing purposes and is appraised accordingly.

"It is interesting to note that, excepting in the rarest instances, farmers do not care to keep reacting cattle on the farm subject to the conditions it is necessary to impose. The extra time and expense necessary for their care and the fact that their presence is usually misunderstood by the neighborhood and that there is no market for heated milk, combine to make this practice unpopular. It is not followed, excepting once in a while in the case of a valuable cow that is in calf. The reacting cattle are usually killed in rendering works and made into fertilizer.

"Our public complaisantly accepts and eats meat that is unsuspected, with the full knowledge that many diseased animals are killed for food, but when a cow has been tested and declared tubercular an outcry is at once made against the sale of its meat, no matter how slight the lesion may be. This illogical but firmly rooted prejudice makes it impossible, at present, for the state to recover the meat value of a portion of these carcasses.

"An attempt is always made to arrange for the destruction of tubercular animals in the neighborhood in which they are found. This makes it possible for interested persons to see the post-mortem examinations and to gain information. This method of informing the public is supplemented by circulars and papers in agricultural reports.

"Recently, the State Live Stock Sanitary Board has provided for the isolation and quarantine of such advanced and udder cases as are found. If their owners do not wish to have their entire herds tested, these animals may be appraised at a nominal price and destroyed, and the appraisement will be paid when the premises have been satisfactorily disinfected by the owner.

"The demand for voluntary inspections has grown at a rapid rate and most rapidly in the sections in which the greatest number of inspections have been made. At this time each applicant is required to file a statement as to his reasons for desiring his herd tested and, since applications are so very numerous and the funds are limited, inspection is not made unless there are satisfactory reasons to believe that the herd is infected.

"In the beginning of this work about 25 per cent. of the cattle in inspected herds were tubercular; now, although the method of selecting herds to test is more rigid and there are more infected herds reported by their owners to select from, only 12.6 per cent. of the cattle in inspected herds are tubercular. These figures represent the conditions in the most extensively infected herds in the State. Up to this time the number of cattle tested under these regulations is 33,147, of which 4,561, or 13.7 per cent., were tubercular. For these \$102,909.62 have been paid, or an average of \$22.56 per head.

"In 1897 it became evident that some action should be taken to keep tubercular animals from coming into Pennsylvania, and such action was demanded by several representative agricultural organizations. Several States east of Pennsylvania had such protection and increased knowledge of tuberculosis, and a desire to free herds from it leads to the sale and distribution of many infected herds. Moreover many farmers wanted to be able to purchase tested cows. Hence the law that went into operation January 1, 1898, that requires all dairy cows and cattle for breeding purposes to be tested if shipped to Pennsylvania. Since that time, New Jersey, Illinois and Kansas have enacted similar laws.

"As knowledge in relation to the manner of warfare that is successful against tuberculosis become more and more widely distributed it is constantly applied without State aid by those who are able to do so, and the work of suppression is going on much faster than indicated by the statistics of the public work alone.

"The operations have worked smoothly throughout, and instead of objections to the effect that too much is done, there is a strong desire on the part of herd owners that more work shall be undertaken in this direction. This is shown by the fact that there are more than three times as many applications for tests as can be responded to, and also by the action of a prominent breeders' organization asking that herds believed to be tuberculous shall be examined, whether the owner so wishes or not, when a request to this effect is signed by three cattle owners in the neighborhood. All of the work has been facilitated by the general appreciation of the fact that it is conducted under the



wing of the State Agricultural Department for the benefit of cattle owners.

"The field work has been done by the general practitioners of the State, and Pennsylvania is fortunate in having a body of veterinarians who have been able to assume the work of enforcing these measures in a way that has won and retained the confidence of the public.

"With the establishment of a system of meat inspection under rational regulations, many economies could be effected and the work could progress faster without increased cost.

"Since tuberculosis has been exterminated on so many farms and in so many districts, which are constantly growing more numerous, and since the flow of tubercular cattle into the State has been cut off, are we not justified in looking forward to the time when the losses from this disease will be reduced to insignificant proportions?"

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During the year 1899, 56,387 testing doses of tuberculin were sent out from the laboratory for use in testing dairy cows and cattle for breeding purposes shipped into Pennsylvania, for testing cattle in Pennsylvania at the expense of their owners and for testing herds in Pennsylvania at the expense of the State.

The applications for herd tests have increased vastly in number during the year so that it has been impossible with the funds available for this work to respond to more than one-third of them. On this account, many herd owners have preferred to have the examinations made at once at their own expense and, if tubercular cattle have been found, they have desired the State to bear a share of the expense of disposing of them. To provide for these cases, and, so far as possible, to insure the permanency of the results for which State funds are expended, the following form of application has been prepared:

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To the State Live Stock Sanitary Board, Harrisburg, Pennsylvania:

Gentlemen: I have had my entire herd inspected and tested with tuberculin and have reason to believe that some of my cattle are affected with tuberculosis.

I have had this inspection and test made at my own expense and now wish to dispose of the diseased animals in accordance with the rules and regulations of the State Live Stock Sanitary Board and to avail myself of the assistance afforded by the Commonwealth in such cases. If such assistance is furnished, I agree to thereafter observe the precautions and measures and to employ the means recommended by your Board to prevent the reintroduction and redevelopment of tuberculosis in my herd.

My herd includes the following animals: Cows.....heifers over one year old.....bulls over one year old.....steers.....calves under one year old.....; total..... The milk from this herd is used by..... for .....

The cattle are,.....  
(State breed and whether registered.)

The inspection and test were made by..... of..... on ..... 190 ..

I certify that, to the best of my knowledge and belief, none of the dairy cows or cattle for breeding purposes in my herd have been brought from another state into Pennsylvania since January 1, 1898, without having been subjected to inspection and tuberculin test, as required by law.

Yours respectfully,  
.....  
(Address).....  
.....County, Pa.

The usual application form is the following:  
To the State Live Stock Sanitary Board, Harrisburg, Pennsylvania:

Gentlemen: I have reason to believe that some of my cattle are afflicted with tuberculosis, and I wish to have my entire herd inspected, and tested with tuberculin, if such test is deemed necessary by your representative, and the diseased animals disposed of according to the rules and regulations of the State Live Stock Sanitary Board.

I understand that this inspection and test are to be made at the expense of the Commonwealth and, in consideration thereof,

I agree to thereafter observe the precautions and measures and to employ the means recommended by your board to prevent the reintroduction and redevelopment of tuberculosis in my herd.

I certify that, to the best of my knowledge and belief, none of the dairy cows or cattle for breeding purposes in my herd have been brought from another state into Pennsylvania since January 1, 1898, without having been subjected to inspection and tuberculin test, as required by law.

Yours respectfully,

.....  
(Address).....  
.....County, Pa.

My herd includes the following animals: Cows....., heifers over one year old....., bulls over one year old....., steers....., calves under one year old.....; total.....  
The milk from this herd is used by..... for.....

The cattle are .....  
(State breed and whether registered.)

.....  
.....  
.....  
.....

The following are my reasons for believing that some of my cattle are afflicted with tuberculosis:

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In many instances an applicant for herd inspection will state that he has among his cattle one or more cases of tuberculosis of the udder or animals with advanced lesions in the lungs or in other parts of the body; animals that are presumably expelling

and distributing excessive quantities of tubercle bacilli. Since all herds cannot be examined at once, on account of the limitations of funds, these particularly dangerous animals would in many instances be kept alive and remain as centers of infection were they not condemned and taken over by the State in the manner provided by law. On this account, the State Live Stock Sanitary Board has authorized the immediate disposal of such animals as are afflicted with advanced or udder tuberculosis and the herds of which they are members are then tested fully as soon as they can be reached.

During the year 1899, 8,916 cattle have been tested at the expense of the State.

The number of tubercular cattle found in these herds, and in herds tested at the expense of their owners and the advanced or udder cases removed from other herds amount to 1,187. These cattle were paid for at an average of \$22.30 per head. The limit of appraisal is \$25.00 for unregistered and \$50.00 for registered stock.

The number of dairy cows and cattle for breeding purposes shipped into Pennsylvania during 1899 is 14,437. Of these, ninety-two were condemned as tubercular after arrival in this state. Many were tested before shipment and there is no way to determine how many were condemned as the result of such tests made in other states. It is known, however, that the dealers in cows are now very much more careful in regard to where they buy their cattle for sale in Pennsylvania. For example, fewer cows are purchased in New York on account of the large number from there that have been condemned.

#### HOG CHOLERA.

Hog Cholera has been reported during the year from sixteen counties as follows: Adams, Berks, Butler, Cambria, Chester, Cumberland, Dauphin, Erie, Franklin, Lawrence, Lebanon, Montgomery, Northampton, Schuylkill, Washington and York. Losses from this disease can only be approximated; it is certain that they have been great, although probably less than in 1898 when they were estimated to amount to \$400,000.

Hog cholera has been brought from other states to several localities in Pennsylvania during the past year. Most of the

outbreaks can be traced to hogs shipped from the west or south. There are only a few places in which the disease appears to have gained a firm foothold.

A satisfactory plan for controlling hog cholera—a plan that will provide for efficient work at a cost that is not prohibitive and that will not impose restrictions that are more onerous than the disease—remains to be developed. The countries of Europe in which hog cholera prevails have not had much success with their suppressive measures. Perhaps the most extensive application of the “stamping out” method has been in England. In that country the most strenuous efforts have been made to locate every outbreak, to quarantine all infected herds and premises and to purchase and destroy all infected swine. The labor expended in this direction is said to be equalled only by the work that was carried out during the time of the cattle plague in the years 1865-1866.

The outbreaks in England were 2,765 in 1879, when registration started; 5,682 in 1894, when the subject was transferred to the Board of Agriculture; 2,155 in 1897 and 2,514 in 1898. It will thus be seen that some ground is being gained but that progress is slow.

The experiments being made by the Bureau of Animal Industry in the suppression of hog cholera in Iowa are still under way, and it is yet impossible to determine whether the measures there being tried will be generally applicable.

Until a further test is made with the hog cholera serum by the Bureau of Animal Industry or other organization, the great desideratum in Pennsylvania is a method for obtaining early reports of new outbreaks so that these may be checked by quarantine and disinfection before whole neighborhoods are involved. A plan to obtain such early reports is now being prepared and it is believed that this, in connection with a system for closely quarantining herds originally infected, will prevent much distribution and loss.

#### MALIGNANT DYSENTERY.

Malignant Dysentery, “white scours” or “calf cholera” are names by which are designated an infectious and usually rapidly fatal disease of calves that develops within a day or two after birth. This disease is of high economic importance because it

is very prevalent in some dairy districts and carries away a large proportion of the calves that it is desired to raise. In my last annual report this disease was described at some length, but so many inquiries in regard to it have been received during the past year that it is quite evident that a further statement should be made in regard to it.

The following is a brief summary of the facts relating to this malady. The symptoms usually appear when the calf is from one to three days old. Sometimes the disease begins within a few hours after birth and some breeders claim that calves may be born with this complaint. The animal is at first strong and hearty. It usually stands up, partakes of nourishment and seems to be in all respects well. When the disease becomes manifest there is loss of appetite accompanied by depression and weakness. The calf then has difficulty in standing and sways when it walks. At times it appears to experience cramps and severe abdominal pain. Later, diarrhoea develops and this continues until death. The faeces are quite thin, they are of a yellowish or grayish color and have a peculiar offensive odor, later may become mixed with mucus and blood. Sometimes little flakes of coagulated milk occur in the discharges. The voiding of faeces may be accompanied by considerable pain. The abdomen is usually contracted and is sometimes sensitive to pressure. The temperature, as determined by measurement with the clinical thermometer, is above normal. The extremities, however, are cold because the heart is weak and the distribution of the blood is irregular and imperfect. Sometimes the fever becomes very pronounced, the temperature rising as high as 106 degrees Fahrenheit. The course of the disease is very rapid and usually terminates in death within from twenty-four to forty-eight hours from the onset. Sometimes, however, it is prolonged to four or five days or even a week.

The appearance of the calf afflicted with this disease in its typical form is most characteristic. If the animal can stand, its back is arched. Its expression is one of anxiety and pain. There is a discharge of saliva from the mouth that dribbles in strings from the lips and moistens the hair about the front of the neck and breast. The eyes lie deep in their sockets. The tail and the hair covering the inside of the thighs are soiled with

the light colored faeces. The animal is soon too weak to stand, it then lies flat on its side almost helpless. Occasionally it suffers from abdominal cramps and during this period will moan and kick convulsively.

The mortality from this disease ranges from 75 to 100 per cent. It is the belief of many herdsmen that calves that have recovered from this disease are of little value because they feel badly and always have a weak constitution.

Upon the postmortem examination, it is found that the carcass is very much emaciated. The most noticeable changes are in the lining membranes of the fourth or true stomach and the intestine. This membrane presents red swollen patches, especially in the region of the pylorus and the Peyers patches are also swollen and softened. Sometimes the rectum is prolapsed and its membrane swollen and of a dark color. In the abdominal cavity, there is a little thin, transparent, straw-colored fluid in which oval bacteria have been found by Monti and Verrati. The mesenteric lymphatic glands are usually somewhat swollen and upon cross-section are found to contain an abnormal amount of blood. These glands and the spleen contain the same oval bacteria that are found in the fluid in the peritoneal cavity. Usually the lungs are normal although sometimes they are in a condition of bronchial pneumonia resulting from rough drenching, during which medicines were poured into the wind pipe, or resulting from the prolonged recumbent position.

The bacillus first found in the tissues by Jensen has been studied carefully by him and by Monti Verrati. The organism is non-motile; does not form spores; it stains well with the usual analine colors but not with Grams or Weigerts stains. The organism grows either in or away from atmospheric air. Its cultures develop considerable gas, but this property is lost after the organism has been passed through several generations on artificial culture media. Growth on the ordinary culture media either at room temperature or in the incubator is good. The organism does not liquify gelatine nor blood serum. It is not pathogenic for rabbits, guinea pigs or white mice when inoculated beneath the skin; it is, however, when introduced into the peritoneal or pleura cavity.

Experiments made by Jensen and Low proved conclusively that this organism is the specific cause of the disease under dis-

cussion. Some observations indicate that under certain conditions the common colon bacillus may be transformed into this organism and that by passage through several calves its virulence is constantly increased. Frank and Jensen have in this way attempted to explain the fact that this form of dysentery sometimes occurs among calves where it is not possible to find any means whereby it could have been brought into the herd from without.

Since the cause of this disease has been discovered and its method of propagation has been determined, it is possible to combat it successfully. The premises upon which it occurs must be regarded as infected premises. The disease must be dealt with as an infectious disease and when handled in accordance with the principles that are thus indicated, it is comparatively easy to prevent. No progress could be made in preventing this disease when it was thought that it arose from improper feeding, some hereditary organs or certain kinds of stable construction, for when the disease was being combatted by attention to these points, the vital point, that is the destruction of the causative germ was not regarded. This disease resembles typhoid fever of man at least in so far that the germ causing it may be found in its most concentrated form in the faeces, and, as in typhoid fever, it is exceedingly important that these shall be so treated so as to destroy their virulence, and that portions of them shall not be distributed within the stable or about the premises occupied by calves.

The germs of dysentery are taken into the calf after it is born and by way of the digestive tract. They enter the calves mouth from the surface of the udder and teats, from the dust in the bedding of the stall, from the accumulations of manure on the stall partitions and walls and, in fact, from anything in the infected stable that the calf touches with its lips or tongue. There is not sufficient ground to believe that infection occurs before birth of the calf. The germs are so exceedingly virulent and the newly born calf has so little resistance that the progress of the malady is extremely rapid. The germ of dysentery is capable of living in a stable for a long period, perhaps for years. Dieckerhoff has observed that in one instance breeding was abandoned for one year on account of the prevalence of this



disease, but when at the expiration of this period, calves were again born into the same stable, they died of dysentery as promptly as though the disease had had a continuous existence. It has been observed frequently that the disease is most prevalent in winter when the cows are stabled permanently; it is less prevalent in spring when they are out of doors part of the time and is least prevalent in summer while the cows are kept out of doors. Calves that are born in the pasture are very rarely afflicted with dysentery. It has been observed by Dieckerhoff that when cows are moved from the infected premises one or two weeks before calving, the newly born calves may, nevertheless, contract dysentery. On the other hand, if the cows are removed from the infected premises one or two months before calving, the calves usually remain healthy. This important observation is explained by the fact that during the longer period of from one to two months the germs of dysentery that have been deposited on the skin and on the hair of the cow while she was in the infected stable have been shaken off, lost or destroyed by the fresh air and sun's rays so that when the calf is born there is no opportunity for infection from the germs that had been carried on the surface of the cow. If, however, the interval is too short there has not been time enough for the germ carried on the skin of the cow to be destroyed and they are ready to be taken up by the calf when it is born.

*Infectious dysentery of calves may be prevented* with almost absolute certainty by the removal of the pregnant cow from the infected premises six or eight weeks before the calf is born. It is best to keep the cow out of doors during this period. If this is not feasible, then she should occupy premises that have been thoroughly disinfected or are known to be uninfected and should be cared for by an attendant who does not come in contact with the infected premises. If the disease is to be eradicated on a farm, it is necessary to practice the most thorough disinfection, to improve faulty drainage, to remove stagnant water, to prevent the accumulation of manure about the yards and buildings and then to renew the cleansing and disinfection from time to time until all danger is passed. A great deal can be accomplished by improving sanitary conditions of the stable. If the stable is made light and airy, if the walls are dry and if the accumulation of

manure and dirt is not permitted and the interior is white-washed occasionally, there will be little opportunity for the multiplication or even for the preservation of the germs of this disease. The preventive treatment, then, is to clean and disinfect the premises that may be contaminated by this germ. The cow should be removed from the building in which infectious dysentery has occurred at least one month, and better, two months before calving. If it is not possible to remove her from the infected premises for as long a period as this, the entire skin should be washed off with a warm two per cent. solution of creolin at least twice during the week prior to the birth of the calf. The calf when born should be kept warm and dry.

*The treatment of the disease* in the already infected calf is not at all satisfactory because the animal has so little resistance and the disease is so rapid that death occurs in the great majority of cases. However, something can be done by appropriate treatment so that if the animal is at all valuable, this should not be neglected even if the more profitable preventative measures have been. Creolin may be given in doses of about thirty drops diluted with warm water, every two or three hours. Small doses of brandy given with white of egg may be useful, laudanum and tanic acid in solution and magnesium carbonate are of benefit in some cases. Salol and salicylic acid are also recommended. Tincture of opium in combination with tanic acid and glycerine is a mixture that is highly prized in some localities. If, perchance, a calf is born in the infected premises it should be removed from them and from its dam with the greatest celerity and taken to the wagon shed, sheep fold or horse stable, and fed on milk that has been heated or on milk obtained from a herd and a stable in which calf dysentery has not occurred.

#### ACTINOMYCOSIS.

Actinomycosis or lumpy jaw is a disease that is frequently reported to the State Live Stock Sanitary Board with the request that the afflicted animal shall be appraised and destroyed. It has never been the practice of the State Live Stock Sanitary Board to deal with this disease in this way and for the reason that no evidence is at hand to indicate that in this State actinomycosis has been transmitted from an infected animal to

another one associated with it. This disease is caused by a fungus that grows on vegetation; notably barley, rye and the several varieties of grass. The fungus taken into the mouth of the cow on sharp pieces of straw or vegetable spines may, by this means, be inoculated into the mucous membrane, where they proliferate and produce the well known lesions of actinomycosis. Sometimes the inoculation and proliferation occur in the tongue, in the throat or even in the walls of the stomach or the lungs so that actinomycosis is by no means a disease of the jaw alone.

The iodide of potash treatment has proven very successful in this disease and is usually satisfactory if used before the lesions are very extensive. When an actinomycotic animal is killed for beef, care should be taken to exclude from consumption, and destroy all of the diseased portions of the carcass.

#### CONTAGIOUS OPHTHALMIA.

Contagious Ophthalmia of cattle has been brought into a number of places in Pennsylvania during the past year by western cattle and has in each instance occasioned considerable anxiety and loss. The disease consists in more or less violent inflammation of the delicate membrane lining the eye lids and of the transparent tissue forming the front of the eye ball, the cornea. In especially virulent or neglected cases, the inflammation may be so intense as to involve all the structures of the eye and cause permanent blindness. The disease is no doubt caused by a micro-organism although the specific germ has not yet been positively identified. It is certain, however, that the causative agent may be rapidly transmitted from animal to animal either by direct contact or by contact with infected mangers or stall partitions or, possibly, through the air.

The first symptoms consist in a reddening and slight swelling of the eye lids and a flow of tears. Later on the cornea becomes pearly white and opaque. This discharge from the eyes thickens, becomes of a sticky character and still later consists of yellow, thick pus. The afflicted cattle suffer considerably when exposed to the light and on this account are inclined to seek dark, secluded places.

The course of the disease varies in different cases from one to three weeks and in most of the outbreaks and, especially, if

appropriate treatment is applied, recovery is complete and the animal is left in as good condition as before. Sometimes, however, the cornea ulcerates and if this results in perforation, the contents of the anterior chamber runs out, the whole eye-ball becomes inflamed and suppurates and then the damage is irreparable. The progress of the disease can be checked by the early isolation of the afflicted animals and the disinfection of the premises occupied by them. The animals already diseased should be kept in a dark stable and the eyes washed twice daily with a solution of potassium permanganate 1.5 parts to 1,000 parts of distilled water or with a solution of boracic acid fifteen grains to an ounce of water. After washing, it is desirable in severe cases to annoint the edges of the eye lids with an ointment containing one part of cocaine and six parts of the yellow oxide of mercury to two hundred parts of lanolin.

#### SHEEP SCAB.

Sheep Scab has been detected in but one flock of sheep in Pennsylvania during the past three years. On the 15th of December, 1899, I was advised by Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, that 133 sheep were received at the East Buffalo Stock Yards from a point in Western Pennsylvania. Dr. George B. Jobson, of Franklin, was at once requested to visit the locality indicated to ascertain the origin of the scabby sheep, the condition of the flocks on the farms in that neighborhood and, if scabby sheep were found, to have them quarantined until treated and cured. Under date of December 20, 1899, Dr. Jobson reported that he had found the farm from which the scabby sheep originated, and that on the farm there were forty-six breeding ewes, several of which were afflicted with scab. These sheep were at once quarantined, to remain in quarantine until cured. The owner was fully advised as to the best method of treating them, also in regard to disinfecting the premises occupied by them. Several other flocks in the neighborhood were visited but all of them were found to be entirely free from disease. A number of other flocks in the same and adjacent counties were subsequently examined by Dr. Jobson with the result that they were shown to be free from scab.

The sheep breeders of many central and western states and those of western New York have been sorely tried by the unusual

prevalence of scab in their flocks. It is thought by many of them that the disease is brought in by sheep from the west. The sheep that pass through the stock yards at Buffalo, East Liberty and Philadelphia are now inspected by the agents of the Bureau of Animal Industry, and it is not likely that scab will be permitted to enter Pennsylvania excepting in a few isolated cases. It may be said with perfect confidence that the native sheep of Pennsylvania are entirely free from the least suspicions of this affection.

### B.

The field work described above has been supported and controlled at every step by the laboratory. All of the tuberculin used in the State work (56,387 doses) has been made in the laboratory as has the mallein and anthrax vaccine. These products represent a value of about \$6,000. All of this work has been done by or under the personal supervision of Dr. M. P. Ravenel. The laboratory is being used more and more by veterinarians who submit specimens of tissues, organs or diseased products for examination and diagnosis. In this way many diseases of public importance are recognized that could not be recognized without such aid. Early recognition of infectious diseases is of the highest importance, and this laboratory is the only one in the State to which such specimens can be submitted and that has connected with it men skilled in the diseases of animals. Anthrax, black quarter, rabies, tuberculosis, actinomycosis, glanders, hog cholera and numerous parasitic and other diseases have been diagnosed, reported upon and thus held in check.

The accuracy of the work of the State Live Stock Sanitary Board has constantly been controlled by rigid laboratory tests. Too much stress cannot be laid on the value of the assistance the laboratory has afforded. The volume of work is very great and the capacity of the organization has been taxed to the utmost.

### C.

The research work of the board has been conducted as actively as the other necessary work, and the funds that could be used for this purpose would admit.

The trials of the new method of treating milk fever by injections of solution of iodide of potash into the udder has been continued in co-operation with a number of veterinarians in country districts. The results of these experiments are most gratifying, for they show that the new treatment is far more valuable than any other that has ever been used, and that, when properly used, it is not capable of injuring the udder. About 75 per cent. of the cases of milk fever treated by this method have been cured.

The experiments to determine the influence of light on the resistance of animals to infectious diseases, and the experiments to determine the value of good sanitary conditions in respect to preventing the spread of tuberculosis in an infected herd, have been carried on for a year and a half. They are now completed and will be published in full in a report that is under preparation. These experiments impress the importance of having dairy stables light and well ventilated, and explain several matters in regard to methods of keeping cattle, that have been in controversy.

The relation of the bacilli of human and bovine tuberculosis has been discussed considerably of late and the statement has been made, although unsupported by scientific evidence, that these bacilli are distinct and separate organisms. As their relation has a direct bearing on the transmission of tuberculosis through the milk of tubercular cows, it seemed important to make a careful study of this question. If it should be found that tubercle bacilli from cattle are less virulent than those from man, the discovery would be an important and gratifying one, because there would then be less need to fear milk infection.

Experiments have been made in which animals of several species, herbivora, carnivora and omnivora; species having a high degree of natural resistance, and species quite susceptible to the attack of tubercle bacilli, have been exposed in the same way and to the same degree to the action of tubercular tissues from man and cattle or to pure cultures of tubercle bacilli from man and cattle. It has been found that almost without exception the bovine germs or tubercular tissues are more virulent and cause death much sooner than similar cultures or tissues from man. These experiments indicate that the tubercle bacilli from cows are, so far as they have been tested, more virulent and,

therefore, surely not less dangerous than tubercle bacilli from man.

Investigations are now being conducted for the purpose of throwing light on the relative merits of large and small cows for the purpose of the dairymen who buy their cows. A study is being made of extradurable horses in respect to their conformation. Such horses are measured and photographed and the result of this study will be published in a report on the conformation of the horse.

A line of research that should be taken up soon is in the direction of experiments with antitoxines for several infectious diseases of animals, as influenza of horses, hog cholera, distemper of dogs and roup of fowls. Work along these and parallel lines promises valuable results. There is no research laboratory in the State prepared to do the careful scientific work that must be done to develop these subjects and properly test these questions, excepting the laboratory of the State Live Stock Sanitary Board.

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The value of the work of the State Live Stock Sanitary Board has been somewhat restricted in some instances from the fact that it has not always been able to obtain early information of outbreaks of infectious diseases. The fact that no one was especially responsible for the rendering of a report, has sometimes led to failure to report outbreaks of which many were cognizant. This is merely an illustration of the truth expressed by the words "Everybody's business is nobody's business." There has not been, in any instance with which I am familiar, a direct attempt to conceal the existence of infectious diseases, and many failures to report outbreaks may, no doubt, be accounted for by the supposition that people that knew of them expected them to be reported by some other person who in turn thought that another would do it. In this way outbreaks of hog cholera, especially, have been permitted to gain considerable headway and sometimes to reach such a state of development that suppressive measures have been very much hampered and their value impaired.

I believe that arrangements can be made by which volunteer correspondents can be obtained in all parts of the State, and

from such correspondents, constantly alert for information in respect to prevalence of infectious diseases, it may be possible to obtain much information that can be used to the advantage of the public. The veterinarians of the State are most earnestly interested in the work of the State Live Stock Sanitary Board and the improvement of all measures directed against infectious diseases. No doubt a great deal of valuable assistance in the direction just indicated could be obtained from the members of this profession.

Very respectfully,

LEONARD PEARSON,  
State Veterinarian.



LAW RELATING TO CONTAGIOUS CATTLE  
DISEASES AS AMENDED IN 1889.

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CHAPTER 177.

An Act to Extirpate Contagious Diseases Among Cattle.

*Be it enacted by the Senate and House of Representatives in Legislature assembled, as follows:*

Sect. 1. That for the purpose of facilitating and encouraging the live stock interests of the State of Maine, and for extirpating all insidious, infectious and contagious diseases, now or that may be among cattle and other live stock, and especially tuberculosis, the governor of the State is hereby authorized and required, immediately after the passage of this act, to appoint a board of cattle commissioners consisting of three persons of known executive ability, who shall be charged with the execution of the provisions of this act, and who shall be known and designated as the State of Maine Cattle Commission and whose powers and duties shall be those provided for in this act, and whose tenure of office shall be at the option of the governor. The compensation of said commissioners shall be at a rate of three dollars per day during the time they are actually engaged in the discharge of their duties as commissioners. The said commissioners shall respectively take an oath to faithfully perform the duties of their office, and shall immediately organize as such commission by the election of one of their number as president thereof, and proceed forthwith to the discharge of the duties devolved upon them by the provisions of this act.

Sect. 2. That it shall be the duties of the said commissioners to cause investigation to be made as to the existence of tuberculosis, pleuro-pneumonia, foot and mouth disease, and any other infectious or contagious diseases. And such commis-

sioners or their duly constituted agent are hereby authorized to enter any premises or places, including stock yards, cars and vessels within any county or part of the State in or at which they have reason to believe there exists any such diseases, and to make search, investigation and inquiry in regard to the existence thereof. Upon the discovery of the existence of any of the said diseases, the said commissioners are hereby authorized to give notice, by publication, of the existence of such disease, and the locality thereof, in such newspapers as they may select, and to notify in writing the officials or agents of any railroad, steamboat or other transportation company, doing business in or through such infected locality, of the existence of such disease; and are hereby authorized and required to establish and maintain such quarantine of animals, places, premises or localities as they may deem necessary to prevent the spread of any such disease, and also to cause the appraisal of the animal or animals affected with the said disease, in accordance with such rules and regulations by them as hereinafter authorized and provided, and also to cause the same to be destroyed, and to pay the owner or owners thereof one-half of their value, as determined upon the basis of health before infection, out of any moneys appropriated by the legislature for that purpose; provided, however, that no appraised value shall be more than two hundred dollars for an animal with pedigree recorded or recordable in the recognized herd-books of the breed in which the animal destroyed may belong, nor more than one hundred dollars for an animal which has no recordable pedigree; provided, further, that in no case shall compensation be allowed for an animal destroyed under the provisions of this act, which may have contracted or been exposed to such disease in a foreign country, or on the high seas, or that may have been brought into this State within one year previous to such animals showing evidence of such disease; nor shall compensation be allowed to any owner who in person, or by agent, knowingly or willfully conceals the existence of such disease, or the fact of exposure thereto in animals of which the person making such concealment, by himself or agent, is in whole or part owner.

Sect. 3. That the said commissioners are hereby authorized and required to make record, and publish rules and regulations

providing for and regulating the agencies, methods and manners of conducting, and the investigations aforesaid, regarding the existence of said contagious diseases; for ascertaining, entering and searching places where such diseased animals are supposed to exist; for ascertaining what animals are so diseased, or have been exposed to contagious diseases; for making, reporting and recording descriptions of the said animals so diseased or exposed and destroyed, and for appraising the same, and for making payment therefor; and to make all other needful rules and regulations which may, in the judgment of the commissioners, be deemed requisite to the full and due execution of the provisions of this act. All such rules and regulations, before they shall become operative, shall be approved by the governor of Maine and thereafter published in such manner as may be provided for in such regulations; and after such publication said rules and regulations shall have the force and effect of law, so far as the same are not inconsistent with this act and other laws of the State, or United States.

Sect. 4. That any person or persons who shall knowingly and wilfully refuse permission to said commissioners, or either of them, or their duly constituted agent to make, or who knowingly and wilfully obstructs said commissioners, or either of them, or their duly constituted agent in making all necessary examinations of, and as to animals supposed by said commissioners to be diseased as aforesaid, or in destroying the same, or who knowingly attempts to prevent said commissioners, or either of them, or their duly constituted agent from entering upon the premises and other places hereinbefore specified where any of said diseases are by said commissioners supposed to exist, shall be deemed guilty of a misdemeanor, and, upon conviction thereof, or of either of the acts in this section prohibited, shall be punished by fine not exceeding one hundred dollars, or by imprisonment, not exceeding ninety days, or by both fine and imprisonment, at the discretion of the court.

Sect. 5. That any person who is the owner of, or who is possessed of any interest in any animals affected with any of the diseases named in section two of this act, or any person who is agent, common carrier, consignee, or otherwise is charged with any duty in regard to any animal so diseased, or

exposed to the contagion of such disease, or any officer or agent charged with any duties under the provisions of this act, who shall knowingly conceal the existence of such contagious disease, or the fact of such exposure to said contagion, and who shall knowingly and wilfully fail, within a reasonable time, to report to the said commissioners their knowledge of their information in regard to the existence and location of said disease, or of such exposure thereto, shall be deemed guilty of a misdemeanor, and shall be punishable as provided in section four of this act.

Sect. 6. That when the owner of animals, decided under the provisions of this act, by the proper authority, to be diseased, or to have been exposed to contagion, refuses to accept the sum authorized to be paid under the appraisement provided for in this act, it shall be the duty of the commissioners to declare and maintain a rigid quarantine as to the animals decided, as aforesaid, to be diseased or to have been exposed to any contagious or infectious disease, and of the premises or places where said cattle may be found, according to the rules and regulations to be prescribed by said commissioners, approved by the governor, and published as provided in the third section of this act.

Sect. 7. That no person or persons owning or operating any railroad, nor the owner or owners, or masters, of any steam, sailing, or other vessels, within the State, shall receive for transportation, or transport from one part of the State to another part of the State, or to bring from any other state or foreign country any animals affected with any of the diseases named in section two of this act, or that have been exposed to such diseases, especially the disease known as tuberculosis, knowing such animals to be affected, or to have been so exposed nor shall any person or persons, company or corporation, deliver for such transportation to any railroad company, or to the master or owner of any vessel, any animals, knowing them to be affected with, or to have been exposed to, any of said diseases; nor shall any person or persons, company or corporation, drive on foot, or transport in private conveyance, from one part of the State to another part of the State, any animal, knowing the same to be affected with, or to have been exposed to, any of said diseases.

Any person or persons violating the provisions of this section, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by fine not exceeding the sum of two hundred dollars, or by imprisonment not exceeding six months, or by both fine and imprisonment.

Sect. 8. That it shall be the duty of the several county attorneys to prosecute all violations of this act, which shall be brought to their notice or knowledge by any person making the complaint under oath; and the same shall be heard in any supreme judicial court having jurisdiction in the county in which the violation of this act has been committed.

Sect. 9. That the said commissioners are hereby authorized to appoint or elect one of their number as secretary of said board, who shall receive a reasonable compensation for his services during the time in which, under the provisions of this act, the services of the said commissioners shall be required. The said commissioners shall make and preserve a full record of all rules and regulations promulgated under the provisions of this act, of all payments and expenses hereunder incurred, and all other transactions performed by said commissioners in the discharge of their duties as herein provided; and the said commissioners shall, on or before the first Wednesday in January of each year, during their continuance in service, and at other times as they may deem conducive to the public interests, or as they may be required so to by the governor of state, report to said governor full and accurate accounts of their expenditures, and other proceedings under the provisions of this act, and of the condition of said diseases, if any, in the State, to be communicated by him to the legislature. Whenever the functions of said commission shall be suspended or terminated, it shall turn over to the secretary of state, all its books, papers, records, and other effects, taking his receipt therefor, and he shall remain the custodian of the same until such time as the functions of said commission may be restored.

Sect. 10. That the commissioners shall have power, and are hereby authorized to employ skilled veterinarians, and such other agents and employes as they may deem necessary to carry into effect the provisions of this act, and to fix the compensation of the person or persons so employed, and to terminate such

employment at their discretion; and they are authorized out of the moneys by this act appropriated, to make such expenditures as may be needed for the actual and necessary travelling expenses of themselves and their said employes, stationery, expense of disinfecting premises, cars and other places, destroying diseased and exposed animals, and paying for the same, and such other expenses and expenditures as they may find to be actually necessary to properly carry into effect the provisions of this act.

Sect. 11. That the moneys appropriated by this act shall be paid over to the secretary of said commission, from time to time, as the same may be found to be needed, upon requisition made by the said commissioners, and shall be disbursed by the said secretary of said commission only upon vouchers approved by said commissioners or a majority of them. The said secretary shall before entering upon the duties of his office, take an oath to faithfully discharge the duties thereof, and shall enter into a bond to the State of Maine, with sureties to be approved by the treasurer of State, in such sum as he may designate, for the faithful accounting of all moneys received by the said secretary of the commission, under the provisions of this act.

Sect. 12. That for the purpose of carrying into effect the provisions of this act, the sum of five thousand dollars, or so much thereof as may be necessary, is hereby appropriated out of any moneys in the treasury not otherwise appropriated.

Sect. 13. That all acts and parts of acts inconsistent or in conflict with the provisions of this act, be, and the same are hereby repealed.

Approved February 14, 1889.

LAW RELATING TO CONTAGIOUS CATTLE  
DISEASES AS AMENDED IN 1893.

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CHAPTER 194.

An Act to amend an act entitled "An act to extirpate Contagious Diseases Among Cattle."

*Be it enacted by the Senate and House of Representatives in Legislature assembled, as follows:*

Section 1. Section one of chapter one hundred and seventy-seven of public laws of eighteen hundred and eighty-nine, is hereby amended by striking out the words, "and other live stock" in the fourth line, and inserting instead the words 'horses and sheep,' so that said section as amended, shall read as follows:

'Sect. 1. That for the purpose of facilitating and encouraging the live stock interests of Maine, and for extirpating all insidious, infectious and contagious diseases, now or that may be among cattle, horses and sheep, and especially tuberculosis, the governor of the State is hereby authorized and required, immediately after the passage of this act, to appoint a board of cattle commissioners consisting of three persons of known executive ability, who shall be charged with the execution of the provisions of this act, and who shall be known and designated as the State of Maine Cattle Commission, and whose powers and duties shall be those provided for in this act, and whose tenure of office shall be at the option of the governor. The compensation of said commissioners shall be at the rate of three dollars per day during the time they are actually engaged in the discharge of their duties as commissioners. The said commissioners shall respectively take an oath to faithfully perform the duties of their office, and shall immediately organize

as such commission by the election of one of their number as president thereof, and proceed forthwith to the discharge of the duties devolved upon them by the provisions of this act.'

Sect. 2. Section two of said act is hereby amended by striking out the word "two" in the twenty-ninth line and inserting instead thereof the word 'one;' and by striking out the words "one hundred" in the thirtieth and thirty-first lines and inserting instead thereof the word 'fifty;' also by striking out the word "one" in the thirty-sixth line, and inserting instead thereof the word 'three;' also by inserting after the word "disease" in the thirty-seventh line the words 'and the owner or owners shall furnish satisfactory evidence as to the time such animal or animals shall have been owned in the state,' so that said section two as amended, shall read as follows:

'Sect. 2. That it shall be the duties of the said commissioners to cause investigation to be made as to the existence of tuberculosis, pleuro-pneumonia, foot and mouth disease, and any other infectious or contagious diseases. And such commissioners or their duly constituted agent, are hereby authorized to enter any premises or places, including stock yards, cars and vessels within any county or part of the State in or at which they have reason to believe there exists any such diseases, and to make search, investigation and inquiry in regard to the existence thereof. Upon the discovery of the existence of any of the said diseases, the said commissioners are hereby authorized to give notice, by publication, of the existence of such disease, and the locality thereof, in such newspapers as they may select, and to notify in writing the officials or agents of any railroad, steamboat or other transportation company, doing business in or through such infected locality, of the existence of such disease; and are hereby authorized and required to establish and maintain such quarantine of animals, places, premises or localities as they may deem necessary to prevent the spread of any such disease, and also to cause the appraisal of the animal or animals affected with the said disease, in accordance with such rules and regulations by them as hereinafter authorized and provided, and also to cause the same to be destroyed, and to pay the owner or owners thereof one-half of their value, as determined upon the basis of health before infection,



out of any moneys appropriated by the legislature for that purpose; provided, however, that no appraised value shall be more than one hundred dollars for an animal with pedigree recorded or recordable in the recognized herd-books of the breed in which the animal destroyed may belong, nor more than fifty dollars for an animal which has no recordable pedigree; provided, further, that in no case shall compensation be allowed for an animal destroyed under the provisions of this act, which may have contracted or been exposed to such disease in a foreign country, or on the high seas, or that may have been brought into this State within three years previous to such animals showing evidence of such disease, and the owner or owners shall furnish satisfactory evidence as to the time such animal or animals shall have been owned in the State; nor shall compensation be allowed to any owner who in person, or by agent, knowingly and wilfully conceals the existence of such disease, or the fact of exposure thereto in animals of which the person making such concealment, by himself or agent, is in whole or part owner.'

Approved March 10, 1893.