Proceedings

Third Annual Meeting
Interstate Association of Live Stock Sanitary Boards

Live Stock Exchange
Union Stock Yards
Chicago, Illinois

October 11-12, 1899
COMPLIMENTS OF

The United States Livestock Sanitary Association

R A Hendershott, Secretary-Treasurer
PROCEEDINGS

OF THE

Third Annual Meeting of the Interstate Association
of Live Stock Sanitary Boards,

HELD IN

THE HALL OF THE CHICAGO LIVE STOCK EXCHANGE,
EXCHANGE BLDG., UNION STOCK YARDS,
CHICAGO, ILLINOIS.

OCTOBER 11-12, 1899.

The meeting was called to order by C. P. Johnson, President of the Association, at 11 o'clock A. M., October 11th.

By direction of the President, the Secretary called the roll of States and the following responded:

Arizona—Colin Cameron.
Colorado—Dr. Sol. Bock.
Illinois—J. H. Paddock, J. P. Lott, J. M. Darnell, C. P. Johnson and Dr. C. P. Lovejoy.
Indiana—Mortimer Levering.
Kansas—F. H. Chamberlain and Taylor Riddle.
Kentucky—G. A. Birch, John M. Letterle, G. W. Embry and Dr. F. T. Eisenman.
Massachusetts—Dr. Austin Peters.
Minnesota—Dr. M. H. Reynolds.
Pennsylvania—Dr. Leonard Pearson.
Texas—W. B. Tullis and R. J. Kleberg.
Virginia—Dr. E. P. Niles.
Wisconsin—Dr. H. P. Clute.
The Bureau of Animal Industry was represented by Dr. D. E. Salmon and Col. Albert Dean.

Mr. Letterle moved that the foregoing be accepted as the membership of this convention, subject to the addition of such delegates as may subsequently report. Carried.

The minutes of the last meeting of the Association were read by the Secretary, and on motion of Mr. Letterle, were ordered to stand approved.

THE CHAIR—In connection with the action of the Ways and Means Committee, which was appointed on a resolution adopted at the last meeting of the Association, I would request the Secretary to read to the convention a statement of the returns received in pursuance of that resolution. I wish to say at this point that because sufficient returns have not been received, the minutes of the last convention were not published.

The Secretary thereupon read the following report of receipts for per capita assessments:

<table>
<thead>
<tr>
<th>State</th>
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<tbody>
<tr>
<td>Illinois</td>
<td>$5.00</td>
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<tr>
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<td>Missouri</td>
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Twelve States, total ........................................... $60.00

THE CHAIR—I would state that the Secretary is open to receive contributions to this fund for printing the minutes of our proceedings. All the expense of correspondence and printing circulars has so far been borne by the Illinois Board.

MR. RIDDLE—For information, I would like to ask if there will not be two assessments due at this meeting.

THE CHAIR—When this Association was organized at Fort Worth, no provision was made for ways and means. The Illinois Board published the minutes of that meeting in its Annual Report and copies were sent to all members; but at the Omaha meeting it was thought wise to create a fund so the minutes might be printed independently for distribution to all the boards interested.
I will state, while this matter of business is being attended to, that the next order of business on the programme I have prepared is the introduction of Resolutions, and following that the appointment of the necessary committees for the transaction of our business. If there are any resolutions to be offered, this is the proper time to introduce them.

MR. RIDDLE—I would suggest that we are expecting delegates from two states that represent quite an important part of our Association, and if it would not delay matters too much, we might adjourn, at least until after the dinner hour, and they might then be present. We will want them on some of the committees.

THE CHAIR—I thought perhaps it might be wise to make up the committees before the noon recess. There were two regular committees created: the Committee on Line and Open Season, and the Committee on Resolutions. The former committee, by action of the convention, was constituted of one delegate from each state; therefore, each state represented is entitled to representation on that committee, and any state coming in after the appointment of the committee will be represented by the addition of their member.

MR. TILLMAN—I think it would be well to appoint the committees before the resolutions are introduced. The State of Tennessee has her state delegates here; Capt. Paine, Commissioner Dunn, and Mr. Hamill. The others of us are here simply representing county and city boards of health, and I would suggest that, in appointing the committees, one of the State delegates be appointed.

THE CHAIR—Col. Skinner, formerly General Manager of the Fort Worth Stock yards, informs me that the Union Stock Yard Co. extends a cordial invitation to all the delegates to lunch at the Transit House, at one o'clock, in the ordinary. What is the will of the convention?

MR. LETTERLE—I move that the invitation be accepted with thanks.

Carried, by a rising vote.

MR. LETTERLE—I move that the Chair appoint a committee of five on resolutions, and that each state appoint, by its Chairman, a representative of the state on the Committee on Line and Open Season.

MR. RIDDLE—I believe that the question of open season should be given to another committee, because it affects only the states bordering on the quarantine line. The states far north can have an open season and the live states can allow cattle to pass through them for those northern states. I think the line states are practically a unit against what has been known as the open season. I therefore move to amend the resolution by striking out that part of the resolution allowing the Line Committee to determine the question of the open season.
The amendment was lost.

The question then recurring on the original motion, it was carried.

The Secretary then called the roll of states for the appointment of the Committee on Line and Open Season, and the following were named by the Chairman of each delegation to represent their respective states on said committee:

- Arizona: Colin Cameron
- Illinois: Dr. C. P. Lovejoy
- Indiana: Mortimer Levering
- Kansas: Taylor Riddle
- Kentucky: Dr. F. T. Eisenman
- Massachusetts: Dr. Austin Peters
- Michigan: J. H. Brown
- Pennsylvania: Dr. Leonard Pearson
- Tennessee: W. H. Dunn
- Texas: W. B. Tullis
- Virginia: Dr. E. P. Niles
- Bureau of Animal Industry: Dr. D. E. Salmon
- Colorado: Dr. Sol Bock
- Minnesota: Dr. M. H. Reynolds
- Wisconsin: Dr. H. P. Clute

The Chair announced the following Committee on Resolutions:

- R. J. Kleberg, Thomas H. Paine, Dr. F. T. Eisenman
- Taylor Riddle, J. H. Paddock

THE CHAIR—Gentlemen: We have with us to-day, by invitation, which he has very kindly accepted and acted upon, Dr. D. E. Salmon, Chief of the Bureau of Animal Industry since its creation. I now take pleasure in introducing Dr. Salmon to the convention and he will address us on questions that he deems of interest.

DR. SALMON.

MR. PRESIDENT AND GENTLEMEN: I have no intention of making a formal address. In the first place, I have not had time to prepare one, and in the second place, if I had, on account of the severe cold from which I am suffering, it would be impossible for me to deliver it. I do wish to say a few words, however, and in the first place to impress upon the members of this Association, so far as I can, the importance and value of the organization to which they belong. There was great need for cooperation between the sanitary authorities of the different states, in order to secure uniform action, and to enable the owners and shippers of live stock to get their animals to market without unnecessary or burdensome
restrictions, and this is one of the most important steps towards securing such results.

The federal government has done something to make the regulations uniform, but in order to satisfy those in the various parts of the country, it was desirable to have something more; it was desirable that those who are interested should have some voice in the conclusions that were reached. The Department of Agriculture has endeavored to follow, so far as possible, the recommendations which have been made from time to time by your organization at its past sessions. It has done so, partly because it recognized the fact that such recommendations should be given great weight, and partly because it desired to do as much as it possibly could to raise the prestige and standing of your organization. It was believed that there was need of such an organization in order that representatives from all parts of the country might come together once a year to deliberate upon these questions.

Now, there will be questions coming before this meeting which you have had in mind, most of you, which will have considerable influence on the live stock industry during the year. It is not necessary that I should review these questions and discuss them at this time, because they will come up and be discussed by you during the progress of this meeting.

It is unfortunate that one expectation we had a year ago has not been realized. We thought, when the regulations for the current year were made, that we had a dip by which we could free southern cattle from infection and allow them to go anywhere without danger to northern native cattle, and we made arrangements in the regulations by which such dipping should be recognized; and we also left out of consideration the open season, which heretofore we have allowed. Unfortunately the dipping of last year injured the cattle to such an extent that the department did not feel that it could recommend it for the current season, and we concluded to make no such recommendations. The oil used last year, which proved so unsatisfactory, was purchased from the Standard Oil Co. I presented the matter to them and explained the effect it had upon the cattle, and they told me the oil was probably refined with sulphuric acid and it was impossible to get all the acid out of it. I arranged to get some oil which had not been treated in that way and was free from acid. I got such an oil and dipped some cattle in Washington without injury to them, and we concluded the oil was satisfactory. A little later in the season, when we got some ticky cattle, we dipped them in the oil and found it did not kill all the ticks. I went back to the Standard Oil Co. and asked them if they knew exactly the kind of oil used last year. They told me they furnished the oil, that it came from their refinery at Whiting, near Chicago, and that they could furnish an identical oil at any time. I arranged with them to send me some of the oil from Whiting to Norfolk, Va., where we have no trouble in obtaining suitable cattle for experimentation. When
that oil came we dipped ticky cattle in it, but we failed to kill all of the
ticks. You can see that I was somewhat embarrassed by these experiments
and was unable to go ahead with the dipping. Since then we have been
making further experiments but they are not concluded, and I can only
say that we have some encouraging results which lead us to hope for suc-
cess in time for the next dipping season.

The question of the open season is one that must soon be settled.
There are many cattle in the South seeking a market, and the department
must decide in a very short time to what extent they can be let out with
safety to the cattle of the North. I have come here to listen to your views
in regard to the suppression of the infection, and hope to see my way clear
to make some recommendation to the department. The Secretary of Agri-
culture is desirous of doing anything in his power that shall be for the best
interests of the greatest number interested in the cattle industry.

I thank you for your attention, and shall be glad to give you any
further information possible upon the questions that come before this con-
vocation. I shall also be glad to hear from you in reference to these ques-
tions, and to receive any information that we have not yet been able to
secure.

THE CHAIR—Is there any one who desires to ask any questions of
Dr. Salmon?

MR. RIDDLE—In regard to the question of an open season, to which
Dr. Salmon has alluded, I can hardly conceive how our Association here
can do anything more than recommend, as each state can pass on that ques-
tion for itself. The state of Illinois may want an open season and can have
it. The state of Kansas might not want an open season, without inspection,
and the state of Kansas would not have it if she didn't want it. It is a
question to be decided by each state for itself, and it should be left in the
hands of the live stock authorities of each state. Any resolution that we
might adopt would have very little effect. I would like to ask Dr. Salmon
if the Secretary of Agriculture allowed an open season, what would be the
effect upon those states that do not desire it?

DR. SALMON—There is always this to be considered. When you
allow cattle to pass the line of any state you do not know where they will
go to from that state. Cattle are shipped from Texas, south of the quaran-
tine line, to Minnesota. That is all right for that state, but who knows
whether they are going to stay there? They are liable to be re-loaded and
shipped elsewhere. The question of an open season does affect more than
the particular state to which cattle go direct, and this is a part of the ques-
tion that must be considered. I do not know to what extent you feel like
acting upon it, but I have always been somewhat embarrassed when the
question came before the department, because I have no way of deciding
where cattle that are allowed to pass the line are destined. Dealers ship
cattle to one place, unload them, and then ship them to some other point. That must be considered in discussing and deciding this question.

MR. RIDDLE—Of course this question of line and open season is not before the convention—simply an informal discussion—but my object in offering my amendment a while ago, to take from the line committee the power to recommend as to the open season, had in effect the very question that is raised by Dr. Salmon. The fact that I believe that Minnesota can take cattle safely from south of the quarantine line, is not altogether a good reason why they should be permitted to do so. We have had cases of fever this year from ticks that were no doubt brought in in the month of December. In my judgment, the most important question to be decided by this body is the question of an open season. After cattle cross the quarantine line, that being the only obstacle to the traffic, so far as Texas fever is concerned, they are at liberty to go anywhere and can go into any state without hindrance.

A DELEGATE—Could not the state of Kansas make its own line around the state—not only the fever line, but a line all around it?

MR. RIDDLE—That would make it necessary for us to have inspectors all around the state, and that would work a great hardship on shippers and would cause a great many innocent people unnecessary annoyance.

MR. DUNN—We have seven inspectors employed by our state to keep cattle from south of the line from coming in.

MR. RIDDLE—Allow me to ask if you have any inspectors on the north to keep injected cattle out?

MR. DUNN—We require all cattle from north of the quarantine line to have a certificate from the county from which they come.

MR. RIDDLE—In case of an open season they might come into your state from Kentucky, Missouri, Arkansas, or any other state.

THE CHAIR—I wish to announce that there will be a slaughter of twelve cattle that have been tested with tuberculin and have reacted, at 10 o'clock tomorrow morning, under the supervision of our Board at B. Wolf's slaughter house, corner of Emerald Avenue and Forty-first street. These cattle were not tested under the supervision of our Board, but the Board will take charge of the post-mortems, and extends a cordial invitation to all the delegates attending this convention to be present and witness the post-mortem examinations.

On motion of Mr. Riddle, a recess was taken until 2:30 o'clock P. M.
The infective possibilities from tubercular milk.

Mr. President and Gentlemen: The study of experimental tuberculosis as related to cows has been treated by all investigators in the direction, first, of demonstrating the infectiousness of the secretions and tissues of tubercular cows to other domestic animals; and secondly, in an attempt to demonstrate the real relations between the disease in the cow and in man. Many series of experiments have been conducted to show that cattle tuberculosis can be transmitted to other animals. These experiments have been by feeding and injecting material derived from cows in which the evidence of tuberculosis was more or less positive.

From a view of the experiments presented one is obliged to recognize that there is a regular increase in the certainty of infecting an animal proportionate to the evidence of the tubercular nature of the material used in the experiments.

The results reported vary to a considerable degree. These variations are probably owing to the numerous difficulties always present in a study of tuberculosis. These are: the chronic nature of tuberculosis, the slow multiplication of the bacilli, their slow removal from the infected individual and the careful technique required to demonstrate them in a given specimen.
Examination of Milk for Tuberculosis.

(From Rabinowitsch and Kempner.)

<table>
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<tr>
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<tr>
<td>Stein</td>
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<td>4</td>
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<tr>
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<tr>
<td>Smith &amp; Schroeder</td>
<td>6</td>
<td>2</td>
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<tr>
<td>Schroeder</td>
<td>31</td>
<td>2</td>
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<tr>
<td>Delpeine</td>
<td>37</td>
<td>9</td>
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<tr>
<td>Nocard</td>
<td>54</td>
<td>3</td>
<td>5.5</td>
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<tr>
<td>Rabinowitsch u. Kempner.</td>
<td>15</td>
<td>10</td>
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</table>

These figures of results show a variation in infectiousness of 5.5 per cent to 66.6 per cent.

Briefly stated, the following is a summary of some reported experiments:

Van Gersten of Brussels was the first to call attention to frequency of tuberculosis in the mammary gland of cows and the consequent danger of infection from the use of milk from such animals.

Gerlach, Klebs and Bollinger caused tuberculosis in animals by giving them milk from tubercular cows.

Schreiber (Inaugural Dissertation, Koenigsberg, 1875), fed 18 rabbits and three guinea pigs on milk from tubercular cows. None became tubercular.

Bollinger, 1879, at German Congress at Baden, announced that milk from tubercular cows' the mammary gland being healthy, could cause tuberculosis when injected into the peritoneum of a healthy pig.

In 1883, May, under direction of Bollinger, conducted some experiments at the slaughter house in Munich. He took milk from tubercular cows and injected two to three c. c. into the peritoneum of guinea pigs. All were negative except one. This was in a case of general miliary tuberculosis with involvements of the mammary gland. Ordinary cooking was sufficient to remove all virulence even when virulent tubercle bacilli were purposely placed in milk. Archiv. f. Hygiene, '83.

Stein (Inaugural Dissertation, 1884, Berlin), under Bollinger's direction injected eighteen rabbits intraperitoneally with milk from advanced tubercular cows. Four showed tuberculosis.

Hipp Martin (Revue de Medicine, 1884, page 196), bought milk as sold at the door in Paris. This he injected into guinea pig's abdomen. He injected nine pigs, three contracted tuberculosis. He concluded that 33 per cent of the milk of Paris was tubercular. Commenting on this, Strand
Tuberculose et bacille), says, experiments made both before and after this are unanimous in showing that in cases where the milk is from an animal certainly and profoundly tuberculous the inoculation gives proportionately very much less.

At International Congress held in Paris in 1884, Bang said that mammary tuberculosis, far from being common, still is not very rare.

At the Tuberculosis Congress in 1888, Bang wrote of milk from tubercular cows but with healthy udders.

In twenty-one cases of this nature, where 1 c. c. was inoculated into peritoneal cavity of rabbits, two showed tuberculosis. The cows had advanced tuberculosis. Says Bang, these results are very reassuring. He injected milk from eight tuberculous women (advanced) with negative results.

At the International Congress of Hygiene in London in 1891, Bang reported experiments on fifty-eight cows; milk inoculated in rabbits and guinea pigs; infected—15.5 per cent.

In these cases nearly all the cows were in advanced tuberculosis. Some succumbed to the acute miliary form. In three cases there was mammary tuberculosis, too slight to be recognized with the naked eye. In one, nothing was found in the mamma, but in the supernanmary glands tuberculosis was found.

Galtier (Tuberculosis Congress in 1889) said tuberculosis was only found when the mammary gland is affected. Nevertheless, always refuse milk from cows with tubercular mammary gland. boil all milk from suspected or proven tubercular cows; never drink any unboiled milk unless you know its source.

Hirschberger (Deut. Archive. fur Klin. Med., '89), took twenty-one cows—all tubercular; cut off mammary gland, incised and milk taken out by pressure and a syringe and examined it microscopically. Tuberculosis found in one case—a case of mammary tuberculosis. Then 1 to 2 c. c. milk was injected in peritoneum of guinea pigs. Eleven times pigs became tubercular—58 per cent—of cows five had general tuberculosis. Their milk gave four positive results. Six others had moderate tuberculosis; milk examination four positive, two negative; nine had localized tuberculosis; three positive, six negative.

Gebhart (Virschow's Archiv., 1890) bought milk on streets of Munich, injected 2 c. c. into peritoneum of guinea pigs. Ten experiments all negative. On the other hand, milk from tubercular cows with sound mammae gave positive results. If this same milk was diluted with 40 to 500 parts of water, no tuberculosis was produced. A certain degree of dilution causes milk to lose its tubercular virulence. The case in which the danger is prevalent is where the milk supply is from a cow and that cow is tubercular.

Gaffky (Deut. Med. Wochensch. 1892), calls attention to the fact that
tubercle bacilli can get in milk from fasces, hair, dirt on teats even when that gland is healthy.

Strauss (Tuberculose et Bacille) summarizes as follows: Milk which comes from tubercular cows is nearly certain to be infected if the mammary gland is tubercular. When the gland is healthy the milk is generally harmless, even if the tuberculosis is advanced and general. He also calls attention to the fact that in these experiments milk was injected subcutaneously or intraperitoneally, and this gives a much greater insurance of infection than when it is taken by mouth.

Bang has taken milk rich in tubercle bacilli, centrifuged (60,000 revolutions) for one hour. Separated three layers—1st, cream; 2nd, milk; 3rd, sediment. Layer No. 3 was rich in tubercle bacilli, layers 1 and 2 about equal to each other, but much less number than in No. 3. Inoculation with 1, 2 and 3 gave positive results.

Scheurlen arrived at the same conclusions as a result of similar work.

C. S. Phillips, 16th Annual Report Storr’s Agricultural Station, Connecticut, 1898.

Four Devon cows were used. Tuberculin shows clean cut reaction. No mammary involvement demonstrable. Eight calves from these and other mothers (healthy) were fed on milk from these cows—none developed tuberculosis while being fed on milk. Tests extended from November, 1896, to February, 1899.

Conclusions: In the experiments here reported, eight calves have been fed. But it is certain that we strangely exaggerated the importance of the intestinal mode of infection. (Strauss ibid.) Calves were fed upon the milk of tubercular cows for periods varying from three months to sixteen months without developing the disease. The results of these experiments coincide with the general results of European observations, and advocate that the danger from the spread of tuberculosis through the milk of cows to man or to other animals, is not as great as has been supposed. In the earlier stages of the disease, and at all times when the udder is not affected, the danger from the use of the milk is quite limited. Great stress, however, should be laid on the danger of using milk from cows which show any symptoms of udder infection.

Dr. Lydia Rabinowitsch and Walter Kempner. Zeitschrift fur Hygiene, 31 Band, 1st heft.

The important questions to be decided are tubercle bacilli in milk, in general cases of general tuberculosis or in cases of tuberculosis of the udder. Nocard’s experiments seem to show that microscopic tuberculosis of udder must be present to have the milk infectious.

Rabinowitsch and Kempner proposed to answer these questions:

First—Are tubercle bacilli in milk from cows with beginning tuberculosis apparent by physical signs and no udder infection?

Second—Are tubercle bacilli in milk from cows with latent tuberculosis...
shown by the tuberculin test? Fifteen cows tested with tuberculin were used.

These questions are answered in the affirmative. Three of the results in which tuberculosis was found are positive answers for the first question, as no udder tuberculosis was present while there were physical signs of pulmonary tuberculosis.

Two of the results in which tuberculosis was found are positive answers to the second question, as in these two cows absolutely no clinical evidence of tuberculosis was present.

The general conclusion that is reached is—that the milk of all cows reacting to tuberculin is infectious. The tuberculin test is therefore of much wider significance than the physical examination of the cattle.

Test with Milk for the Illinois State Board of Live Stock Commissioners.

As to the way in which these samples were examined, we may present the following condensed summary:

Bottles of a capacity of 200 cubic centimeters were sterilized by steam and well corked. These were sent to the slaughtering house and were filled with the milk, one sample being taken from each of the four teats, or as many of the teats as would give milk. It was also attempted to obtain a mixture of the first portion of the milk and the stripings from each teat. The bottles were tightly closed, marked and sealed. They were packed in ice and were sent at once to the College of Physicians and Surgeons, where the examination was conducted. The samples were received there three or four hours after their collection. The examination was begun at once.

The first step in the preparation of the samples was to shake them thoroughly and swing the milk in the Purdy centrifuge. The tubes of the centrifuge were filled with milk and swung at a speed of about two thousands revolutions a minute for five minutes. A portion of the cream layer was then removed with a sterilized platinum spatula and placed in a sterile test tube. The milk down to the sediment was then emptied and the tube was refilled from the bottle and swung. This procedure was continued a number of times, each time removing a small portion of the cream layer. The sediment was then removed from the bottom of the centrifuge tube and a direct microscopical examination was made without any other preparation. This was for the purpose of showing the presence of pus cells, blood cells and epithelium.

Three slides were then spread from the cream that had been collected from the tubes, and three similar slides were spread from the sediment. These were stained for tubercle bacilli, using the usual method of Ziel Nielson. The cream that was obtained and the sediment were then mixed and about five cubic centimeters was injected subcutaneously in a guinea
The guinea pigs were marked and remained under supervision until they died, or were killed at the end of five or six weeks and a post-mortem examination made.

The tables which we present indicate the number of the sample; the special test from which the sample was removed; the physical character of the milk as received; the amount of milk; the results of the direct microscopical examination; the results as to the presence of the bacillus tuberculosis, or other bacteria from the stained slides prepared from the cream and the sediment; also the weight of the guinea pigs, the amount of milk injected and the length of the period that they survived; and finally the results of the post-mortem examination and the details of the examination of the tissues taken from the animals.

It has been our intention throughout to conduct the experiments as rapidly after receiving the samples as possible, and to use the greatest possible precaution in every step to avoid any possible contamination or interference with an exact result.

Results.

The milk from thirty cows was examined and there were 120 samples of milk. The milk of eight cows was shown to be tubercular, or 26 per cent. of the number examined.

Upon microscopical examination of the milk samples, tubercle bacilli were found in all samples, or 9.1 per cent. of the entire number. Tubercle bacilli were found in the cream alone four times and in the sediment alone three times. In the other samples where tubercle bacilli were found they were both in the cream and in the sediment.

One guinea pig was inoculated with the mixed specimens from each cow. Macroscopically and microscopically, eight guinea pigs showed tuberculosis. These were all from the cows in the milk of which tubercle bacilli were found.

In this series of cows physical examination of the udders showed an absence of tuberculosis.

Reviewing the data of the experiments, it is apparent that the milk of two cows, Nos. F 95 and C 94, are of a positively dangerous character. In the other cows but few tubercle bacilli were found and the guinea pig infection was not extensive.

The result speaks strongly for the possibility of having a dangerously tubercular milk from cows apparently free from udder tuberculosis.

THE CHAIR—Gentlemen: I take pleasure in introducing to you Prof. Evans, Pathologist of the Columbus Medical Laboratory, a colleague of Prof. Gehrmann.
Mr. Chairman and Gentlemen of the Convention: This discussion forms a part of the work which is going on in every country that claims to be civilized.

The American Medical Association at its last session took official cognizance of the movement, to the extent that it appointed a committee with large powers. In the state of Illinois there is a society for the suppression of tuberculosis. There are similar societies in Pennsylvania, in Massachusetts, and in other states. Cook county has recently erected a hospital for consumptives. There is effort, somewhat unorganized and somewhat inconsistent, but certainly opportune, that is spreading all over America. But America is not a pioneer in this work. There is the British Association for the Prevention of Tuberculosis. Last year the Berlin Congress was held. France has been investigating the subject for several years. The King of Sweden gave his Jubilee fund to the suppression of the disease. The State Board of Illinois is to be commended, for adding its efforts to those of other communities. In every work of this character the coefficient of effort must of necessity be large. The massing of material then, is the proper method of obtaining opinions that are correct.

The importance of the subject is beyond compare. It is commonly held that of all the people, one in seven dies from tuberculosis (1) those who die between fifteen and sixty years of age, one-third die from tuberculosis. Before fifteen, the child is dependent upon its parents; after sixty, the adult becomes dependent upon either the state, his family, or the accumulation of his years of greater capacity. This division then, is in reality a division into burdens and burden carriers, and one-third of those who die while carrying the load of the world, die from this disease. Bertillon’s statistics for Paris show that, of 1,000 people dying from tuberculosis, 76 were between 20 and 60 years of age. The census of 1890 showed that 110,000 people died that year from this disease. Allowing for the disposition of any statistics to understate the number of deaths from tuberculosis, it is safe to say that 150,000 people die each year from the disease in the United States. Vaughan estimates that at any given moment there are 1,500,000 people in the United States who have this disease. As regards the disease in animals, there is the greatest variance in opinion. It is universally accepted that it is at once of greatest importance and of greatest frequency in milch cows. The work of the Illinois Board would indicate that 20 per cent of the milch cows are affected. There are $36,000,000 worth of milch cows in the state. This would indicate that $7,000,000 represents the value of diseased animals in this state. The fact that the cows of institutions and cows open to suspicion have been examined with greater frequency than any other, would indicate that this percentage is higher than the facts would warrant. Let us say that it is 10 per cent or 2 per cent,
the figure given by one of our neighbors, as proper for this state; the
matter is not materially changed. There is more tuberculosis this year
than there was last, and there will be more next year than there is this.
If it would be expensive this year, it would be more so next year. In
a recent address by Dr. Adami to the Association of Canada, Dr. Adami
argues strongly that Canada should handle the question before it becomes
so expensive and so troublesome.

The State Board of Illinois is to be commended for adding its efforts
to the world wide movement looking toward the control of this disease.
Even if no new fact is uncovered, or even sought, the massing of informa-
tion is, desirable, for the adjudication of a question of such stupendous
moment is not to be entered upon until there is sufficient data to guard
against serious error.

When we come to consider the question of the infectiousness of milk
two avenues of inquiry branch off. The one relates to the spread of the
disease to other domestic animals; the other relates to its relation to the
disease in the human subject. The communicability of the disease through
the milk—first, to sucking calves and animals fed on milk—second, to ani-
imals associated with the diseased animals.

A piece of investigation eminently proper in its bent, was that of
Phelps. He raised calves on milk from cows that had responded to tuber-
culin. While his method was proper, study of the period of reaction of
the mothers, and the date of feeding of the calves, forces us to believe that
conclusions cannot be drawn from the work. The very rapid spread of
the disease in stock, the virulence of the germ in bovine tuberculosis and
the virulence of the germ in milk, are good evidence that the disease is
spread by the milk.

Theobold Smith has recently shown that the tubercle bacillus that
has passed through the cow has gained in virulence. The British Royal
Commission for 1890 said: The milk of cows with tuberculosis of the
udder possesses a virulence which can only be described as extraordinary.

The statistics from Copenhagen show the great prevalence of tuber-
culosis in pigs fed on skim milk from creameries.

Its relation to the disease in the human subject. This is in reality
the greater question of the two, even to the stockman. The life of a man
and of his family must ever be superior to any question of property. People
with tuberculosis are not fit companions for stock any more than stock
with tuberculosis are fit companions for people. If the annual loss from
tuberculosis in the United States is $750,000,000, the stock owner must suffer
in common with every one else. The work of Bang at Copenhagen and
the experimenters at Thurbyville, England, show the disease is spread by
association. The Bang experiments are familiar to most of you. An ex-
position of them can be found in the valuable report of Prof. Conn at
Thurbyville in 1892. Sixty-three per cent of the herd tuberculous—seg-
gregation has applied. In 1897 this percentage had fallen to 27.
What evidence have we that tuberculosis can be transmitted from cows to man?

To begin with, we must pose the general proposition that every animal that has tuberculosis serves as a culture bed for the bacilli of that disease. It is true that the disease may be more or less modified as to its virulence by the animal in which it has found a home. This does not destroy the force of the original statement. In birds the bacillus has been so modified as that its virulence towards other animals has been in a great measure lost. This represents the extreme of divergence. Yet it would hardly be denied that the presence of avian tuberculosis contributes in some measure to the possibility of the spread of the disease.

In autopsies of calves it has been found that 68 per cent showed intestinal tuberculosis as the primary lesion. This tends to show that milk was the medium of infection. Tatham’s statistics for England show that whereas pulmonary tuberculosis had decreased 45.4 per cent., when we compare 1851 to 1860 with the present time, intestinal tuberculosis has only decreased 8.5 per cent. If we study intestinal tuberculosis as shown in children of different ages, we find that under one year of age it has increased 27.7 per cent., and under five years of age it has decreased only 3 per cent. This tends to show that improved hygienic conditions, better light, better air, better drainage, cleaner homes and work places, have lowered the amount of tuberculosis enormously. But even these bettered conditions—a betterment assuredly as helpful to babies as to adults—have not been sufficient to compensate for a food supply become more dangerous. And what is the food supply of children under five, and especially of babies under one year of age? Tatham’s statistics show that for each 100,000 people in England, 206 die each year from pulmonary tuberculosis, 225 from all forms of tuberculosis, and 44 from intestinal tuberculosis. That of 100,000 children under four years of age, 151 will die each year from intestinal tuberculosis. Of 100,000 babies under one year of age, 404 will die from intestinal tuberculosis.

Dr. Gehrmann has spoken at some length on this phase of the question. It is scarcely denied in reputable quarters that milk from cows with tubercular udders is infectious to animals and to man. The Jena statistics for 1897 show that 1 per cent of the animals having tuberculosis have tuberculosis of the mammary gland. Nocard has emphasized the fact that it is not always possible to demonstrate tubercular nodules in the mammary gland when there is indication of such involvement. We are willing to accept the statement of Conn, who says—after careful study of the problem for many years there appears to be at the present time in the minds of scientists an undoubted tendency to regard the danger as very much less than has been supposed. In the series of examinations that we have made, whilst 26 per cent of the milks of cows with sound udders showed tubercle bacilli in the milk, yet in only two of these cases was there a number of tubercle bacilli that would have constituted a considerable element of danger.
In a person with a sound intestinal tract. The single organism found after prolonged searching of several slides in each of the other specimens would probably have been easily handled by the resisting or protecting forces.

In spite of all this, the milk tuberculosis question presents itself in about this fashion:

First. We are trying to eradicate a disease that kills one-seventh of the people and costs $700,000,000 annually.

Second. Milk constitutes one of the avenues of infection.

Third. Milk can sometimes contain large numbers of the bacilli when the mammary gland is not infected.

Fourth. It is not always possible to demonstrate tuberculosis in the gland, either before or after death, when other evidence conclusively demonstrates its presence.

Fifth. No man can say when the walls of his intestines are capable of resisting even a small number of bacilli.

The conclusion of the British Commission is correct, to-wit: Any person who takes tubercular matter into the body as food, incurs risk of acquiring tuberculosis disease.

Says Dr. F. W. Smith, of the New York Tuberculosis Commission: The first great step toward the prophylaxis of tuberculosis in man is to stamp out the disease in cattle.

The question is one worthy of our most judicious thought, from whatever standpoint we view it; and by no means the least important point of view is that of the man who, clear headed and far sighted, tries to save the stock interests of the country, not only from the impending ills, but from those that, farther removed, are still well above the horizon.

In Northrup’s series of seventy-seven post-mortem in children, forty-two appeared to have a primary thoracic tuberculosis; nineteen appeared to have primary abdominal tuberculosis. He calls attention to the fact that in apparently primary pulmonary tuberculosis, the bacillus might have entered the intestines, traversed the wall, passed to the lymphatics, thence to the thoracic duct and the lungs.

At the conclusion of Prof. Evans’ paper the convention took a recess until 10 o’clock A. M. the following day.
SECOND DAY'S PROCEEDINGS.

October 12, 1899, 10 o'clock A. M.

The convention was called to order by the President.

Dr. Pearson offered the following resolution, which was read, and, on motion of Mr. Tillman, was referred to the Committee on Resolutions.

WHEREAS, Tuberculosis of cattle is now attracting much attention in all parts of the country and has been the subject of much legislation in the eastern states and in some of the central states; and,

WHEREAS, In some of the discussions on this subject certain fundamental facts have been lost sight of, or are misstated, and there is need of a definite statement as to some of the points in regard to tuberculosis that are so fully established as to be placed beyond reasonable doubt and have been accepted and endorsed by the conventions that have taken action on this subject during recent years, be it

Resolved. That the following points in regard to tuberculosis may be considered as established and should enter into all plans for controlling this disease:

1. Tuberculosis is a contagious disease.
2. Tuberculosis prevails extensively in many parts of the United States and is spreading, except in uninfected beef producing herds and in states that are combating it actively.
3. While the losses caused among cattle by this disease are large and sufficient to justify energetic efforts to eradicate it, tuberculosis is also of much importance on account of the intimate relation of this disease of cattle to the public health.
4. Tuberculin furnishes by far the most accurate means that is at present available for recognizing tuberculosis in living animals, and the mistakes made where it is carefully used are so few as to be of no practical importance.
5. It is necessary that states shall authorize measures planned to suppress this disease if it is not to be permitted to continue to spread.
6. This convention recommends that all states that have not already done so shall authorize and empower the proper authorities to adopt such
planned and conservative measures to repel the encroachments of this disease and to eradicate it where it is already established.

Mr. Charles W. Baker, Secretary of the Chicago Live Stock Exchange, in behalf of the Exchange, extended an invitation to the delegates to visit some of the large packing houses at the Stock Yards as its guests, and stated that carriages would be in waiting at Wolf's slaughter house at the conclusion of the post-mortems for the use of those delegates who desired to make the trip.

Dr. Leonard Pearson, State Veterinarian of Pennsylvania, read the following paper on

The Control of Tuberculosis.

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 will 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 in 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.

As to the first point, there is no lack of observation 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 Registry 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 59.1 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 tubae 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 not 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.

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 sea-
board and 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 mountainous country be-
yond. The extent of prevalence in the old dairy sections of the east ap-
ppears 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 sec-
tions, 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 Phila-
delphia. This herd was established about twenty-five years ago and con-
sists 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 in-
creased by breeding and not by purchase, excepting a bull occasionally,
and, as has been shown by a tuberculin test, it entirely free from tuber-
culosis.

In many of the interior valleys of Pennsylvania a large number of
herds have been tested without finding a single tubercular cow. These val-
leys 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 of Pennsylvania and other eastern states,
tuberculosis is very common; some herds have been almost completely ex-
terminated by it and in certain restricted localities it exists on almost
every farm. Notwithstanding the extent to which it prevails in some sec-
tions and the fact that it has brought ruin to many farmers; I do not
think that the distribution among all the cattle of Pennsylvania exceeds
about 2.5 per cent.

Tuberculosis has spread very rapidly among cattle in this country dur-
ing recent years. Of this I am convinced by the statements of veterinarians,
hbutchers 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 had 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 Pennsyl-
mania, including three districts in which tuberculosis was previously un-
known, 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 satu-
rated 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 on 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 government.

The federal government is doing very effective work in this connection by keeping tuberculous cattle out of the country and in assisting in the control of inter-state 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 taken up this work seriously other than New York City, Philadelphia, and, perhaps, a few other municipalities. 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 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 tuberculous cows, and is supplemented by the statements of several gentlemen who had owned tuberculous cows and 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, but 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 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 that 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 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.

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 except 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 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 his 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
Interstate Association of Live Stock Sanitary Boards.

iar 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 tuberculous 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 tuberculin 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, 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 tuberculous 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 a discharge of water from a bayou fed from it.

B 3. 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 now 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 4,961 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 observation, shows that not many infecting animals are allowed to remain in herds 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 observation 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 in 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 tuberculous 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 aid 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 tuberculous 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.

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 prophesies 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 some-
times 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 the 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 carefully 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 unreasonable 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 acquisition 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? 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 by feeding the products of animals that are tubercular to a certain degree. 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 realize 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 a certain district 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. Or, all herds supplying milk for shipment or for consumption as milk may be tested, 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 the 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 the 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 slaughter houses, 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 rigorous 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 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 Sickamgrotzky 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 are 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 1896 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 assisted 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 greater 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, tuberculous 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 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, Pittsburgh, Baltimore, and to other, lesser cities. Much butter is made at the 600 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 Pittsburgh, and from West Virginia. One county, Lancaster, feeds from 20,000 to 25,000 steers each winter.

As stated above there is much difference as to the extent 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 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, Secretary of Agriculture, 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 $50,000 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.

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, except 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 cooperation 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 andudder 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 andudder cases alone and not to 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 help 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 cow as soon as born and if the milk will not be used without pasteurization. Or, the reacting animals may be killed at once after appraisal. The limit of appraisal 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 appraisal, 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 un inspected 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 with to have their entire herds tested, these animals may be appraised at a nominal price and destroyed, and the appraisal 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 injected herds reported to select from, only 11.6 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 injected herds. Moreover, many farmers wanted to be able to purchase tested cows. Hence the law that went into operation January 1st, 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 becomes 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 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?
DISCUSSION.

MR. RIDDLE—Is not tuberculosis aggravated by the confinement of animals in barns?

DR. PEARSON—I have known of cases where the disease appeared in cattle in pasture, and others where they were stabled part of the time.

DR. CLUTE—Do you have any trouble in making tests in hot weather?

DR. PEARSON—Sometimes cattle shipped into the state have to be detained several days on that account before they are tested, but that does not occur among cattle on the farm.

DR. CLUTE—There were four different cases last summer where we had to abandon the test on that account; the temperatures ran from 103 to 105.5 the first day, and perhaps next day would be normal.

THE CHAIR—How many preliminary temperatures do you take?

DR. PEARSON—Not so many as formerly. Not less than two, usually three.

DR. EISEMAN—I would like to ask what agent you use for disinfecting.

DR. PEARSON—Carbolic acid. We tried corrosive sublimate but it was not satisfactory. The objection to corrosive sublimate is that it does not penetrate as the carbolic acid does. In Denmark the use of corrosive sublimate has been entirely discontinued.

THE CHAIR—Do you follow that with an application of chloride of lime?

DR. PEARSON—Usually.

A DELEGATE—I would like to ask in regard to the compensation paid to owners of diseased cattle. You state that $25 is the limit for grades and $50 for pure bred cattle.

DR. PEARSON—This is only an arrangement we have made which proves entirely satisfactory. It can hardly be called an appraisement; it is more of an agreement than an appraisement.

A DELEGATE—About what does it cost per year to pay for reacting cattle?

DR. PEARSON—Between $25,000 and $30,000.

A DELEGATE—What is your average hour in the evening for injecting?

DR. PEARSON—Six or seven o'clock, after two or three preliminary
temperatures, the following day continue taking temperatures until at least sixteen hours after injection.

MR. TILLMAN—I do not intend to controvert the fact that tuberculosis is a dangerous disease: dangerous to the animal and a source of great loss to the owners of stock and dangerous to the human family, but I want to ask this question: All of this investigation seems to proceed on the idea that the increase of tuberculosis in infants indicates that the disease had its origin in the food. I would like to ask if the increase in the density of population, warmer houses and closer confinement of infants in this age may not be the cause of the increase of the disease among infants. It seems to me that question should be disposed of before we assume that the milk consumed by infants is the cause of the disease. Cattle confined in stables are more liable to have the disease than those running in the pasture. Tuberculosis is more common in cattle housed than in those running on ranches or on the barrens. Before assuming that the milk consumed by infants is the cause of the disease, you should look and see if there is not another cause to take the place of that: whether the greater density of population, and the increase in the comforts of home, the child going less in the open air, may not be the cause of the increase in the disease. After it leaves childhood and these conditions are changed in a measure, the disease decreases. Crowded up as they are in cities like London and Chicago, you would naturally expect to see an increase in the prevalence of the disease.

DR. PEARSON—I would say, in reply to that question, that these statistics that I have quoted, and that were quoted yesterday, were taken from the statistics of the General Registry Office of England. It has been shown definitely and it is a well known fact, that the buildings and houses and habitations generally in London, and also in the larger American cities are far better now than they were forty years ago. Laws have been enacted requiring area ways to be a certain width; the houses to have a certain amount of light and the condition of the filthy tenement houses that existed years ago, where people were huddled together with whole families in a room, has been greatly improved. There is no reason to believe that the conditions are more favorable to the growth of tubercle bacilli in children than in adults. Now, if the conditions have been improved to such an extent that the disease has been restricted in a marked degree among adults, as has been found to be the case, we would naturally infer—and justly infer—that the same conditions would restrict the prevalence of the disease among infants, provided infants derived the infection from association. The fact that there is a decrease in the prevalence of the disease among adults and an increase among infants, would indicate that the increase among infants is due to their food, and we know that tuberculosis has been developed in animals by feeding them milk from tuberculous cows.
MR. LOTT—In regard to dairy cows coming into the state subject to inspection; how do you manage cows coming into your market, ostensibly for feeding purposes, some of them going out for dairy purposes? Is there any restriction on that point?

DR. PEARSON—Our difficulty in that direction is not great. Our conditions are entirely different from the conditions that exist here. We have no very large live stock market in Pennsylvania; the largest is at East Liberty, which is one of the largest markets in the east. We have an inspector constantly in these yards, and everything about which there is any doubt is inspected and tagged before it is allowed to leave.

DR. PETERS—Mr. President: I think whatever discussion is desired to be had on these papers might well be postponed until we have acted on the reports of committees.

THE CHAIR—Is the committee on Line and Open Season ready to report?

In response Mr. Niles, from the Committee on Line and Open Season, reported the following resolutions which were on motion, adopted:

Resolved. That this Association recommends the withdrawal of the quarantine regulations applying to cattle on account of Texas fever infection from November 1st to January 1st; Provided that cattle below the quarantine line destined for feeding in the states of Missouri, Kansas and Texas, and the territories of Oklahoma, New Mexico and Arizona, be inspected and only allowed to proceed in case they are found free from ticks; And provided further, that all infested cattle in transit through the states and territories mentioned, be treated as are infested cattle during the quarantine season.

Resolved. That the Interstate Association of Live Stock Sanitary Boards respectfully recommends to the Secretary of Agriculture the establishment for the ensuing year of the present quarantine line bounding the territory to be scheduled on account of danger from southern cattle fever with the exception that Cumberland, Cannon and Lincoln counties in Tennessee, be placed above the line, upon the State Sanitary authorities of that state furnishing to the Department satisfactory proof that said counties are free from infestation with boophilus bovis.

WHEREAS, There is no doubt that on the first of November, when the open season, under the present quarantine regulations, will commence, there are in the Southern Divisions of all Northern stock yards numerous young ticks (boophilus bovis) rendering it dangerous for native cattle to be yared in said Southern Divisions prior to the occurrence of sufficient cold to destroy such ticks, therefore, be it

Resolved. That this Association respectfully petitions the Secretary of Agriculture to issue orders prohibiting the yarding of any native cattle
in the southern divisions of stock yards north of the quarantine line at any season of the year.

MR. RIDDLE—There are some counties in Missouri, which, I think if Missouri was here to defend herself, she would ask to have put south of the line. The Department of Agriculture is familiar with these counties as is also Kansas, and I have it from Missouri people that they are making a special effort to free these counties from the infection, and if the Bureau of Animal Industry—which is as familiar with the conditions in these counties as Kansas is—I say, if they are willing to still allow them to remain north of the line, Kansas will make no protest, knowing they are making their best efforts to make these counties clean. There are several counties in Texas under the same conditions. We are assured that Texas is doing her level best to make those counties clean, so we are willing to accept the line as it was last year.

Mr. Kleberg, from the committee on Resolutions, to which was referred the resolution on tuberculosis offered by Dr. Pearson on yesterday, reported the same back with the recommendation that it be adopted.

On motion of Dr. Reynolds, the report of the committee was concurred in and the resolution was adopted.

On motion of Mr. Cameron, the Secretary was instructed to transmit promptly to the Secretary of Agriculture copies of the resolutions regarding the open season and the establishment of the quarantine line.

DR. NILES—I would like to ask Dr. Salmon if there is any likelihood of these resolutions being rejected by the Department of Agriculture, and whether it would be proper for the various states to give notice that the open season would be from November 1st to December 31st. My reason for asking this question is that a great number of stockmen who are
interested in this matter are writing letters asking for information in that direction.

Dr. Austin Peters, Chairman of the Massachusetts Cattle Commission read the following paper, on

The Suppression of Bovine Tuberculosis in Massachusetts.

Mr. Chairman and Gentlemen:

Mr. C. P. Johnson, Secretary of the Live Stock Commission of Illinois wrote to me some time ago suggesting that I make a few remarks at this meeting upon the suppression of Bovine Tuberculosis in Massachusetts.

I am of the opinion that it will be much easier to give you an account of the steps taken for the eradication of this disease in Massachusetts, than it will to give you an exact statement as to what has been accomplished; that is it would be a very difficult matter to say exactly what proportion of the cattle of our State were tuberculosis on a tuberculin test, or upon a physical examination prior to 1894, when the work of eradicating bovine tuberculosis was first entered upon extensively, and the proportion of meat stock in the State that would now react to tuberculin, or that today shows physical evidence of disease. but it may be instructive to give you a brief history of the work of the Massachusetts Cattle Commission with a short account of its various vicissitudes, its ups and downs, its policy at different times in the past and at present, and some of the difficulties it has had or has to contend with, and some of the snags it has struck. Such a narrative may prove instructive, and if heeded will no doubt be useful to public officials having sanitary laws to enforce where nothing has yet been done for the suppression of this malady, or where steps are just being taken to embark upon this enterprise.

The experience of the Cattle Commission of the old Bay State is valuable in showing what the farmers and dairymen of a locality will, or will not submit to, and how far radical measures are expedient, what is sufficient to protect the public health, and whether the public in general care to go to any farther extremes than those necessary simply to protect their health.

Massachusetts, while not one of the great agricultural states, being more a commercial and manufacturing commonwealth, at the same time has a large number of farmers among her population whose herds and flocks add materially to her wealth. We have over 200,000 head of neat cattle in our State, the greater number of which are milch cows; hence it is necessary that her live stock interests shall be protected, and for this purpose there is a Board of Cattle Commissioners.

Massachusetts is a commission governed State, and its Cattle Commission is one of its older commissions, and it is one of the oldest if not the oldest of the Live Stock Sanitary Boards in any state in the Union. It be-
came necessary for the live stock interests of Massachusetts to be protected by law years before it was requisite for most of her sister states and those that should have been protected failed to see the necessity for such protection to their own subsequent loss, and at a great expense to the national government in later years.

Forty years ago, in 1859, contagious pleuro-pneumonia was imported into Massachusetts from Holland in a herd of Dutch cattle, and after a struggle of five years it was finally stamped out in 1864, since which time it has never again been allowed to make its appearance in our State.

Occasionally when I hear of the great achievements of the United States Bureau of Animal Industry, and the credit it takes to itself for eradicating contagious pleuro-pneumonia from this country, I am constrained to smile a faint smile to myself when I remember that Massachusetts did this duty of her own volition years before the Bureau of Animal Industry was dreamed of, and that if New York and New Jersey had been sufficiently fit for self government at that time to do likewise, this vast labor and expense would have been spared to the general government and contagious pleuro-pneumonia would never have obtained the foothold it did in Pennsylvania, Maryland, Virginia, and finally in some localities West of the Alleghanies, leading to the great outbreak here in the suburbs of Chicago in 1866, which I had an opportunity of seeing when here as a delegate to a Live Stock Growers Convention at that time.

After terminating its labors in eradicating contagious pleuro-pneumonia, the Massachusetts Cattle Commission was dismissed, but in 1867 an outbreak of Texas fever made it necessary for the governor to appoint a new commission, and since that time it has had a continuous existence. For a number of years its duties were mainly confined to dealing with glandered horses, outbreak of "hog cholera" (used here as a generic name for any supposed contagious swine disease) and keeping Texas fever out of the State during the summer months.

The attention of the Cattle Commission was first directed towards the problem of bovine tuberculosis, by Dr. J. F. Winchester, of Lawrence, who was appointed to the Board in October, 1885, and served as a member until October, 1889. He noticed the alarming prevalence of this disease among our cattle stock and while he was a member of the Commission a good deal of space in its annual reports was devoted to a consideration of this subject.

As the result of modern knowledge of tuberculosis, and constant agitation the Massachusetts Legislature in 1893 passed an act recognizing this malady as one of the contagious diseases of animals, and providing that animals suffering from it could be ordered killed by the Cattle Commission or any of its members without appraisal or payment. Tuberculosis was found to prevail, however, to such an extent among our herds that it proved a great hardship for cattle owners to have their animals killed without receiving anything for them, resulting in a change in the law in 1894, pro-
viding that cattle condemned as having tuberculosis shall be appraised and
the owner paid half of the value for meat or milk purposes for each animal
killed.

The Legislature also, in 1894, passed an act providing that the Board of
Cattle Commissioners should thereafter consist of five members, instead
of three as formerly, it being represented to that body that there was so
much work to be done in connection with eradicating bovine tuberculosis,
that no three men (who had formerly been sufficient to perform all the
duties of the Board) could do all the necessary labor, and that a larger
Board was needed. This idea was correct to a certain extent, but no five
men could do the work the reorganized Board had mapped out, and a small
army of agents and assistants was required.

As far as doing the executive business portion of such work is con-
cerned a Board of three is better than one of five; even one man with
the necessary employees could carry out the duties of the office, although
at times the consensus of opinion of three men may be better than that of
one but nothing is gained by having a larger body.

In the autumn of 1894, the Cattle Commission having investigated the
use of tuberculin and decided upon its reliability as a diagnostic, announced
that all the cattle in the State were to be tested, commencing on Cape
Cod and working West, that all reacting animals were to be killed and un-
der the law the owners were to receive half the animal's value. Under the
provisions of this act 810 cattle were condemned and made into fertilizer
or buried. as the law until 1898 provided that all diseased animals were unfit
for human food, no matter how slight or localized the lesions might be.
Since 1898 the Massachusetts Cattle Commission has had the power to make
rules and regulations for the inspection of meat to conform with those of
the United States Bureau of Animal Industry.

Our farmers very naturally objected to a law which gave the Cattle
Commission the power to test animals that to all outward appearances
were healthy, and then to kill those that reacted and pay but half the value,
especially as it is very difficult to make the average farmer understand that
a nodule the size of a pea in a mediastinal gland is a serious and dangerous
disease, rendering the milk unfit for use and making the flesh dangerous as
an article of food. The result was that in 1895, the law was so amended
as to give owners of condemned cattle their full appraised value up to
a limit not exceeding $60, and the passage of an act restricting the use of
tuberculin. The use of tuberculin as a diagnostic agent for the detec-
tion of the disease known as tuberculosis in domestic animals shall be re-
stricted to cattle brought into the Commonwealth from any point without
its limits, and to all cattle at Brighton, Watertown and Somerville: provided,
however, that tuberculin may be used as such diagnostic agent on any ani-
mal or animals in any other part of the State, upon the consent in writing
of the owner or person in possession thereof, and upon any animals con-
demned as tuberculous upon physical examination by a competent veterinary surgeon."

For carrying out the law in 1895, $150,000 was appropriated; about 8,100 cattle were tested, of which about 2,800 were killed and paid for. Of these 4,015 were reported as suspected of being tuberculous by the local inspectors, 1,795 were condemned or about 44 per cent, and 4,093 were tested at the request of owners who wished their entire herds tested, of which 1,081 were tuberculous, making about 26 per cent.

In 1896, $300,000 was appropriated for the use of the Commission; 8,969 cattle were examined and 4,694 were condemned.

In 1897, $250,000 was appropriated; 9,991 cattle were examined and 5,435 were condemned.

By this time certain farmers discovered that a law which paid them full appraised value up to a limit not exceeding $60 was a very good one for them, and that by insisting on good prices they could sell old unprofitable cows to the State at a little better figure than to anyone else. The result was that some of them employed veterinarians at their own expense to test their cows and then reported the reacting animals to the Cattle Commission. In the winter and spring of 1897 about 3,400 animals were tested in this way, and about 3,100 reacted and were taken by the cattle Commission. This right was so abused that an act had to be passed to stop it, after over $40,000 of the appropriation had been taken by men who had no idea of disinfecting their stables or buying tested cattle to replace those that were killed. This act is as follows:

"No person having animals tested with tuberculin shall be entitled to compensation from the treasury of the Commonwealth for any animals which react to the tuberculin test, unless such testing be done by the board of cattle commissioners, or by its authorized agents acting as such at the time of the test, and such testing shall be subject to the supervision and control of the board of cattle commissioners."

This work was done among a number of dairy farmers in the Eastern part of the State, in Middlesex and Essex counties, and gives a pretty fair idea of the condition of the average milkman's herd in Eastern Massachusetts.

In 1898 the Legislature made an appropriation of $20,000, then refused to give any more for the reason that it considered the Commission extravagant, and thought the dangers to the public health from bovine tuberculosis had been exaggerated. The House then voted to abolish the Commission, but this action could not be gotten through the Senate. The Governor then wrote the Legislature a special message, saying that something ought to be done; the House again voted to abolish the Commission and the Senate again refused to concur.

This year (1899) our laws relating to contagious diseases were recodified, the Commission reduced from five members to three, and $75,000 appro-
priated to carry out the law. The limit of value was reduced to $40. At present we are killing only cows that show well marked physical evidence of disease, or which have tuberculous udders. We are using very little tuberculin and then only on questionable cases, or where entire herds are tested; of the latter we have had very few. If an owner wishes his entire herd tested with a view to eradicating tuberculosis, the Commission does it only on condition that he will take what he can get for animals that pass as fit for beef, the State only paying for those that are unfit for food; that he will agree to thoroughly disinfect his barn and that he will buy only tested animals to take the places of those that are killed.

The Massachusetts Cattle Commission requires all cattle brought into the State to be tested with tuberculin, except beef cattle for immediate slaughter and calves under six months old. Here difficulties are encountered: At first at our great markets, Brighton and Watertown in 1894 and 1895, the cows were tested by the Commission upon arriving at the stockyards, but cattle amid strange surroundings, and excited by transportation and unfamiliar sights are not fit to test, many will have rages in temperature not due to tuberculin. Out of 100 killed as reacting to tuberculin, 20 were found to have no lesions and this plan was abandoned. It would be too expensive to hold cattle in quarantine for a week and then test them; the only other plan was to allow the drovers to have them tested by veterinarians in the states from whence they came, chiefly Maine, New Hampshire, and Vermont. Here the temptation to fraud is great. the drovers do not care to buy cows and have them react. and the farmers do not care to sell them to the drovers at their own risk, hence if the veterinarian doing the testing can be bribed or corrupted to fill out certificates without testing the animals it will be done.

A year ago last spring the Massachusetts Cattle Commission had a list printed giving the names of veterinarians whose tests it would accept. At that time the names of a number of men known to be doing dishonest work were dropped, and it was hoped that a reliable body of men to do the testing had been secured, but it did not take the drovers long to find out who was corruptible, and many of the cow dealers I fear are again bringing in cattle that have never been properly tested. The reason we have so few diseased cows brought in is not due to our requiring a test, but because the animals come from sections of the country where bovine tuberculosis has not yet acquired much of a foothold.

As animals do not always react after two or three tuberculin tests, it is possible to have a diseased cow tested honestly and fail to react because she has previously been tested by another veterinarian, or because the dealer has already given her one or two tuberculin hypodermic injections in order to lessen her chances of reaction.

The regulations of our Board requiring a tuberculin test are simply rules of our Commission and not law; perhaps statutes inflicting a heavy
penalty on anyone who brings a tuberculous animal into a state would be more effective, and there is more certainty of cattle being properly tested if the State has quarantine stations where all dairy and breeding cattle can be held and tested by state officials, rather than relying upon veterinarians out of the State, many of whom, I am ashamed to say, as I am a veterinarian myself and feel a pride in my profession, are thoroughly dishonest and corrupt.

To sum up from our experiences in Massachusetts it can be said:

1. If tuberculosis prevails to any very great extent among the cattle of a community owners will not submit to having their cattle killed without compensation.

2. If the use of tuberculin is abused, farmers will insist that it shall be used under proper restrictions.

3. If owners are paid full compensation by the State, legislation may be necessary to prevent their selling diseased cattle to the State as a matter of speculation.

4. If the State pays full value for animals killed as tuberculous the taxpayers will not long tolerate killing cattle that are not sufficiently diseased to be a source of danger to the public health, especially if animals practically sound are to be made into commercial fertilizer.

5. In endeavoring to prevent the entrance of bovine tuberculosis into a state it is extremely difficult, if not impossible, to have animals honestly tested with tuberculin outside the limits of the state; the safer way is for the state to have its own quarantine stations where the animals can be tested, if this work is to be undertaken.

In dealing with bovine tuberculosis it must be considered from two points of view. First, its danger to the public health; secondly, as a contagious disease among cattle causing annually heavy losses to our cattle owners. As a menace to the public health the danger should not be overestimated. As only cows badly diseased with general tuberculosis, or having tuberculous udders are likely to excrete tubercle bacilli in the milk, although some may be floating in the dust of the stable where badly diseased animals are kept, and perhaps a few tubercle bacilli may gain entrance to the milk from the air. Furthermore, there seems to be a question among recent investigators as to the identity of the bovine and human tubercle bacillus which may still farther lessen the danger; this question is, however still open to additional study.

Looking upon it as a contagious disease of animals it depends upon its prevalence in a given locality as to how radical the means to be taken for its suppression may be. Where very few cases are to be found in a community it is practicable to stamp it out; where it is widespread and there are many infected buildings as well as cattle, more gradual and conservative methods will have to be employed, always bearing in mind the importance of good sanitary surroundings, and raising young cattle that are
healthy and with good constitutions to replace those that have gone before; remembering that the bovine population changes about once in twelve years in any event.

Do not think from what I have said that I underestimate the value of tuberculin, as I am well aware of its worth when properly used.

It has been a great pleasure to me to present my ideas to you gentlemen, and I thank you for your attention.

Election of Officers.

The Chair announced the next order of business to be the election of officers.

Dr. Eisenman placed in nomination for the office of president, Mr. C. P Johnson of Illinois.

On motion of Mr. Riddle, Mr. Johnson was elected president for the ensuing year by acclamation.

Dr. Pearson nominated Dr. E. P. Niles of Virginia as vice president for the ensuing year.

On motion, Dr. Niles was elected vice president for the ensuing year by acclamation.

Mr. Tillman nominated Mr. Mortimer Levering of Indiana for the office of secretary.

On motion of Mr. Lott, Mr. Levering was elected secretary for the ensuing year by acclamation.

Mr. Cameron nominated Mr. W. B. Tullis of Texas for the office of treasurer, and, on motion, Mr. Tullis was elected treasurer for the ensuing year by acclamation.

MR. TILLMAN—I notice from the minutes of the last meeting, at Omaha, that each of the states was assessed $3.00 for the payment of expenses. Nothing of that sort has been done by this convention.

THE CHAIR—that action applied only to the Omaha meeting, and it was taken in order to provide a fund for printing the proceedings of that meeting, that copies might be furnished to all of the states represented.

MR. LOTT—I move that each state represented at this meeting be assessed $5.00 per year for printing the proceedings of this year and of last year, and that the action of the Omaha meeting be confirmed in the assessment of $3.00 per year from now on.

MR. RIDDLE—I see an injustice in this motion. I believe only four states paid the assessment that was levied against them last year at Omaha and think the chances of recovering from the others is very small. So far
as Kansas is concerned, we are willing to let that assessment go, but I believe that the proceedings at Omaha, and also those had here, can be printed in one volume, and the cost would not exceed what would be realized from a single assessment; therefore, I move as a substitute, that the assessment begin now, and that it apply to the expenses of this meeting and the printing of the proceedings of both meetings.

MR. PAINE—That is, make just one assessment for the two years.

MR. RIDDLE—Yes.

MR. CAMERON—I would like to ask, for information, whether, if a state has refused to pay its assessment, it would not be the fault of the officers of this Association?

THE CHAIR—I do not think any state has refused.

The question recurring upon the substitute offered by Mr. Riddle, it was adopted.

On motion of Mr. Riddle, it was ordered that, if the funds realized from the assessment would permit, 500 copies of the proceedings be printed.

The next order of business being the selection of place and time for the next annual meeting of the Association:

Mr. Cameron presented the claims of Kansas City, Mo., and asked that the next meeting be held in that city.

Mr. Embry invited the Association to come to Louisville, Ky.

Dr. Niles asked that the meeting be held in Richmond, Va.

Dr. Pearson urged the selection of Philadelphia, Pa., as the place of meeting.

Dr. Peters offered the hospitality of Boston.

On motion of Mr. Paine, the roll of states was called, with the following result: Kansas City, 6; Louisville, 9.

On motion of Mr. Levering, the selection of Louisville was made unanimous.

The Chair announced that, under the resolution adopted at the time of organization of the Association, the time of meeting was fixed on the Tuesday after the first Monday in October, and if there was no action changing the time, that would be the date of the next meeting.

After some discussion, the date of meeting was left unchanged.

THE CHAIR—The programme, which tends to make these meetings interesting, entertaining and instructive, should be made up earlier than it was this year. I sent out circulars asking for suggestions from the various
State Boards, but received no response, and it has devolved upon me as your President, to prepare such a programme as I could arrange for. I want to ask that within the next six months you communicate with me, or the Secretary, and make some suggestions as to questions of interest to be discussed, either in the form of papers or addresses; and if you would also suggest some one who is competent and willing to treat of the subject in the best possible manner, it would be of great help in making up the programme.

In response to this request of the Chair, Mr. Embry suggested that Dr. Eisenman be requested to make a report at the next meeting of the Association on a test he (Mr. Embry) proposed to make in exposing native cattle to tick infested cattle fed upon distillery slop and stabled in distillery barns; and also by infesting native cattle, fed in distillery barns upon distillery slop, with young ticks, it being Mr. Embry's idea that native cattle so fed are immune to the disease.

On motion, a vote of thanks was tendered to Drs. Salmon, Gehrman, Evans, Pearson and Peters, for their excellent addresses on the respective subjects handled; to the Union Stock Yards Co., the Chicago Live Stock Exchange, the Illinois State Board of Live Stock Commissioners, and the Press, for courtesies extended.

On motion of Mr. Lott, the conyention adjourned sine die.

MORTIMER LEVERING,  C. P. JOHNSON,
Secretary.           President.