Report of the Proceedings

of the

TWENTY-SIXTH
ANNUAL MEETING

of the

UNITED STATES
LIVE STOCK SANITARY
ASSOCIATION

CHICAGO
December 6th, 7th and 8th, 1922
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R. A. Ramsey, Washington, D. C.
E. L. Speairs, Oklahoma City, Okla.
Report of the Proceedings
of the
Twenty-Sixth Annual Meeting
of the
UNITED STATES LIVESTOCK SANITARY ASSOCIATION
Chicago, Illinois, December 6, 7 and 8, 1922

The meeting was called to order at ten o'clock A. M., December 6, 1922, at Hotel LaSalle, Chicago, Illinois, President T. S. MUNCE, presiding.

PRESIDENT MUNCE: The Twenty-Sixth Annual Meeting of the United States Livestock Association will please come to order. The roll call, I believe, is the first order of business.

DR. HOSKINS: Mr. Chairman, I move the suspension of the roll call and the acceptance of the registration in lieu thereof. (Which motion was duly seconded and carried.)

PRESIDENT MUNCE: Having disposed of the roll call and substituting the registration card system, the reading of the minutes of the last annual meeting is the next order of business.

DR. HOSKINS: Mr. Chairman, I would move the minutes of the meeting, of the last meeting, be dispensed with and the printed proceedings be accepted in lieu thereof. (The motion was put and unanimously carried.)

PRESIDENT MUNCE: Unfinished business. The Chairman of the Executive Committee, our Vice President, Dr. Simmons, is he present?

DR. BUTLER: Any unfinished business from the Executive Board from the last meeting?

DR. BUTLER: There is no unfinished business that has been called to my attention.

PRESIDENT MUNCE: The next is the President's address, I believe. (Thereupon President Munce read his address to the Convention as follows:)

ADDRESS OF THE PRESIDENT
T. E. MUNCE
Harrisburg, Penn.

As presented at U. S. L. S. S. A., Nov. 6, 1922, at Chicago.

Our constitution does not require the President to deliver an address. I find, however, that it has been customary to do so, therefore, in keeping with that custom, I have prepared and shall now present a few impressions and recommendations which I believe should receive your attention at this time.
TWENTY-SIXTH ANNUAL MEETING

The United States Livestock Sanitary Association can justly point with satisfaction and pride to its numerous outstanding accomplishments. Its members have been benefited from educational, professional and social standpoints. Its influence in the livestock sanitary world has been broadening and uplifting. The livestock industry has been materially benefited by the Association from the standpoint that it has been the direct cause of improvement in methods of handling transmissible animal diseases. There has been a tendency towards bringing about harmonized action and more uniformity of laws and regulations in reference to diseases in the different states. The unbiased suggestions offered at the meetings have been most beneficial to the many truth seeking members. During the years of the Association's useful and honorable existence its members and officers have generally been most diligent, painstaking, and persevering in the performance of their duties, and thus, the Association has been an outstanding successful organization.

We have lauded the accomplishments of the Association and its members but still we must remember that we have only begun—there lies before us a great duty—the greater problems are still unsolved.

Surely no person could entertain a doubt as to the achievements of this Association and no person who is loyal would underestimate their value.

Purpose of this Association

The purpose of the Association as written in the constitution has been pointed out many times by the presiding officers. The purpose should ever stand before us and our aim should be to accomplish that purpose. It is our duty to prevent the Association from becoming undermined by elements disinterested in its welfare.

Constitution, Section 2—"The purpose of this Association shall be the study of sanitary science, and the dissemination of information and methods pertaining to the control and eradication of infectious diseases amongst livestock."

There is a tendency for every successful organization to expand and become broader in scope. In organizations with a definite purpose and a definite prescribed duty, there is a limit to which it can expand and at the same time perform its prescribed duties in a creditable manner. To expand beyond this limit is for an association to bring about its downfall, insofar as accomplishing its purpose is concerned.

For several years I have been confronted with the problem that this Association has not been rendering the service, producing the kind of results it is capable of giving and that the country needs. In assuming the presidency a year ago it was with a keen feeling of the importance of the position and the responsibility the office carries with it, that I did so.

The experiences gained during the last year through a study, with more perseverance than ever before, of the cause of the present predicament of the Association has confirmed the opinion previously formed.

Instead of trying to find and administer an immediate remedy I thought it more advisable to present the facts at this meeting with the hope that we might jointly, and to better advantage, consider and adopt the necessary corrective measures.

Annual Meeting

The Association, during recent years at least, has gotten into the rut of functioning only during the period of the three days annual meeting, or perhaps for a few weeks prior.
The assembling of material for the program for this meeting has indicated to me the need of a change along that line.

The officers, particularly the president, secretary and chairman of committees on the most troublesome diseases, should, not only by training, be qualified to perform the duties of their respective offices in the Association, but they should by all means be intensely interested in the affairs of the Association throughout the year. They should aim from the time of the annual meeting at which they were chosen to lay out in advance and cover certain definite ground during the year.

I would then suggest that the above officers constitute the Program Committee and that they jointly formulate a suitable program for the annual meeting. The Program Committee should be intimately associated with those who are in position to contribute the kind of material needed. This plan was followed this year. Such an arrangement tends to eliminate papers which are not in harmony with the purpose of the organization and insures the presentation of a logical, constructive, and connected program of strong addresses paving the way for helpful discussions.

Our work is too important at home, time is too valuable, and traveling too expensive to come here to be entertained, and be obliged to listen to papers and wrangling discussions, that do not get us anywhere, nor bring out new points.

Suggestions Sought

In January of 1922 your President wrote to a number of the members asking them for suggestions concerning this year's work and to set forth problems, which, in their opinion, the Association should give attention during the year.

It was pointed out that from the purpose of the Association as defined in the constitution, "it becomes the duty of the Association to formulate regulations, principles, policies, methods and plans for the control and eradication of diseases, and should include prevention, which is paramount. These principles should be based on research and investigational work that has been done and reported elsewhere, and should be evolved from the results of such investigations."

"For example, the Finance Committee should make a thorough study of that subject, not only as pertains to the best methods of financing the Association but in financing campaigns against disease whether national or sectional. A definite financial system should be produced."

"Great strides have been made in perfecting methods of controlling animal diseases, and in this respect the states have cooperated splendidly with one another and the Federal Government. But on the other hand, we have been working independently of one another with reference to finances."

Replies to this letter brought out a number of very helpful points and valuable suggestions. It seemed to be the consensus of opinion that the Association has not been fully accomplishing its purpose during the last few years.

Policy

To accomplish the most and to render the greatest service possible every individual or group thereof bound together for a definite purpose must have a definite policy.

This Association does not seem to be giving back to its members in full measure; nor to be rendering to the country the 100 per cent helpful service it is capable of doing. The reason, apparently, is that the Association is without a definite policy and is struggling along in a haphazard, hit and miss sort of a way. It does not seem to be actively striving to
accomplish the purpose for which it was organized and maintained. Instead of confining its attention to livestock regulatory and sanitary problems its field has been extended to include practically every phase of veterinary science. The policy should define the relation of the Association to livestock and poultry husbandry, public health measures, research and veterinary education, the various regulatory services, veterinary and livestock associations, the veterinary practitioner, biological products, free service, indemnities for livestock, financing veterinary science and regulatory work, humane societies, publicity, cooperation and other necessary points.

Veterinary Education

It is a further duty of this Association to make recommendations to our veterinary schools, setting forth the kind of instruction that will make the graduates especially fitted and adapted to conduct special lines of transmissible disease research and regulatory work needed by our country.

It is becoming known at the present time that men who enter medical or veterinary schools with the intention of specializing on certain phases of the work can find positions in those special lines when they have finished.

It is not the men who can do a large number of things with a fair degree of accuracy, but those who are specialists in certain phases of commercial, industrial or professional enterprises and can do these things well, that are sought to fill positions today.

The instructions received in the veterinary schools should be of such a character that will give the students special ability in certain phases of the work which necessarily must be theirs in the future.

Since it is the young man who is more inclined to possess the modern view and since it will become his duty to apply his school instruction to modern conditions, the teaching staff of every veterinary school should aim to keep young men of ability associated with the older members of the staff, and thus, the connecting link becomes more secure. The same principle should be applied to national and state bureaus and to all associations and their committees.

Research and Specialization

It is the further duty of this Association to study the necessity of and recommend that special lines of research be done thus enabling it to a better advantage to formulate sanitary and regulatory recommendations. No unquestionably sound sanitary and regulatory recommendations can be advanced until the results of unquestionable research and investigational work have formed a sound basis to warrant their formulation and practicability of application. Many things which apparently are unpractical can be proved by research and mathematical calculation to be of practical value.

Accredited Herd Plan

Five years’ trial of the accredited herd plan, and the policies adopted for its administration in Pennsylvania, for tuberculosis control proves that when its principles and requirements are complied with they are sound and practical; and by their application a diseased herd can be rendered free and kept free from tuberculosis.

The principle of area work is good. In states where funds are available to first provide for the voluntary requests of purebred and other cattle owners for tuberculin tests and also to successfully conduct area work, it should become an effectual and economical method of causing
increased progress in the suppression and eventual eradication of tuberculous. However, the plan adopted should be supplied with the provisions necessary to meet the variable conditions of all classes of cattle owners.

But in our work of prevention and repression of tuberculosis and other transmissible diseases of cattle we come in contact with several classes of owners:

1. Breeders of purebred cattle—Farmers, Dairymen:
3. Dealers.

In each of these classes cattle are owned for a different purpose; are kept under different conditions; and the practices of the various classes of owners are different.

The purebred cattle breeder can, to advantage, comply with the present accredited herd plan because he usually maintains better equipment and the certificate has the advantage of increasing the number of sales, of bringing a higher price for cattle and, also facilitates the movement of cattle.

The last two groups of owners which comprise more than ninety per cent of the cattle population cannot and will not comply with the stipulations of the present accredited herd plan because they do not have the equipment; they cannot see that the plan would be of any particular advantage to them; and further they are usually not willing or able to devote any additional expense to their plant.

Plans for handling tuberculosis and all other transmissible diseases of animals, to be applicable in an effectual way to all classes of cattle owners, must of necessity be so drawn as to enable the various classes of owners to comply with them and to benefit proportionately therefrom. If the accredited herd plan is the one under which we are going to control tuberculosis in this country, then every herd owner must at some time, be in a position to comply with its requirements. Furthermore, if the accredited herd plan is going to continue to have the confidence of the people, the word “Accredited” must be held “Inviolate” as recommended by this Association a year ago, then those in charge of its administration must see that its requirements are fully observed.

In order for the accredited herd plan as it now stands to become adaptable to all classes of cattle owners, either the owners of classes two and three, by a tremendous amount of educational work, must be elevated to its requirements and to become elevated they must make a large sacrifice or the stipulations of the plan must be altered and its standard lowered to meet the variable conditions of classes two and three.

As far back as 1896 Pearson stated that “tuberculosis cannot be eradicated by state officers if they fail to secure the cooperation of the herd owners; and further experience everywhere had shown that it was difficult for a state to check the progress of this disease and to obtain permanent results without the earnest cooperation of the owners of herds.”

The requirements of the accredited herd plan can now be met by the purebred owners and should stand. It would be wise to have in addition to the accredited plan a modified plan to meet the conditions of the owners of classes two and three who can not meet the requirements of the accredited herd plan in order to bring about their cooperation more quickly. I would recommend that this matter be given your earnest attention and study.
Prevention

Last but foremost in importance is prevention. It has been neglected both as pertains to the policy of this Association itself and in its recommendations for the control of disease. Prevention is a strictly sanitary measure and is the key to successful methods for the control of each and every transmissible disease.

At the 1921 meeting of the American Veterinary Medical Association held at Denver the speaker was privileged to present a paper on "The Importance of Preventive Measures in the Repression of Animal Diseases." In this paper, the principles that the speaker considered essential were pointed out. It was recommended that the American Veterinary Medical Association authorize the appointment of a special committee to study the question of transmissible disease prevention and report at the next meeting. A committee of five was appointed which rendered an excellent report at this year's meeting at St. Louis. The report was adopted and the committee continued.

It is interesting and gratifying to observe the nation-wide interest at the present time on the subject of "Disease Prevention" which has been disgracefully neglected for many years. It is to be hoped that this interest will continue to become greater from year to year.

In Pennsylvania we consider the subject of transmissible disease prevention so important that we have established in the Pennsylvania Bureau of Animal Industry a separate service, the entire energies of which are devoted to a study of methods of the prevention of transmissible diseases of animals. This service has been successfully operating for more than a year.

Summary and Recommendations

The embarrassing situation of the Association with reference to finances as pointed out by the Executive Committee at the last annual meeting placed the incoming secretary-treasurer in a sphere of great responsibility. In this respect the Association is greatly indebted to Secretary-Treasurer Dyson for the creditable manner in which he has handled the situation. Knowing as I do, and as most of you know, the predicament of the Association on the one hand, and the ability of those who comprise its membership on the other, I feel that it becomes our duty at this meeting to take the steps necessary to put the Association on its feet so that it may function and render the service it should. I would therefore, offer the following recommendations:

1. The appointment of a Committee for the purpose of making recommendations to the Association of a definite, constructive, forward looking, yet elastic policy. Said Committee to render a report at this meeting.

2. That the Association confine its attention and activities to livestock and poultry sanitary and regulatory problems, leaving other veterinary questions and problems to the strictly veterinary organizations.

3. That in view of the major importance of transmissible disease prevention and in order that this Association may function properly along that line that the incoming President be authorized to appoint a Committee on transmissible disease prevention.

4. That the Association become the clearing house through which should pass the bigger problems which come within the scope of its activities.

5. That the administrative personnel be such as to enable the Association to function, to a greater degree, throughout the entire year thus making it possible for the Association to render a more useful
service. Under such an arrangement the members would receive helpful suggestions from the Association and become inspired to perform bigger and better public service. Furthermore, the subjects and discussions would attract more men interested in the prevention, control and repression of livestock and poultry diseases, and would better justify their time and expense in attending the meeting.

6. Greater cooperation and coordination of federal, state and local regulatory service, educational institutions, private agencies and health officials relating to the repression of transmissible animal diseases. Since the final aim of all agencies in this respect is the same it would be to the advantage of everyone if all organizations were more closely interlocked.

7. That the states submit proposed regulations to each other and to the Federal Government, and the Federal Government to the states when such proposed regulations would have an effect from the standpoint of interstate movement of livestock, etc.

To thus submit such proposed regulations to others before their final adopting may be of benefit to both parties concerned. On the one hand they may contain something with which other states could not comply, and furthermore the officials in other states may offer valuable suggestions. Moreover the practice would be the means of familiarizing the different officials with the federal and sister state requirements and bring about greater personal interest and mutual assistance.

8. Leadership. That this Association itself and other allied organizations become more of a leading factor in their line of endeavor. The regulatory bodies throughout the country should assume a higher position as leader. The advancements of the profession as a whole are more or less directly proportionate to its leadership. Leaders are persons or groups of persons who will put the right principles into effect at the right time. They are born and developed, not made.

9. Inspections. With the limited force more time should be spent in an advisory and supervisory capacity, educational work and disseminating useful information. Less time should be devoted to routine field work such as tuberculin testing, vaccinating, etc., more work of this character could be done to better advantage by the practicing veterinarian.

Is the time not at hand when the consumers should assume their share of responsibility of a wholesome food supply? Let the people themselves who use milk and eat meat take more interest in the source of handling of animal food products. So long as municipal, state and federal regulatory officials continue to assume practically all of the responsibility for a wholesome food supply just so long will the public permit them to do so.

10. That this Association and its members individually do their utmost to bring about adequate reimbursement of the veterinary sanitarian. They are at present underpaid. The best veterinarians are needed for this work. The best way to attract good men is to adequately pay them.

11. That in view of this Association having completed twenty-five years or a quarter of a century of honorable and useful existence a Committee be appointed to prepare and submit at the next annual meeting a suitable history of the Association.

Our Problem

On this point I can be very short. Our present problem is largely educational, more in getting the work done than in doing it. The greatest factor in the prevention and control of animal diseases is the attitude
of the livestock owners and consuming public. If they recognize the economic feature and danger to public health caused by prevalent preventable animal diseases and unite in an effort to suppress such diseases there is no power on earth that may stop an early and complete summation of the task we as regulatory officials are attempting.

Plans for doing the work are ready. Therefore it is our immediate duty to arouse these factors to action and they will supply the necessary means. It is to be hoped that this will be a successful meeting and that all will have a pleasant and profitable time.

(Applause.)

DR. BUTLER: Mr. President, I am sure the Association appreciates the wonderful paper that you have given us and I would like to make a motion to the Association that the President be empowered to appoint the committees he has suggested or recommended, and that if these committees are unable to bring in a report at this particular time, that the President be empowered to continue these committees to make a report at the next meeting. (The motion was seconded and carried.)

PRESIDENT MUNCE: The report of the Executive Committee was called for but there did not seem to be any. Are they any committees ready to report at this time? Any committee that has a preliminary report to make, perhaps not a final? The report of the Secretary and Treasurer, Dr. Dyson.

SECRETARY DYSON: I regret that it is necessary to apologize to the members of this Association for not being able to supply you all with a program this morning. I mailed all members of the Association a copy several weeks ago. The records of the Association were placed in the hands of the Express Company last Saturday morning, I thought they would be here before I arrived, but they have evidently been lost in transit. I have all the officials of the American Express Company looking for the shipment and I hope to have it here this afternoon. I will defer making my report until we receive the records.

I received at the last moment word from Secretary Wallace that he would not be able to address the Association at this session.

PRESIDENT MUNCE: Professor Van Norman, President of the World's Dairy Congress, is with us and would like to address you for a few moments in connection with their work. Professor Van Norman. (Applause.)

PROFESSOR VAN NORMAN: Gentlemen of the Association: There is to be held in this country in October of 1923, a World's Dairy Conference, in which the President of the United States has invited all countries of the world to participate. The plans are to develop a program that shall be of interest to four groups of people: One is those who view the dairy industry and its various aspects from the scientific and educational point of view; second, those who view the industry from the standpoint of business, production, manufacture, distribution and so on, breeding of animals and the manufacture of machinery, exploitation of products of milk, the men whose view is primarily that of the dollars and cents; the business man; third, those who view the industry from the standpoint of the law's relation to it, sanitation, inspection, epidemic control, disease control, all those things which come under the law's relation to the dairy industry in any of its phases clear from the cow to the consumer; and fourth, those who are interested in the industry from the standpoint of the relation of dairy products to national health.

Now we are trying to develop a program, I say, that will interest these four groups of people of other countries to join with us in this affair. The spirit which prompts this Congress is stated in
the following words possibly: That progress is ahead of the printed page. Therefore, if you want to get the newest things that are being done, let us bring together the men who are doing them and let us hear from them what they have done. In due time those new things find their way into print.

The next point is that progress is brought about by the exchange of ideas. It was stated to me in Europe this summer that America is ahead of Europe in many, many ways. Why is it? Well, one reason is because we have such meetings as this, it is a part of our American democracy that we come together in groups and exchange our ideas and then go home and do as we please. Everybody is organized from the banker to the hod carrier and conventions are epidemic in America and there does not seem to be any control legislation necessary.

Now then, if our progress is due to our willingness to exchange ideas, the leaders in the dairy industry feel that with the upset conditions in the world, coupled with the fact that dairy products are world products, that you can ship butter around the world for two or three cents a pound and that a shortage or surplus of dairy products in one country affects the price, and therefore the prosperity, of every other dairy country.

With science pointing out to us the vital part the increased use of dairy products may play in the health of the nations, it seems an opportune time to take up and discuss these various problems. Therefore we hope to make this Congress an occasion for that newer exchange or that exchange of the newer things which will be of vital interest and which will stimulate the industry, and it is felt that the presence in this country of men from foreign countries itself will be a stimulus to our industry.

If Bill Jones comes up to Chicago from Texas to buy a milking machine, that is not news for the Chicago Tribune or the Associated Press. But if Baron Rothschild comes over from France or the Prince of Annam or someone from India comes over here to study how we reduce the death rate of our children by furnishing clean and better milk and more of it, that becomes newspaper news and we want that. It will be a very great advantage to our industry to take advantage of the presence of a man here from India, China, Japan, Australia and many other countries of the world who are becoming increasingly interested in the progress we are making in this country in the study of milk and its products in relation to human food.

Now I must not take more of your time to enlarge on the possibilities of this Congress, except to say that I assume as sanitarians, many of you with veterinary training, you are vitally interested in the relation of the dairy cow, her health and her products, her relation to human health, and therefore I invite you, as a representative of the World's Dairy Congress Association which has charge of these plans, your Association, Mr. President, to add one more committee to the list, to add one more plank to your activities, and appoint a committee of two or three who will cooperate with our Program Committee in detailing and developing those subjects which are of vital interest to you and which may have a proper place in the World's Dairy Program.

Now we do not wish to develop a program for the Veterinary Medical Society, but every man who owns cows is interested in tuberculosis and its control, in contagious abortion, in sanitation and various other things which come to your attention, and you are interested in them. Therefore we feel that there is a twilight zone possibly of common interest, and those papers, and those accomplishments of the last few
years which are properly coming within your separate field of activities, we would like to have brought out into the limelight and a place found for them in our program and it seems to me the scientific way to do it would be if you would appoint a committee of two or three who would confer with our Committee with regard to those things.

The Congress will be held in the first week in October, and it seems probable it will be in one of three cities, Washington, Philadelphia or Chicago. We hope to be able to announce definitely the place in a short time; plans are coming to a head very rapidly.

Thank you, Mr. President, for the privilege of extending this invitation and for the opportunity of inviting you to participate in the development of our program in this way. (Applause.)

PRESIDENT MUNCE: We all appreciate, Professor Van Norman, your coming here and the instructive talk given and the cordial invitation extended to cooperate with your Association. I have no doubt that the incoming administration of this Association will take due note of your suggestion to appoint a committee to work with you.

Now, as Secretary Dyson explained, we are obliged to vacate the room and the morning's program is complete unless some of the members have something to say or announce. Any announcements to be made by anyone? If not we will stand adjourned till 1:30 o'clock in this room at which time we will take up the symposium on the very important subject of Bovine Tuberculosis.

Adjourned to 1:30 o'clock P. M. of the same day.

AFTER ADJOURNMENT

1:30 o'clock P. M.

PRESIDENT MUNCE: The Convention will please come to order. In view of the fact we have a very heavy program it is necessary to start, but I would like to preface the program with the announcement that we have a telegram from Dr. Eichhorn who was on the program for tomorrow morning I believe, to the effect it will be impossible for him to be here due to an accident to Mrs. Eichhorn. I also want to announce at this time that Dr. Schroeder, who is also on the program this afternoon, that it has been impossible for him to be here owing to the death of his mother.

This afternoon session is devoted entirely to the very important subject of Bovine Tuberculosis, and on behalf of the Committee on Tuberculosis I will say this program was arranged by the Committee. This Committee is composed of Dr. Jacobs of Tennessee, Chairman, Dr. Butler of Montana, Dr. Kiernan of the Federal Bureau at Washington, Dr. Cotton of St. Paul and Dr. Bruner of Pennsylvania, and I am going to lean very heavily on these men in the presentation of this afternoon's program.

We will now proceed with the first paper listed. The subject is "Organizing Counties for Bovine Tuberculosis Eradication," by Dr. W. Moore, State Veterinarian of North Carolina. Dr. Moore.

ORGANIZING COUNTIES FOR BOVINE TUBERCULOSIS ERADICATION

By Dr. W. Moore, State Veterinarian, North Carolina.

Circumstances and conditions must vary in the several states, making it impossible to lay down fixed rules for the organizing of counties for bovine tuberculosis eradication, and the conducting of area work in such counties. However, certain general principles, which have proven
UNITED STATES LIVE STOCK SANITARY ASSOCIATION

successful in the eradication of other animal diseases, must be followed. Not being familiar with this work in other states, except in a general way, I deem it advisable to briefly discuss the plan which we have followed in North Carolina with marked success.

The first essential step is a proper Tuberculosis State Law, which will give the county commissioners authority to appropriate money for tuberculosis eradication, regulate the movement of cattle into such areas and take care of other details. We have found it advisable to first take up the work in those counties which had the most infection. Some testing is done in the county to demonstrate the practical value of the test and to interest herd owners in the importance of tuberculosis eradication. We solicit and receive the cooperation of the practicing veterinarians, civic organizations, bankers, the press, county health officers, county agent, women's clubs, Farm Bureau and other organizations. The work is presented as a business proposition and one of economic importance. The public health aspect is left to the county health officer, he being a physician and charged with the duty of protecting the public health. I might say that we have invariably received the county health officer's support and cooperation.

When sufficient preliminary work has been done, we, together with those interested in the campaign, appear before the Board of County Commissioners and present the matter to them as a business proposition and request them to provide an appropriation for the work. The amount asked for depends, of course, upon the number of cattle in the county, the size of the county, etc. We have a written agreement stating just what each party will do, signed by the County Commissioners and the State Veterinarian, each of whom retains a copy. We have not as yet failed to get an appropriation from the County Commissioners in any county in which this plan was followed. I might add that in four or five counties, the practicing veterinarians were to a large extent, if not entirely, responsible for the County Commissioners adopting the work. We insist on dealing entirely with the County Commissioners who are responsible for county affairs. If municipalities or civic organizations desire to help bear the expense, they must negotiate with the County Commissioners. We require the Commissioners to furnish ear tags for animals which pass the test. These tags bear a serial number and the name of the county. They also furnish posters, showing that the county is conducting area work and quoting the state law, relative to the movement of cattle, which are posted throughout the county and especially along the county lines. We reserve the right to select the veterinarians who are to conduct the work. We have found that it is not satisfactory to appoint local men, for many reasons. It is also essential that a veterinarian give his full time to the work. No one has a higher regard for the practicing veterinarian and his important work than I, but I am convinced that they are not in a position to take the lead in tuberculosis eradication. They are unorganized and could not conduct the work in a uniform manner, which is essential to success. They would be unable to withstand the criticism and opposition which would in many instances come from their best clients. The Bureau and the states must take the lead in this important work and secure the cooperation of the practicing veterinarian, giving him due recognition at all times. If tuberculosis eradication is properly conducted there need be no fear that it will be opposed by the practicing veterinarian. However, if we, as state officials, play politics and create factions in conducting this work, opposition will naturally follow. Turn back the accredited herds to the practitioner, encourage him to apply the first tests to herds to be accredited, have
him test cattle to be shipped interstate or into counties which have adopted the area plan, and in other ways let him help us eradicate tuberculosis and at the same time increase his practice.

We select only qualified veterinarians to do tuberculin testing, and before they undertake this work alone they are required to work with an experienced veterinarian. We have not found it advisable to undertake so-called "drives" in area work, our local conditions making this unnecessary. We use the intradermic test as a single test almost exclusively, and test all cattle regardless of age. All reactors are tagged, branded, quarantined and slaughtered as soon as possible.

We have completed one or more tests in nine counties and have only one cow which we have been unable to test. Practically all of our reactors are slaughtered soon after they are located. A county is tested by townships and we meet with little, if any, opposition to the work.

We have the state divided into districts with a competent veterinarian in each of said districts, whose duty is to supervise the work. He frequently visits the counties doing area work to instruct and assist the local veterinarian. He confers frequently with the County Commissioners in regard to the progress of the work or other details, receives all reports from the counties in his district and checks them before sending them to the central office. He also visits those counties in his district not doing area work, for the purpose of starting the work.

In organizing counties for tuberculosis eradication, we must constantly keep in mind that it is a business proposition, and our duty and aim is to eradicate tuberculosis. Dealing as we do with County Commissioners who are business men and charged with the duty of conducting the county's business, we expect them to inquire as to the future of the work, how long they must continue to test, etc. I find it necessary for us to evade such questions. The accredited herd rules provide that a county must be accredited in the same manner as a herd. Provision is made for issuing an accredited herd certificate, but there seems to be no such procedure for declaring a county free. Must we continue to test all cattle in a county until all herds have passed two free tests? Can we convince Boards of Commissioners that it is necessary and a good business proposition to continue to test all cattle in the county when there is less than two per cent of infected premises in the county? Are we eradicating tuberculosis when we do this? We are facing this proposition in nine counties in North Carolina. Sufficient testing has been done throughout the United States to demonstrate that there is a wide difference in the amount of infection in different sections—and how absurd it would be to have one rule apply to all sections.

In North Carolina we began tuberculosis eradication in 1917, in cooperation with the Bureau under the accredited herd plan. This afforded an excellent opportunity to establish this work throughout the state and to eradicate tuberculosis from many herds. Our testing for the next five years was as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Cattle</th>
<th>Reactors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1918</td>
<td>4,358</td>
<td>2.4%</td>
</tr>
<tr>
<td>1919</td>
<td>7,445</td>
<td>2.2%</td>
</tr>
<tr>
<td>1920</td>
<td>10,389</td>
<td>2.1%</td>
</tr>
<tr>
<td>1921</td>
<td>23,402</td>
<td>1.6%</td>
</tr>
<tr>
<td>1922</td>
<td>101,271</td>
<td>.78%</td>
</tr>
</tbody>
</table>

The most of our work in the past year has been under the area plan, testing more than 100,000 cattle with three-quarters of one per cent of infected animals. Let us now make some comparisons using the figures...
from the Bureau monthly reports for the twelve months ending September 1st, 1922, for the seven Southeastern states and seven states to the north of them. These figures are as follows:

<table>
<thead>
<tr>
<th>State</th>
<th>Cattle Tested</th>
<th>Reactors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Florida</td>
<td>26,577</td>
<td>1. %</td>
</tr>
<tr>
<td>Georgia</td>
<td>22,027</td>
<td>0.8 %</td>
</tr>
<tr>
<td>Alabama</td>
<td>25,059</td>
<td>0.65 %</td>
</tr>
<tr>
<td>Mississippi</td>
<td>23,252</td>
<td>0.7 %</td>
</tr>
<tr>
<td>Tennessee</td>
<td>63,630</td>
<td>0.5 %</td>
</tr>
<tr>
<td>South Carolina</td>
<td>19,258</td>
<td>1.1 %</td>
</tr>
<tr>
<td>North Carolina</td>
<td>86,970</td>
<td>0.8 %</td>
</tr>
<tr>
<td>Maryland</td>
<td>42,617</td>
<td>1.1 %</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>56,903</td>
<td>4.7 %</td>
</tr>
<tr>
<td>New Jersey</td>
<td>20,753</td>
<td>6.2 %</td>
</tr>
<tr>
<td>New York</td>
<td>148,195</td>
<td>11.4 %</td>
</tr>
<tr>
<td>Connecticut</td>
<td>24,134</td>
<td>16.5 %</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>10,060</td>
<td>5.7 %</td>
</tr>
<tr>
<td>Vermont</td>
<td>70,225</td>
<td>5.8 %</td>
</tr>
</tbody>
</table>

These figures cover all the testing done in these states, the percentage of reactors running from one-half to one and one-tenths per cent in the Southeastern states and from four and seven-tenths to sixteen and one-half per cent in the other group of states. To date we have taken up area work in seventeen counties. In one county we completed two tests and in eight counties one test has been completed with the following results:

<table>
<thead>
<tr>
<th>County</th>
<th>Cattle Tested</th>
<th>Reactors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buncombe</td>
<td>16,376</td>
<td>0.4 %</td>
</tr>
<tr>
<td>Rowan</td>
<td>13,402</td>
<td>0.3 %</td>
</tr>
<tr>
<td>New Hanover</td>
<td>2,563</td>
<td>0.6 %</td>
</tr>
<tr>
<td>Forsythe</td>
<td>8,375</td>
<td>0.8 %</td>
</tr>
<tr>
<td>Scotland</td>
<td>2,867</td>
<td>0.3 %</td>
</tr>
<tr>
<td>Cumberland</td>
<td>4,230</td>
<td>0.5 %</td>
</tr>
<tr>
<td>Davidson</td>
<td>9,870</td>
<td>0.2 %</td>
</tr>
<tr>
<td>Davie</td>
<td>6,534</td>
<td>0.3 %</td>
</tr>
<tr>
<td>Pender</td>
<td>3,726</td>
<td>0.4 %</td>
</tr>
</tbody>
</table>

Can we conscientiously insist that all cattle in these counties be re-tested, knowing that the percentage of infected premises is much below one-half of one per cent? If we do, I fear we will experience difficulty in having other counties adopt this work.

We must all recognize the experience gained in conducting tick eradication for the past fifteen years. The general principles of this work can be profitably applied to tuberculosis eradication. In fact, the success of tuberculosis eradication depends upon our adoption of the general plan of tick eradication. Would one now contend that a ticky county should be held in quarantine and continue to dip all cattle in the county when the infestation existed on much less than one per cent of the farms. They would not, but on the contrary the county would be released from quarantine and the infected premises would be held under a local quarantine until thoroughly cleaned of ticks. If we apply one test to all cattle in a county and find less than two per cent of infected premises, properly dispose of reacting animals, disinfect the premises, issue a local quarantine on infected herds and retest same every six months until they have passed three free tests, I am convinced that it would be perfectly safe and correct to permit the Bureau and State Livestock Officials, within their discretion, to declare such counties free after the completion of the first test. I recommend that this Association go on record as favoring such a plan.
TWENTY-SIXTH ANNUAL MEETING

TUBERCULOSIS ERADICATION IN CALIFORNIA.
By Dr. J. P. Iverson, State Veterinarian, Sacramento, Cal.

When a military organization is operating to accomplish a single stupendous task, its united activities vary more or less in certain of its sectors depending upon the immediate obstacles with which they are confronted. We, who are engaged in the suppression and eradication of tuberculosis, have experiences paralleling military operations and consequently our methods of procedure in circumscribed areas vary in accordance with local conditions.

In the state of California we are endeavoring to economically and efficiently deal with the tuberculosis problem by applying methods which accomplish the greatest general good. When the initial work along this line was contemplated, in order to make a satisfactory beginning, it became necessary to determine the sources from which our state became infected. Investigations revealed that in the early history of the livestock industry in California tuberculosis was not known to exist. As the industry developed the introduction of new blood was considered necessary for the improvement of the herds. This gradual improvement in quality was continued under very limited restrictions to the introduction of transmissible diseases. The result was that splendid types of farm animals were produced but at the same time tuberculosis was spreading among them. Undoubtedly this disease was brought in by the animals intended for the improvement of our herds.

When this unfortunate situation became apparent laws were enacted to prevent a further introduction of the disease. In California, as in many other states, legislation followed in the wake of the disease instead of preventing its spread at a time when its eradication could have been readily accomplished. As it gradually continued to spread among our dairy cattle it was recognized as a serious menace to public health. This situation made it possible in the year 1916 to have enacted what is known as the California Pure Milk Law. While it is not sufficiently far reaching to be regarded as an eradication measure, it serves as a splendid protection to milk consumers and also prevents the spread of the disease among dairy herds.

This law prohibits the sale of milk from cows that have not passed the tuberculin test unless the product is pasteurized under official supervision. In other words, the dairyman may have his cows tuberculin tested and sell raw milk provided he removes any reactors found. The tuberculin test is made without charge to the dairyman and is conducted by veterinarians engaged in state work. The results of the past six years in tuberculin testing under the provision of this law show that 44,344 herds were tested, comprising a total number of 376,379 cattle.

Since it was necessary to provide for pasteurization obviously owners of a number of badly infected dairies took advantage of this provision in order to avoid having their animals tested. Hope of eventually having all dairy cattle free from tuberculosis was, therefore, abandoned, and it became necessary to devise other means of arousing interest so that the work could be carried on in a more effective manner. This was accomplished by conducting an extensive educational campaign among stock owners showing the benefits to be derived from the accredited free herd and free area plans of tuberculosis eradication.

At first this proved a difficult task for the reason that there were a number of stock owners averse to the enactment of any measures that would bring about a reformation in their methods of dealing with tuberculosis. Expressions of views on the subject by many of them
revealed that their attitude was due either to a lack of sufficient information regarding the economic importance of the disease or to unreasonable propaganda spread among them by individuals apparently with ulterior motives. Undismayed by such impediments the plans of the campaign were carried out. That they were successful is evidenced by the fact that two important new laws dealing with the eradication of cattle tuberculosis were enacted by the legislature in 1921.

One of these laws is known as the Federal-State Accredited Herd Act, which provides that the California Department of Agriculture may cooperate with the United States Department of Agriculture in the control and eradication of cattle tuberculosis from individual herds. This law is applied only to purebred herds and does not require the slaughtering of reactors. These animals are branded and quarantined off the premises and continue to remain valuable for breeding purposes.

The other new act is that known as the Tuberculosis Free Area Law. This is distinctively an eradication measure which, when successfully applied, will ultimately bring about far-reaching beneficial results. Any county in California having 90 per cent or more of its cattle free from tuberculosis is eligible to its benefits. After a county has been declared within the eradication area, the Division of Animal Industry may proceed to tuberculin test all the cattle therein. Reactors must be branded with the letter “T” on the left jaw and must be removed from the area of eradication in accordance with the prescribed regulations or be slaughtered under the supervision of a state or federal meat inspector. The work is now being carried on in three counties and since actual operations began less than a year ago no serious difficulties have been experienced. All cattle within the area are tuberculin tested and all reactors not purebreds are slaughtered. These purebreds are disposed of in the same manner as provided for under the accredited herd plan.

When the enactment of a law of this kind was contemplated, the subject of indemnity for reactors was seriously considered. It was found to be impracticable at that time, but cattlemen of the state recognized the value of a free area law and urged its passage without including an indemnity clause.

Some livestock sanitary authorities consider that the successful operation of this law without a provision for indemnities an heroic procedure. It must be realized, however, that practically all the cattlemen in these areas are sincerely interested in the eradication of tuberculosis. Their willingness to sacrifice reactors without any assurance of reimbursement is evidence of the sincerity of their motive. An attitude of this kind makes it possible for the work to continue uninterruptedly. This probably would not be the case if an indemnity appropriation had been provided because the cooperative spirit of the cattlemen would then be influenced to some extent by the amount of funds available for indemnification.

Considerable progress is being made in the counties in which the work has been undertaken and the cooperation accorded the state and federal officials by cattle owners justifies the hope that within a reasonable period quite a large area of California will be declared free from tuberculosis.

PRESIDENT MUNCE: Discussion of papers according to the arrangement here is to be deferred until the completion of the afternoon program. The next paper is The Bovine Tuberculosis Problem in California, by Dr. J. P. Iverson, State Veterinarian of California. Owing to the absence of Dr. Iverson, we will pass to the next paper, The Necessity
of the State and Federal Governments' Recognition of the Accredited Practicing Veterinarians in the Control of Bovine Tuberculosis, by Dr. J. G. Ferneyhough, State Veterinarian of Virginia. Dr. Ferneyhough.

DR. FERNEYHOUGH: Gentlemen, I will not address you like a farmer did down in Virginia some time ago. He said, "Mr. President, Fellow Veterinarians and Gentlemen." We include us as gentlemen here, of course. (Laughter.)

Gentlemen, I wish to say to you in the beginning that I deem it quite an honor to have been assigned such a subject. I had the pleasure of going to Oklahoma, it must be twenty odd years ago, to attend a meeting of this Association and I have attended many meetings since and I do not consider there is an association concerned with the interests of livestock in the United States that is superior to this one, and I know there is not a better fellow feeling in any association than we have here.

Gentlemen, the subject assigned to me appeals to me strongly. What little I have accomplished in Virginia has certainly been through the help of the practicing veterinarian. I think we have the finest set of men in the world, down there, with a few exceptions, and they are very few.

Now, gentlemen, I want to say to you that I don't believe any of us appreciate as we really should the value of the practicing veterinarian. I do not see how we can carry on this work as we propose to carry it on, without the aid of the veterinarian in practice.

When Dr. Kiernan started qualifying the practitioner by an examination, I did not like it, some of our men did not like it. After I got to thinking it over, I soon saw it was a good thing, we had to have some line on these men, and now, I think the Bureau men who happen to know conditions in Virginia will agree with me when I say very few of our men have not taken the examination. So I have become convinced that the examination in Virginia has been a splendid thing for our men. It has made them more careful. I am much interested, and I believe Dr. Kiernan's heart is in the right place, but I don't believe we will get anywhere without the practitioners.

THE NECESSITY OF STATE AND FEDERAL GOVERNMENTS' RECOGNITION OF THE ACCREDITED PRACTICING VETERINARIANS IN THE CONTROL OF BOVINE TUBERCULOSIS.

J. G. Ferneyhough, State Veterinarian, Virginia.

In the first place, owing to the magnitude of the work in the control and eradication of bovine tuberculosis, the veterinarians who are in private practice must help in this all important undertaking, or else, the comparatively small number of official veterinarians who represent the state and federal government will fail to accomplish the desired end, since without the help of the practicing veterinarian, we cannot cover the territory. For my part, as an official veterinarian of the State of Virginia, I have always recognized the fact that in the control of all contagious and infectious diseases among livestock, the practicing veterinarian can be (and in Virginia he always has been), of the greatest assistance, not only to the livestock owner, but also to the State Department.

In the eradication of the cattle tick, in the control and eradication of foot and mouth disease, and anthrax among cattle, as well as glanders affecting horses and mules, and hog cholera among swine, I have found the practicing veterinarians in Virginia, as a class, not only ever ready
and willing to help enforce our regulations, but they render the most valuable aid in applying their professional knowledge and skill in a practicable way. Then, too, the influence of the practicing veterinarian among the owners of livestock is quite an asset to the work, when it is necessary to enforce quarantine rules and regulations.

In connection with the control of bovine tuberculosis, the U. S. Bureau of Animal Industry some years ago recognized the importance of having the private veterinarian take part in the work, and as far back as 1918 the U. S. B. A. I. recommended to the Sanitary Association that the accredited herds be turned over to the private practitioner. The B. A. I. further recommended at that time that a list of accredited veterinarians be made so the state could recommend any veterinarian on said list to the livestock owners as competent to apply tests to accredited herds. Following this, it was decided to have an examination given by the state and B. A. I. to the private veterinarians, in order to have a regular accredited list in each state. This plan has worked splendidly in Virginia as the majority of our best veterinarians have passed the examination and are now on the accredited list, and have taken charge of many of the finest herds in the state.

The private veterinarian is thus taking up the work of the control of bovine tuberculosis by testing the herds which have been accredited by the state and Bureau. For my part, I can conceive of no other method by which we may continue and advance the work of the control of bovine tuberculosis, except through the help and support of the private accredited veterinarian.

Of course, we who are conducting official work know that many of the herd owners wants the testing done by the state and Bureau, because the testing is thus done free of cost to the owner. We should not blame the owner, as he has a perfect right to expect his tax money to furnish him state and federal aid. Nevertheless, this is a big country of ours and the tax money soon runs out, as we enlarge the work by taking up new territory. Thus in order to help as many herd owners as possible, it has been deemed wise to accredit a man's herd, and then let him place it in charge of an accredited private veterinarian, while the state and Bureau take up new herds, thereby extending the work. In other words, without the aid of the private veterinarian, tuberculosis eradication work cannot progress to any great extent.

On the other hand, the private veterinarian has much to gain by taking an interest in the accredited herds. It not only adds constantly to his practice, but it gives him an official rank, and enables him to review the herds which have been passed on by the state and federal officials; thus, he has an opportunity to form an honest professional opinion of the class of men and the individuals who are conducting the veterinary work of the state and federal governments.

The whole work of the control of bovine tuberculosis must be absolutely cooperative with the state, the U. S. B. A. I., the herd owner, and last but not least the private veterinarian, who is doing accredited herd testing. When I tell you that the State Livestock Sanitary Board of Virginia has passed a regulation requiring all cattle which enter the state for dairy or breeding purposes to be tuberculin tested, either by an accredited veterinarian, or a B. A. I. inspector, you can see what importance Virginia places on the work of these accredited men. In fact, too much stress cannot be given to the importance of using the utmost care and judgment when applying the tuberculin test to cattle, and especially is this true in testing accredited herds. For the above reasons, when we employ a veterinarian to work for the state as an
official, he is required to go with an experienced man for some time before he is sent to apply the test alone. Likewise, before a private veterinarian is placed on the accredited list, he is required to pass an examination which deals exclusively with bovine tuberculosis and the tuberculin test. This is special work and every man who is conducting the same, whether state, federal or private veterinarian, must be qualified before he is assigned to pass on said work officially. The above plan has resulted in a system which enables the work of tuberculosis control to be carried on in a systematic manner throughout the United States. Compare this with the old method prior to 1918, before there were any accredited private veterinarians, and one can see at a glance the improvement and progress under the new accredited plan.

Now, gentlemen, I wish to say to you what we do in Virginia, that we do not want to be arbitrary, we do not want in any sense to be hard on any other states, but after we adopt a rule and a regulation there, we honestly believe in standing by it, and with this accredited herd work, we are going to stand by it, and we are going to live up to that last regulation, that any cattle coming in there from any state must be tested by a regular official of the State Bureau, or else by a man who is on the accredited list. We think that essential to the work, and for that reason we are going to stick to it.

PRESIDENT MUNCE: As previously announced, Dr. Schroeder is not in attendance. I believe Dr. Jacob, Chairman of the Committee on Tuberculosis, has something to say.

DR. M. JACOB: Mr. Chairman and Gentlemen, on account of the absence of Dr. Schroeder for this particular period, the Committee has deemed it wise to make a slight modification in the program. Dr. Kiernan will give a report on observations covering the intradermal test, and Dr. Bruner will supplement his paper, discussing the results on work covering combination tests, and then at the conclusion of the program, Dr. Day will give the results of some recent observations on some experimental work on tuberculosis that he has been carrying on for the Bureau.

PRESIDENT MUNCE: Dr. Kiernan.

OBSERVATIONS MADE IN INTRADERMIC TUBERCULIN TESTING

By Dr. J. R. Kiernan,

B. A. I. Tuberculosis Eradication Div., Washington, D. C.

At the Tuberculosis Eradication Conference held in Chicago, Illinois, November 25 and 26, 1921, the following resolution was offered and adopted, and at the meeting of the United States Livestock Sanitary Association in December 1921, the same resolution was also adopted:

"We request the Bureau of Animal Industry to gather data on the different tests and at the next meeting called by the Bureau for this purpose to submit to this conference the data secured and designate the proper technique to be used in all tests, including the intradermic, ophthalmic and subcutaneous."

In connection with this resolution a bulletin has been prepared by Drs. L. B. Ernest and Elmer Lash of the Bureau and is now on the press, which it is believed covers practically all points of discussion.

The following data relative to the periods at which observations should be made following the injection of tuberculin by the intradermic method, were secured from state and Bureau officials engaged in cooperative tuberculosis eradication work. This information was to include not only infected herds but herds which were found free at the 72nd
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hour. Readings were to be made at the 72nd hour and all animals classified as healthy or diseased, and an additional reading required at a period between the 120th and 150th hours. The summary of this work is as follows:

HERDS FOUND FREE AT 72ND HOUR

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of herds</td>
<td>7,705</td>
</tr>
<tr>
<td>Number of cattle</td>
<td>86,534</td>
</tr>
<tr>
<td>Number reactors 120-150 hours</td>
<td>96</td>
</tr>
<tr>
<td>Per cent reactors 120-150 hours</td>
<td>1%</td>
</tr>
</tbody>
</table>

HERDS FOUND INFECTED AT 72ND HOUR

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of herds</td>
<td>6,943</td>
</tr>
<tr>
<td>Number of cattle</td>
<td>169,610</td>
</tr>
<tr>
<td>Number reactors 72nd hour</td>
<td>28,451</td>
</tr>
<tr>
<td>Per cent reactors 72nd hour</td>
<td>16.8%</td>
</tr>
<tr>
<td>Additional reactors 120-150 hours</td>
<td>793</td>
</tr>
<tr>
<td>Total reactors</td>
<td>29,244</td>
</tr>
<tr>
<td>Per cent delayed reactions</td>
<td>2.7%</td>
</tr>
</tbody>
</table>

It will be noted that only .1 of one per cent, or a total of 96 out of 86,534 head of cattle in herds free at the 72nd hour, were found infected at the later observation, this report covering the period from February to September 1922, inclusive.

In the infected herds the story is different. It will be noted that 793 delayed reactors out of a total of 29,244 diseased cattle were found at a period between the 120th and 150th hours, an average of 2.7 per cent of the total diseased cattle. The report indicates that 87 of these were regarded as suspicious at the 72nd hour. In addition to the above it appears that 18 additional reactors were found at periods running from the 178th to 300th hours after injection. The information was not complete regarding such reactors where combination tests were applied. However, it does show that a considerable number of these so-called delayed reactions were found by the ophthalmic method prior to the period when the later intradermic reading was made.

In a further effort to shed light upon the proper hours at which observations should be made, data were secured from the same sources covering observations made of infected herds at periods as follows:

<table>
<thead>
<tr>
<th>Period</th>
<th>Number of reactors</th>
</tr>
</thead>
<tbody>
<tr>
<td>72nd hour</td>
<td>96th hour</td>
</tr>
<tr>
<td>96th hour</td>
<td>120 to 150th hours</td>
</tr>
</tbody>
</table>

Special attention was to be given to determining the number of reactions apparent at the 72nd hour which were not visible at the 96th hour, this being in addition to the number of reactors appearing at periods later than the 72nd hour. The summary of this information is as follows:

SUMMARY OF DELAYED REACTIONS FOLLOWING INTRADERMIC INJECTION, AT 96 AND 120-150 HOURS

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of herds</td>
<td>1,171</td>
</tr>
<tr>
<td>Number of cattle tested</td>
<td>18,391</td>
</tr>
<tr>
<td>Number reactors at 72nd hour</td>
<td>2,130</td>
</tr>
<tr>
<td>Number additional reactors at 96th hour</td>
<td>36</td>
</tr>
<tr>
<td>Per cent reactors at 96th hour (not reactors at 72nd)</td>
<td>1.7%</td>
</tr>
<tr>
<td>Number additional reactors at 120 to 120th hours</td>
<td>10</td>
</tr>
<tr>
<td>Per cent reactors at 120-150 hours (not reactors 72nd or 96th hrs.)</td>
<td>.5%</td>
</tr>
<tr>
<td>Number reactions at 72nd hour not visible at 96th hour...</td>
<td>52</td>
</tr>
<tr>
<td>Per cent reactions at 72nd hour not visible at 96th hour</td>
<td>2.4%</td>
</tr>
</tbody>
</table>

A study of these figures shows that 1.7 per cent of the total reactors were found at the 96th hour following the injection of tuberculin, or in other words that these 36 animals constituting this percentage would
have been missed had only one observation been made. It further appears that 10 additional animals, or .5 per cent of the total reactors, were apparent at from the 120th to 150th hours. The most startling figures, however, of this summary are the ones which indicate that 52 out of the 2,130 animals which had visible reactions at the 72nd hour would not have been classified as such at the 96th hour. This constitutes a percentage of 2.4, which is sufficient to indicate that the 72nd-hour observation is necessary in all cases, and should not be neglected in favor of the 96th hour period.

Summarizing this study of delayed reactions in infected herds it would appear that observations should be made in every instance at the 72nd hour after the installation of tuberculin and that in nearly all cases where infection is disclosed in a herd another observation should be made at a period between the 120th and 150th hours. The exceptions to this rule would be in cases of small herds where the history of the infection is plainly discernible as for instance where an animal classified as a reactor is shown to be a recent addition to the herd, or cases of a similar nature. In those herds showing a continuing infection or in which a considerable percentage of diseased cattle are obtained, it is especially important that the longer observations be made in order that full justice may be done the test and the livestock owner. It is, therefore, recommended that all livestock sanitary officials of the various states cooperate with the Bureau in issuing instructions of this character.

In this connection it is further recommended that further studies be made relative to the 96-hour observation as much valuable data in this respect have been gathered by the Animal Health Commission of Canada and the Bureau of Animal Industry of the State of California.

PRESIDENT MUNCE: Summary of the Developments in the Prevention and Eradication of Bovine Tuberculosis in Pennsylvania During the Past Thirty Years—Dr. S. E. Bruner.

SUMMARY OF THE DEVELOPMENTS IN THE PREVENTION AND ERADICATION OF BOVINE TUBERCULOSIS IN PENNSYLVANIA DURING THE PAST THIRTY YEARS

By S. E. Bruner

PENNSYLVANIA BUREAU OF ANIMAL INDUSTRY

Harrisburg, Pennsylvania.

Tuberculosis was recognized as white plague in the earliest days and since it is a disease so long known it would be difficult to point to the particular time when the most important step towards its eradication was taken. There is a possibility that that time is yet to come. The discovery, in 1865, by Villemin of the inoculability, and, therefore, the transmissibility, was certainly a great step in the right direction.

Knowing that the disease could be produced by inoculation of material from the lesions, a study of this material led to the discovery of the tubercle bacillus in 1882 by Robert Koch which was probably the greatest step. Koch’s continued study of this organism led to his invention of tuberculin in 1890, another great step.

Leonard Pearson was studying abroad at the time the tuberculin was first prepared and naturally becoming interested in the new discovery kept in touch with and studied new developments with this product. After the Russian veterinarian, Professor Gutman, in 1891 had successfully used it as a diagnostic agent in cattle, Pearson obtained some of this material, brought it to this country, and in 1892 applied the first tuberculin test in this country to a herd of cattle near Philadelphia. This we consider
the greatest step towards the eradication of bovine tuberculosis in this country.

So our work of tuberculosis eradication in Pennsylvania dates practically from the time this tuberculin test was applied by Pearson, or a period of slightly more than thirty (30) years. The results of this test and others which immediately followed, formed the basis for the next step in Pennsylvania—the formation of the Pennsylvania Plan. The principles of the Pennsylvania Plan as outlined by Pearson became not only the fundamentals of tuberculosis eradication work in America, but, to a large degree, constitutes the principles which are being practiced in tuberculosis eradication work in this country at the present time.

The bulletin entitled, "Tuberculosis of Cattle," by Leonard Pearson and M. P. Ravenel, published in 1901, has been revised, rewritten, and amplified. Our purpose in this paper is to call attention to a number of the important statements in the original bulletin which was founded on the work up to the time of its publication. Also to show some of the important developments which have taken place in Pennsylvania since 1901.

FROM THE ORIGINAL BULLETIN PROGRESS

The history of tuberculosis of cattle shows that when it is once introduced into a previously uninfected district, its tendency is to spread from farm to farm with a rapidity that depends largely upon the activity of cattle traffic.

Tuberculosis, once introduced, spreads with increasing rapidity as the centers of infection are multiplied.

So long as there is but one infected herd from which tuberculosis may spread in a district, the spread of the disease will necessarily be slow, but when ten (10) herds are infected from this one (1), the progress of the disease will be ten (10) times as rapid, and when five (5) herds are infected from each of the ten (10), the disease will, other factors being equal, spread at fifty (50) times the original rate of progress.

One reason why tuberculosis of cattle has spread by such leaps and bounds is that in recent times there has been a great interchange of cattle between different countries, states, and localities. More recently, however, and especially during the present generation, great efforts have been made to improve cattle for special purposes, as for beef, milk, butter, etc., and this has led to the purchase of fresh blood.

TENDENCY

Tuberculosis is a disease which runs a chronic course with but little tendency to heal, although it is sometimes latent for a long period. Even if the animal recovers, it is not thereby rendered immune to another attack.

Therefore, when tuberculosis is introduced into a herd it is not self-limiting and its tendency is constantly to spread and with a degree of rapidity that depends largely upon the sanitary conditions to which the herd is subjected.

We must also remember that tuberculosis of cattle was not studied seriously until it became extremely prevalent. Consequently, it was not possible to formulate effective repressive measures until a few years ago.

IMPORTANCE

In discussing this subject, exaggeration should be most strenuously avoided. Many wild statements have been made in this connection. The facts are grave enough; they should not be magnified.
Tuberculosis of cattle is important in two (2) ways:

(A) It is of economic importance in relation to the livestock industry.

(B) It is of hygienic importance in relation to the transmission of disease to consumers of meat and milk.

(A) In reference to the economic importance of tuberculosis of cattle, we may recognize several ways in which this disease works to the financial injury of owners of livestock:

1. By destroying animals outright, as when tuberculosis is allowed to reach its full development and kill its victim.

2. By reducing the market value of the animal, as in those cases in which the beast is sold before the disease has reached such a stage as to render it entirely unmarketable.

3. By reducing the breeding value of a herd and its general productivity.

4. By causing a waste of cattle food through feeding it to animals that cannot give an adequate return.

5. By infecting other animals, swine, calves, cattle, through the milk or by contact.

6. By injuring the reputation of a herd, thereby rendering it difficult to dispose of the animals or their products.

7. By destroying the enthusiasm or interest of the breeder in the maintenance of his herd at a high standard.

There can be nothing more discouraging to a breeder, who has devoted a great deal of time, the better part of his life, perhaps, and much of his means, to the development of a particular breed or strain, than to see his valuable herd ruined by tuberculosis. Of course, the losses caused by tuberculosis are in ratio to its prevalence.

(B) In regard to the public health importance of tuberculosis of cattle, since it is known that tubercle bacilli from cattle are virulent for man, that the products of tuberculous animals sometimes contain germs of tuberculosis, that those products when fed to experimental animals will produce tuberculosis, that in such cases the disease shows a distribution and development indicating the channel of infection, that similar products are consumed by people and that lesions of tuberculosis in man (especially in children) are not rarely distributed as in animals infected under fixed conditions in feeding experiments and develop when causes other than infected milk do not appear, there is ample reason for the belief that the products of tuberculous cows may cause tuberculosis in man.

Experiments conducted in this laboratory during the years of 1896 and 1897 for the State Livestock Sanitary Board of Pennsylvania show that tubercle bacilli may pass into milk when the udder is free from disease.

Ravenel cited four (4) cases of accidental inoculation of man. He, also, cited an experiment, "Bovine Tuberculin A Factor in the Causation of Human Tuberculosis," and his conclusions were, "The drinking of tuberculous milk may readily, in man, give rise to lesions of the lungs without first giving rise to lesions in the intestines.

It should be remembered that no one claims that tuberculosis of cattle is the principal source of infection for man.

THE CAUSE OF TUBERCULOSIS AND THE INFLUENCES THAT GOVERN ITS SPREAD

The primary cause of tuberculosis is the tubercle bacillus. Without this germ, tuberculosis cannot exist and the disease only arises when this organism is carried into and multiplies in the tissues of an animal. The
tubercle bacillus is as strictly essential to the development of the disease as a seed is for the development of a plant.

Anything that facilitates the acquirement of tubercle bacilli by animals or influences that tend to bring animals into a condition more favorable for the growth of tubercle bacilli may be called secondary or accessory causes of tuberculosis.

**HOW TUBERCULOSIS IS CARRIED INTO A HEALTHY HERD**

A healthy herd or a healthy animal may become infected by placing it in premises previously occupied by tuberculous animals.

Tuberculosis has also been carried to healthy herds in the milk of tuberculous cattle. Such milk fed to calves will give rise to tuberculosis. Numerous instances are known in which herds have become infected by the **skim milk from creameries**.

Swine may contract tuberculosis by feeding upon milk of tuberculous cows, following the cows, by eating the offal of slaughtered tuberculous animals.

An animal with latent tuberculosis and harmless today, may, within a week, become a prolific distributor. An animal with latent tuberculosis has within its body a resting seed-bed of disease that is ready to sprout and spread the moment the conditions are favorable.

It should be observed that if tuberculous cattle are maintained alive it should only be under special precautions, for every tuberculous animal is a possible source and most tuberculous animals are at some time actual sources of infection and danger.

From the practical standpoint, the danger to which the greatest attention should be paid is that resulting from the introduction of a tuberculous animal into a previously healthy herd.

**HEREDITY**

The very extensive and successful Danish work is based largely upon the knowledge that calves from tuberculous cows are born healthy and will remain healthy if they are not exposed after birth to tuberculous animals or their products.

**PREDISPOSITION**

It is well known that some genera of domestic animals are far more predisposed to tuberculosis than others. Exposed equally by feeding infectious material, the pig contracts tuberculosis more rapidly than the dog. If exposed to infection in the same way, the cow contracts tuberculosis far more readily than the horse. To a less extent there is a predisposition or, on the contrary, a resistance among the individuals of a species. For example, when all of the cattle in a herd are subjected to the same influence and are exposed to tuberculosis in the same way, only part of them will contract and even after the herd has become extensively infected and nearly all of its members are tuberculous, to a greater or less extent, there are usually a few that continue to resist the attacks of tubercle bacilli.

When a number of animals are exposed equally, a difference in predisposition stands out clearly. The causes of this individual predisposition or this resistance, as the case may be, are supposed to coincide with the factors that combine to lessen or to increase the general vigor, stamina or health of the animal.

**STABLING**

Among the chief influences governing the spread of tuberculosis in a herd are stable construction and stable management. A herd of cows originally healthy may be ever so closely stabled and fed, and cared for in the
worst possible way and they will not develop tuberculosis unless the germs are introduced by a diseased animal or the products of a diseased animal. Any system of stable management that serves to bring diseased and healthy animals into intimate contact, that facilitates the deposit of tubercle bacilli within the reach of healthy cattle, that serves to favor the accumulation or the distribution of germs of tuberculosis, or to prolong their life in the stable, helps to cause infection. And, further, any system of herd management that tends to reduce the vital resistance of the animal by overwork or improper nourishment, or to depress the activity of the organs or functions by insufficient use, will favor the spread of tuberculosis by preparing the soil upon which the seed is sown.

LIGHT

The value of light lies in the facts (1) that it has a decided germicidal action; (2) that it increases the resistance of animals to the attacks of the tubercle bacilli; and (3) that it favors cleanliness.

VENTILATION

An ample supply of fresh air is desirable for three reasons: (1) it has a distinct inhibitory action on the growth of tubercle bacilli; (2) it increases the resisting powers of the animals; and (3) it dilutes atmospheric impurities and carries them away. Tubercle bacilli grow best in cultures when the tube is sealed and air excluded.

CLEANLINESS

In well-kept stables the visible accumulation of dust and filth are removed and with this material a large proportion of the tubercle bacilli is taken away from the reach of the members of the herd and the chances for infection are reduced.

DAMPNESS

This point has been seriously overlooked in stable construction and in herd management.

STALL CONSTRUCTION

The plan of the stable and especially the stall arrangement has a most important bearing on the distribution of tuberculosis among the members of the herd. My attention was first called to this point when in 1892 I tested two (2) herds with tuberculin. One of these was housed in a well-ventilated but indifferently lighted stable where the cows were kept in box stalls with solid partitions about four (4) feet high. One of the animals in the herd reacted to the test, was condemned as tuberculous and killed. The post-mortem examination showed the disease to be extensively distributed in the body of the animal. This cow had been in the herd for several years, but none of the other animals were affected, and although the herd has been under observation ever since and has been tested three (3) times, no indication of tuberculosis has appeared in any other animal. In the other herd, the cattle were confined in stanchions, arranged in rows across the stable, and the stable was fairly well ventilated, well lighted and clean, but more than half of the cattle were found to be afflicted with tuberculosis. In this case, there were no partitions between the animals and no mangers. The cows could reach their neighbor's food, could lick each other and cough in each other's faces.

EXERCISE

Exercise is essential to perfect health. Continuous stabling without exercise weakens the muscles, the respiratory system and the organs of circulation.
THE RECOGNITION OF TUBERCULOSIS IN LIVING CATTLE AND THE TUBERCULIN TEST

The symptoms of tuberculosis in cattle are, as a rule, not sufficiently prominent to enable one to diagnose the disease except when the lesions are extensive or interfere with the functions of an important organ or are close to the surface.

In testing cattle there are numerous precautions to observe, the most important of which are reliable tuberculin, sterile syringes, accurate thermometers, avoidance of conditions that will excite the animals under test, absence of febrile condition, accuracy of temperature measurements and a very careful physical examination.

ACCURACY OF TUBERCULIN

As to the value of the tuberculin test from the standpoint of accuracy, it has never been claimed, and is not now claimed, that tuberculosis is infallible. Some conditions over which we have no control and some conditions that are not as yet fully understood operate against it. There is proof that a variable but small percentage of tuberculous cattle fail to react. It is for this reason that badly infected herds should be retested.

PENNSYLVANIA PLAN

Experience, everywhere, had shown that it was very difficult for a state to check the progress of this disease and to obtain permanent results without the earnest cooperation of the owners of herds.

The Pennsylvania Plan covered the following points:

1. Physical examination and tuberculin test of entire herd.
2. Removal and appraisement of reactors.
3. Cleaning and disinfection of premises.
4. Retesting of herd.
5. Directions for inspection and tuberculin testing.
6. Tuberculin testing of additions.
7. Precautions and measures to be observed by the owners to prevent the re-introduction and re-development of tuberculosis in their herds.

(A) Additions should be purchased subject to the following conditions: Tuberculin test by a competent veterinarian; full information covering the herd from which the animal is procured. It should be known that the herd has never been infected with tuberculosis; or that its members have been inspected with tuberculin and found free of disease. It should not be forgotten that a large proportion (probably nine-tenths) of all herds that are infected with tuberculosis were contaminated by cattle that were thought to be sound when they were purchased.

(B) Stables should be well lighted, kept clean and dry. The air must be kept free and the stable should be cleaned with special care and white-washed at six (6) month intervals.

(C) Skim milk obtained from creameries should not be fed to calves without previous sterilization by boiling.

(D) Healthy cattle should not be allowed to drink from a watering trough habitually used by tuberculous cattle, nor should they be allowed to associate with them in the pasture or elsewhere.

(E) The offspring of tuberculous parents or calves from a tuberculous herd should not be allowed to mix with the herd until after they have been tested with tuberculin and found free from the disease.

(F) The bull should be perfectly healthy and should not be patronized if he has been in a tuberculous herd, unless his freedom from tuberculosis has been proved by the application of the tuberculin test.

(G) Tuberculous attendants should not be permitted to work about cattle or in the dairy in any capacity.
The Pennsylvania Plan, with few modifications, as originally outlined by Pearson was used in Pennsylvania with a high degree of success for twenty-one (21) years (immediately prior to the adoption of the Accredited Herd Plan July 1, 1919).

DEVELOPMENTS SINCE 1901

RELATION OF BOVINE TUBERCULOSIS TO PUBLIC HEALTH

Experiments were conducted jointly by Pearson, Ravenel and Gilliland on "The Intercommunicability of Human and Bovine Tuberculosis," and were reported in 1902. Their conclusions were that human and bovine tuberculosis are but slightly different manifestations of one and the same disease, and that they are intercommunicable. Bovine tuberculosis is, therefore, a menace to human health.

The eradication of bovine tuberculosis is amply justifiable from a purely economical standpoint. Viewed in its bearing on human health, it becomes a public duty.

PURIFIED TUBERCULIN

Purified tuberculin is prepared by the Pennsylvania Bureau of Animal Industry by the addition of old tuberculin to absolute alcohol and is the form of old tuberculin used in the preparation of both intradermal and ophthalmic tuberculin.

OPHTHALMIC TUBERCULIN

In Pennsylvania the sensitizing method has been used for ophthalmic testing since 1912. Powdered tuberculin in 4% and 8% solutions in normal saline has been used. At present we use 4% and 8% solutions in 50% glycerine saline for ophthalmic testing.

INTRADERMAL

The intradermal tuberculin which has been used in Pennsylvania since 1912. It is a 5% solution of powdered tuberculin 0.5% carbosulfine.

METHOD OF PREPARATION OF TUBERCULIN

Boerner and Barnes in a report at the 1920 meeting of the A. V. M. A. recommended uniformity in methods of preparation of tuberculin, their work determined the following points.

1. Heating cultures for one hour in the autoclave under 15 pounds pressure was detrimental to the potency of tuberculin.
2. Heating to 100°C. for three hours in the Arnold sterilizer produced more potent tuberculin than when cultures were not heated at all. This is accounted for by maceration of the bacilli and extraction.
3. Tuberculins of various ages were tested and it was found that tuberculin in the diluted form retains its potency for a number of years.
4. In only one case (the oldest sample tested) was it found that tuberculin had entirely lost its potency and this sample was prepared in 1896 and maintained under unfavorable conditions.

RECOGNITION OF TUBERCULOSIS IN LIVING CATTLE AND TUBERCULIN TEST

As the number of purebred herds increased and the placing of these herds under the Pennsylvania Plan, production of certified milk, the enactment of municipal ordinances pertaining to their milk supply, the testing of cattle at public stockyards, the question of recognition has assumed more importance and attention each succeeding year.

The Bureau's object has always been:
1. To remove the infected animals from the infected herds in the shortest possible time.
2. A prompt, accurate decision of suspects.
3. Lengthen the interval between the testing of free herds.

With these problems to solve, rather a large amount of experimental work was conducted at the State Experimental Farm and in the field. This has been especially true during the last ten (10) years. Time does not permit us to enumerate the projects and their conclusions.

The subcutaneous tuberculin test serves its purpose to a good advantage. We have learned its efficiency and inefficiency. On herds that are tested by the subcutaneous method the first time, data shows that its efficiency is about 96%. Putting it another way, upon completion of the first test, it will leave about 4% of tuberculous animals in the infected herds. The efficiency, based on autopsy findings is 98%.

The intradermal tuberculin test was first used in Pennsylvania in 1912 and has since been used to a considerable extent in combination with the subcutaneous and ophthalmic tuberculin tests. It was given official recognition as a single test for native and interstate cattle in January of the present year (1922). Basing its efficiency as a single test, on a project just completed, in the testing and retesting of 150 herds, comprising, 2,356 cattle, of which 357 reacted, the efficiency is 97%. In other words, it left 3% infection in the herds upon completion of the first test. The efficiency, based on autopsy findings, was 88%.

The ophthalmic tuberculin test was first used in Pennsylvania in 1912. It is not used as a single test. The efficiency of the ophthalmic test has not been determined on a percentage basis, however, it is an asset in combination, as a check test. According to our present methods, if animals are negative to either the subcutaneous or intradermal tuberculin tests and positive to ophthalmic test, they are classed as positive, providing they give a (P-3), an abundant purulent discharge.

COMBINATION TUBERCULIN TESTS

The following combinations have been employed in Pennsylvania since 1912: subcutaneous and intradermal: subcutaneous and ophthalmic; intradermal and ophthalmic; subcutaneous, intradermal, and ophthalmic. The intradermal and ophthalmic, and subcutaneous and ophthalmic combinations are preferable to either the three-way or subcutaneous and intradermal combinations. As our projects demonstrate, the two-way combinations are superior to the three-way combination.

With the present information as to the recognition of tuberculosis, we can say in Pennsylvania today:
1. That regardless of test or tests employed, one application will not remove all infected animals from all infected herds.
2. That regardless of the extent of infection, in practically all cases, tuberculosis can be eradicated from infected herds after the completion of two tests, i.e., initial—60-90 day retests.
3. That herds credited with one negative test, 99% will pass the next annual (accrediting test).

TUBERCULIN TEST OF HOGS

We first used the intradermal test on hogs in 1913. It has proved a very satisfactory test.

COMPLEMENT FIXATION TEST

Considerable work has been done in Pennsylvania in this connection in the recognition of tuberculosis in cattle. This work was reported this
TWENTY-SIXTH ANNUAL MEETING

year (1922). Conclusions were that the percentage of true specific reaction was in the minority.

In the recognition of avian tuberculosis, avian tuberculin is used. An internal injection is made. The efficiency, based on the work to date, is 75%.

EQUINE TUBERCULOSIS

Quite rare. During 1920-21, four (4) cases were brought to the Bureau's attention. The intrapalpebral tuberculin test seems to be the best test to recognize tuberculosis in equines.

ACCURACY OF TUBERCULIN, BASED ON AUTOPSY FINDINGS

In this respect, no trouble to any great extent was encountered in Pennsylvania until 1919. The inefficiency:

<table>
<thead>
<tr>
<th>Year</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1913-3%</td>
<td>1917- 6%</td>
</tr>
<tr>
<td>1915-3%</td>
<td>1918- 7%</td>
</tr>
<tr>
<td>1916-6%</td>
<td>1919-11%</td>
</tr>
</tbody>
</table>

In an effort to determine the cause of the alarming increase, it was found and is true today, that as the disease decreased, the inefficiency of the tuberculin test increases. As to the cause of animals giving a definite and characteristic reaction to various tuberculin tests and then being able to demonstrate the disease, either macroscopically or microscopically, we have been unable to determine the trouble. However, since 1920, before passing final judgment on animals classed as reactors to other than the first or second test, especially those herds that are credited with passing one or more tests, judgment is temporarily suspended until after such animals are kept under further observation. If the history of the individual animal, as well as the herd, is favorable, and a source of re-infection cannot be determined, they are classed as suspects and subjected to further test or tests. By taking these precautions during the present calendar year in the disposal of 1,645 reactors, 165 or 10% were reported as negative to autopsy, which was confined by laboratory examination in practically all cases.

PREVENTION

In an experiment outlined by Pearson, "Production of Artificial Immunity Against Tuberculosis in Cattle," this experiment covered a period of seven (7) years. Began in 1900 and completed in 1907. Was carried out by Gilliland, Ravenel, and others. Gilliland's conclusions were that until further knowledge is obtained in regard to the destruction or outcome of the living tubercle bacilli constituting the vaccine, no practical method for the immunization of milk-producing animals under ordinary conditions can be advocated. In connection with this experiment, two strains of tubercle bacilli from several animals that had been vaccinated six (6) years previously were isolated. Results showed that human tubercle bacilli may remain for as long as six (6) years without undergoing any change in any of its characteristics.

Pearson pointed out the necessity of preventive measures for the successful suppression of tuberculosis and to prevent its re-introduction. At all times we are dealing with two (2) classes of herds or areas, i. e., free or infected. Our efforts have mostly been directed to the infected groups. However, prevention has been practiced in affording protection to clean herds as the part of the Pennsylvania Plan, but has not been given proper recognition.

Prevention of tuberculosis in free herds and areas is paramount and plans have been formulated by the Pennsylvania Bureau to deal with this phase of the subject by the establishment of a disease prevention service. As the result of this service, the tuberculosis division will be considerably benefited.
The extent to which prevention, along with other measures, is practiced in conjunction with any plan for the eradication of tuberculosis, is a barometer to the success of the plan. The success of the plan is directly proportionate to the intensity with which prevention is practiced.

The following factors are responsible for the success in Pennsylvania during the past thirty (30) years in the prevention, suppression and eradication of tuberculosis.

1. The adoption of a definite plan.
2. A policy for the administration of the plan.
3. An adequate and an efficient organization.
4. Owners who appreciate the economic importance and are in sympathy with the work and their desire to own healthy livestock.
5. By the consumer’s interest in the source and quality of the products produced from healthy animals.
6. By the support of various cooperating agencies, state and municipal health authorities, educational institutions, agricultural and daily press.
7. By the interest that the Pennsylvania veterinary practitioners have taken in the work and support that they have contributed.

TUBERCULIN TESTS—SUMMARIZED EXPERIMENTS

In connection with the ophthalmic tuberculin test, the interval between the sensitization and the diagnostic instillation was determined as either three (3) or four (4) days by a number of experiments conducted at the Pennsylvania State Experimental Farm and in the field in 1912.

During 1920 and 1921, it was advanced by a number that the ophthalmic tuberculin test was efficient on a short sensitization. In order to definitely determine this point, a project was completed December 1, 1922.

The project was divided into six (6) groups, conclusions to be based on at least fifty (50) animals giving a positive reaction under each group. The interval between the sensitization and diagnostic instillation under Group “A” was six (6) hours; “B”—twelve (12) hours; “C”—twenty-four (24) hours; “D”—forty-eight (48) hours; “E”—seventy-two (72) hours; “F”—ninety-six (96) hours.

The results of ophthalmic reactions are reported according to the following key:

Small amount of pus ........................................ P-1
Much pus ......................................................... P-2
Abundant pus .................................................. P-3

In carrying out the project, the ophthalmic test in all cases was used in combination with either the intradermal or subcutaneous test.

The following table shows the period, herds, cattle and reactors tested under each group:

<table>
<thead>
<tr>
<th>GROUP</th>
<th>PERIOD</th>
<th>HERDS</th>
<th>CATTLE</th>
<th>REACTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>6th hr.</td>
<td>38</td>
<td>861</td>
<td>47</td>
</tr>
<tr>
<td>B</td>
<td>12th hr.</td>
<td>49</td>
<td>607</td>
<td>56</td>
</tr>
<tr>
<td>C</td>
<td>24th hr.</td>
<td>118</td>
<td>1,912</td>
<td>53</td>
</tr>
<tr>
<td>D</td>
<td>48th hr.</td>
<td>96</td>
<td>1,515</td>
<td>12</td>
</tr>
<tr>
<td>E</td>
<td>72nd hr.</td>
<td>96</td>
<td>1,714</td>
<td>74</td>
</tr>
<tr>
<td>F</td>
<td>96th hr.</td>
<td>64</td>
<td>801</td>
<td>11</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>461</td>
<td>7,410</td>
<td>253</td>
</tr>
</tbody>
</table>
GROUP A
SIX HOUR SENSITIZATION

In testing of thirty-eight (38) herds, comprising eight hundred and sixty-one (861) cattle, forty-seven (47) animals were classed as positive to the ophthalmic tuberculin test, all of which gave at least a P-1 reaction. In a few cases, the maximum reaction was obtained as early as the second hour and as late as the tenth hour. The maximum reactions in most cases occurred from the fourth to the sixth hour. The character of the lesions in all but three (3) cases showed a caseous-calcareous character.

CONCLUSIONS
From the data, and in the opinion of the field veterinarians who conducted the tests, the reactions were not marked, and in only a few cases were they definite and characteristic. A number of animals were negative to the ophthalmic tuberculin test, but were positive to either the subcutaneous or intradermal tests and on autopsy showed lesions.

GROUP B
TWELVE HOUR SENSITIZATION

In the testing of forty-nine (49) herds, comprising six hundred and seven (607) cattle, fifty-six (56) animals were classed as positive to the ophthalmic tuberculin test. The maximum reaction in most cases occurred from the fourth to the sixth hour. The reactions were not marked, but were more intensified than under Group A.

CONCLUSIONS
In the opinion of the field veterinarians, which is confirmed by the data compiled, the twelve hour is superior to the six hour sensitization.

GROUP C
TWENTY-FOUR HOUR SENSITIZATION

In the testing of one hundred and eighteen (118) herds, comprising one thousand nine hundred and twelve (1,912) cattle, fifty-three (53) animals were classed as positive to ophthalmic tuberculin test. The reactions to the ophthalmic test were more intensified than in either Group A or B. The maximum reaction occurred between the sixth and eighth hour.

CONCLUSIONS
In the opinion of the field veterinarians, which is confirmed by data compiled, a twenty-four sensitization is superior to either the six or twelve hour sensitization.

GROUP D
FORTY-EIGHT HOUR SENSITIZATION

In the testing of ninety-six (96) herds, comprising one thousand five hundred and fifty-five (1,555) cattle, twelve (12) animals were classed as positive to the ophthalmic tuberculin test. The testing of this group was discontinued before fifty (50) positive reactions were obtained on account of the forty-eight hour sensitization, from a field standpoint not being economical in that it required an additional trip to each premise. On the basis of small number tested, the forty-eight hour sensitization is as efficient as the twenty-four hour sensitization. The ophthalmic reactions obtained in this group were well marked and the maximum reactions occurred between the sixth and eighth hour.
UNITED STATES LIVE STOCK SANITARY ASSOCIATION

GROUP E

SEVENTY-TWO HOUR SENSITIZATION

In the testing of ninety-six (96) herds, comprising one thousand seven hundred and fourteen (1,714) cattle, seventy-four (74) animals were classed as positive to the ophthalmic tuberculin test. Fifty-five (55) of the seventy-four (74) animals classed as positive to the ophthalmic test gave either a P-2 or P-3 reaction. The maximum reactions, on an average, occurred at the seventh hour.

CONCLUSIONS

In the opinion of the field veterinarians, which is confirmed by the data obtained, seventy-two hour sensitization is superior to the six, twelve, twenty-four and forty-eight hour.

GROUP F

NINETY-SIX HOUR SENSITIZATION

In the testing of sixty-four (64) herds, comprising eight hundred and one (801) cattle, eleven (11) were classed as positive to the ophthalmic tuberculin test. The maximum reactions occurred between the sixth and eighth hour, and gave a P-2 and P-3 reaction.

CONCLUSIONS

From the small number of reactors obtained under this group, the efficiency seems to be equivalent to the seventy-two hour sensitization.

SUMMARY

In order to obtain the maximum efficiency in connection with the ophthalmic tuberculin test, the project indicates that the shortest possible time between the sensitization and diagnostic instillation is seventy-two (72) hours or three (3) days. At least four (4) observations should be made following the diagnostic instillation and should be made at four, six, eight and ten hours. The test at this time may be discontinued, unless the eye has the appearance of an approaching reaction.

In connection with the other project, "To Determine The Comparative Value Of The Subcutaneous And Intradermal Tuberculin Tests," the result of the test and retest of one hundred and fifty (150) herds was reported before this Association at the 1921 meeting. Following are tables in connection with this project:

<table>
<thead>
<tr>
<th>GROUP A</th>
<th>FREE AND INFECTED HERDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test</td>
<td>No. Herds</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
</tr>
<tr>
<td>Ind.</td>
<td>150</td>
</tr>
<tr>
<td>S. &amp; O.</td>
<td>150</td>
</tr>
<tr>
<td>.......</td>
<td>109</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GROUP A</th>
<th>INFECTED HERDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test</td>
<td>No. Herds</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
</tr>
<tr>
<td>Ind.</td>
<td>70</td>
</tr>
<tr>
<td>S. &amp; O.</td>
<td>70</td>
</tr>
<tr>
<td>.......</td>
<td>55</td>
</tr>
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### GROUP A  
#### FREE HERDS

<table>
<thead>
<tr>
<th>Test</th>
<th>No. Herds</th>
<th>No. Cattle</th>
<th>No. R.</th>
<th>Per Cent</th>
<th>Autopsy</th>
<th>Tanked</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ind.</td>
<td>80</td>
<td>870</td>
<td>0</td>
<td>.</td>
<td>0</td>
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<td>0</td>
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<tr>
<td>S. &amp; O.</td>
<td>80</td>
<td>853</td>
<td>6</td>
<td>.7</td>
<td>4</td>
<td>66%</td>
<td>2</td>
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<tr>
<td></td>
<td>54</td>
<td>642</td>
<td>8</td>
<td>1</td>
<td>4</td>
<td>50%</td>
<td>4</td>
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</table>

### GROUP B  
#### FREE AND INFECTED HERDS

<table>
<thead>
<tr>
<th>Test</th>
<th>No. Herds</th>
<th>No. Cattle</th>
<th>No. R.</th>
<th>Per Cent</th>
<th>Autopsy</th>
<th>Tanked</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub.</td>
<td>150</td>
<td>2,813</td>
<td>501</td>
<td>17.8</td>
<td>493</td>
<td>98%</td>
<td>8</td>
</tr>
<tr>
<td>I. &amp; O.</td>
<td>150</td>
<td>2,308</td>
<td>65</td>
<td>2.8</td>
<td>62</td>
<td>95%</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>108</td>
<td>1,831</td>
<td>19</td>
<td>1.</td>
<td>16</td>
<td>84%</td>
<td>3</td>
</tr>
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</table>

### GROUP B  
#### INFECTED HERDS

<table>
<thead>
<tr>
<th>Test</th>
<th>No. Herds</th>
<th>No. Cattle</th>
<th>No. R.</th>
<th>Per Cent</th>
<th>Autopsy</th>
<th>Tanked</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub.</td>
<td>96</td>
<td>2,019</td>
<td>501</td>
<td>24.8</td>
<td>493</td>
<td>98%</td>
<td>8</td>
</tr>
<tr>
<td>I. &amp; O.</td>
<td>96</td>
<td>1,558</td>
<td>60</td>
<td>3.8</td>
<td>58</td>
<td>96%</td>
<td>2</td>
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<tr>
<td></td>
<td>64</td>
<td>1,142</td>
<td>16</td>
<td>1.4</td>
<td>14</td>
<td>87%</td>
<td>2</td>
</tr>
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</table>

### GROUP B  
#### FREE HERDS

<table>
<thead>
<tr>
<th>Test</th>
<th>No. Herds</th>
<th>No. Cattle</th>
<th>No. R.</th>
<th>Per Cent</th>
<th>Autopsy</th>
<th>Tanked</th>
<th>Per Cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub.</td>
<td>54</td>
<td>794</td>
<td>0</td>
<td>.</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I. &amp; O.</td>
<td>54</td>
<td>750</td>
<td>5</td>
<td>.6</td>
<td>4</td>
<td>80%</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>42</td>
<td>689</td>
<td>3</td>
<td>.4</td>
<td>2</td>
<td>67%</td>
<td>1</td>
</tr>
</tbody>
</table>

The kind of third test under each group is not indicated for the reason that the kind of test applied depended upon the results of the second herd test. Some herds were given the third test by application of the intradermal and ophthalmic, subcutaneous and ophthalmic and three-way combination tuberculin tests, at periods of from nine to twelve months from date of second test.

Under Group A, it will be noted that one hundred and nine (109) of the original one hundred and fifty (150) herds were given the third test, and

- 14 animals or 1.1% were classed as reactors,
- 16 or 72% of the 22 reactors showed lesions on autopsy,
- 6 or 28% of the 22 reactors showed no visible lesions on autopsy,
- 2 or 9% of the 16 positive animals were tanked.

The twenty-two (22) animals classed as reactors were from ten (10) herds. Eight (8) of the twenty-two (22) were not in first or intradermal
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It will be noted that of the original seventy (70) infected herds, fifty-five (55) herds were given the third test, and 15 animals or 1.1% were classed as reactors, 12 or 85% of the 14 reactors showed lesions on autopsy, 2 or 16% of the 14 reactors showed no visible lesions on autopsy, 2 or 14% of the 12 positive animals were tanked.

The fourteen (14) animals classed as reactors were from seven (7) herds.

It will be noted that of the original eighty (80) free herds, fifty-four (54) herds were given the third test, and of the 8 animals classed as reactors, 4 were positive and 4 were negative on autopsy.

Under Group B, it will be noted that one hundred and six (106) of the original one hundred and fifty (150) herds were given the third test, and 19 animals or 1% were classed as reactors, 16 or 84% of the 19 reactors showed lesions on autopsy, 3 or 16% of the 19 reactors showed no visible lesions on autopsy.

The nineteen (19) animals classed as reactors came from fourteen (14) herds.

It will be noted that of the original ninety-six (96) infected herds, sixty-four (64) herds were given the third test, and 16 animals or 1.4% were classed as reactors, 14 or 87% of the 16 reactors showed lesions on autopsy, 2 or 13% of the 16 reactors showed no visible lesions on autopsy.

It will be noted that of the original fifty-four (54) free herds, forty-two (42) herds were given the third test, and of the 3 animals or .4% classed as reactors, 2 were positive and 1 was negative on autopsy.

CONCLUSIONS

1. The subcutaneous and intradermal tests are about equal as initial tests.
2. The subcutaneous is superior to the intradermal test, based on autopsy findings.

In addition to the purpose of the project, it should be noted:

1. That regardless of test or tests employed on infected herds, one test will not remove all the tuberculous animals from all infected herds.

2. That regardless of test or tests employed on herds which pass the initial test, tuberculous animals are disclosed on less than 1% on retest of this class of herds.

3. That as the disease decreases, the inefficiency of the tests increases, based on autopsy findings.

4. That regardless of the extent of infection, in practically all cases, tuberculosis can be eradicated from herds after the second tuberculin test.

PRESIDENT MUNCE: It is hardly necessary for a state official to introduce a successful editor of a successful livestock journal. I think it will be sufficient to merely present our distinguished young friend, who has sacrificed the time to come down here and talk to us this afternoon on "Some Things Overlooked by Federal and State Officials in the Eradication of Bovine Tuberculosis." Mr. Charles E. Snyder, editor of "The Chicago Daily Drovers Journal." (Applause.)
MR. CHARLES E. SNYDER: I trust you gentlemen noticed what this red-headed President of yours did to me. You didn't? You see that subject? "Some Things Overlooked by Federal and State Officials in the Eradication of Bovine Tuberculosis"—and expect me to stand up here and point out your faults, evidently. At any rate, you won't feel like a man who attended a funeral; in the midst of a funeral oration he got up abruptly and walked up in front and looked into the coffin, and turned around and went back and sat down. The reverend conducting the ceremony was very much put out, and said: "What do you mean?" He said: "In view of the remarks being made here, I thought I had gotten into the wrong funeral." (Laughter.)

I have tried to be very brief in the paper I have prepared because I would rather leave one or two things with you than an accumulation of indefinite things, none of which you would remember.

SOME THINGS OVERLOOKED BY FEDERAL AND STATE OFFICIALS IN THE ERADICATION OF TUBERCULOSIS

By Chas E. Snyder, Editor Chicago Daily Drovers Journal

Mr. President, and Members, United States Livestock Sanitary Association: As sanitary officials you are faced not merely with the problem of eradicating bovine tuberculosis. It is as much your problem, and even more important from the standpoint of the permanency of the work and the prestige of your profession, to prevent its recurrence in areas actually or supposedly free of the disease. In other words, if the claim is made for a county that it is entirely or practically clean, and if, subsequently, serious losses from the disease should be suffered by herd owners in that county, eradication work would be given a severe setback not only in the immediate vicinity, but everywhere else as well, and a black mark would be recorded against veterinarians and their work. We cannot afford to take the chance of either of these things happening. And prevention imposes a much broader obligation on livestock sanitary officials than the mere testing of cattle.

Let me say that the work of eradication as far as it has gone reflects great credit on you who have borne the responsibility of its direction. The present demand for testing of individual herds, the wide call for area-testing, the forces drawn to your support, and the appropriations placed at your disposal all evidence the truth of this statement. And, incidentally, they add immeasurably to your responsibilities. You cannot turn back now. You must make good. And to do so you must be on guard to leave no place for unfavorable publicity to find a foothold.

The greatest educational force in the agricultural field is the farm press. It is largely instrumental in molding sentiment among farmers. I wonder how many state and federal sanitary officials have taken the pains to consult with farm paper editors about this work. I know by personal experience that some have, and by favorable report that others have. But I surmise that it is a precaution that has been overlooked by not a few. This, to some of you, may be an unpleasant task, but it should be done, not to secure publicity, but solely in the interest of a better understanding. If the impression, contrary to the fact, should get abroad that you are pushing this work as a matter of self-interest it would be exceedingly unfortunate. You are doing this work because the livestock industry demands that it be done. Don't forget that! At the present time you are properly in the background. Keep there. Credit aplenty for the work done will be forthcoming at the proper time.

The tester whose work ends when he has tagged the reactors found
in a herd is perhaps your worst enemy, inside or outside your ranks. The testing itself is merely incidental to the eradication of this disease. Put yourself in the place of the breeder. What does he want to know? There are many who have no particular craving for such information, and others who feel that the veterinarian is not competent to give it. If you start to preach you get nowhere, but there are other ways of suggestion and instruction that the tactful man knows.

What is the best insurance of producing healthy animals? The answer to that question should appear clearly enough: Healthy parent stock of strong constitution, properly housed and fed. If tuberculosis is to be kept from appearing and reappearing the employment of diseased or constitutionally weak animals in breeding herds must be stopped. This is the very starting point in the prevention of bovine tuberculosis. It can hardly be stressed too often or too forcefully. If we could, in some way, induce farmers everywhere to look more closely to the health of the breeding stock in their herds, this problem of tuberculosis prevention and eradication would be simplified beyond measure.

How should animals be handled to keep them healthy? We think we have learned the answer to this question, and probably we have. It is divided into three parts: Housing and feeding, the introduction of new animals, and sanitation.

It seems to be established beyond any question of doubt that the more an animal lives outdoors the less likely it is to be tubercular. There is no lack of evidence to support this belief. And it is as well established that an animal well fed and properly nourished is better able to resist disease than an impoverished animal. It is well to bear in mind also that liberal feeding pays in other ways. It should be realized, however, that the matter of housing becomes a difficult problem in the care of dairy cows in full production. There the economic factor is opposed to the disease-prevention factor, inasmuch as it is believed that cows closely stabled produce more milk than those permitted their freedom in yard or open shed. Proper ventilation in barns is the point to be emphasized here, and we still have much to learn about ventilation because with old buildings the problem is for the most part an individual one.

There is much carelessness in the introduction of new animals. Buying only tested animals is the logical course of procedure, but unfortunately it is not always safe to rely on this rule alone. In the case of valuable accredited herds new animals should be segregated until a re-test is possible. The risk otherwise is greater than should be taken.

When it comes to sanitation we think we know a good deal, but probably we don't know half as much as we think. Certainly, the layman hardly knows the first principles. It is probable that we have all underestimated its importance. In the production of ton-litters in six months time on Indiana farms this season we are informed that sanitation looms up as one of the most important factors. In maintaining a healthy herd of cattle the clean-up after testing is not the most important thing. What we should be more concerned about is the day-by-day sanitary precautions of a practicable nature that are followed, or neglected. What are these? Who knows them? Is it not worth while for you who are doing this work to keep an eye on the suggestions that go to breeders from agricultural writers, county agents and others? Without exception these advisers, whether volunteer or hired, want to be of real service. If they make the mistake of going too far, or of not going far enough, they will appreciate such suggestions as you can give them.

There is another factor having its influence on this work that is
TWENTY-SIXTH ANNUAL MEETING

perhaps as important as all that has gone before. That is human nature. It should be borne in mind that cattle raising is only a part of the farming business, and testing only one phase of the farmer's cattle production problem. In dealing with the individual farmer, a certain amount of patience should be a part of the tester's equipment. In the summer months, with haying, harvesting and other work engaging every moment of daylight, is not the farmer who neglects for the moment something he should do in connection with testing to be forgiven? Resorting to arbitrary rulings, except in the case of the utmost necessity, or evident intention to evade proper regulations, is possibly as big a mistake as could be made. Rules and regulations are necessary, and they should be enforced—within reason. You are working for the public at large, you are regularly constituted officers of state and nation, yet you are also working for as well as with the individual farmer. Without his cooperation you get nowhere. And to have his full cooperation you must view his problem through his own eyes, as far as possible, and try to work with him. It is realized of course that this policy won't work with all farmers, but for the most part it is a policy that will be productive of good feeling and good results.

As a means to this end it would seem advisable that, whenever possible, assistant state veterinarians should be assigned to definite territory rather than used generally. This would give each veterinary worker the opportunity to get better acquainted with the people in the territory assigned to him, and he would take a certain pride in making a good record for that territory. It is only natural for all professional men to become so wrapped up in the technique of their profession that they neglect the practical ends sought. It will be impossible for the veterinarian who does not learn to manifest real and sympathetic interest in the cattle and in their owner to win the highest success in this work. It is unfortunate if any veterinarian leaves with the owner of any herd the impression that his sole aim is to find the greatest possible number of reactors in that herd. He should try to be as sorry as the owner for every reactor found. To the veterinarian a cow may be only a subject for examination, one among a thousand such subjects; to the owner that same cow may represent the culmination of years of effort and hope to produce a meritorious animal. He is pleased if the veterinarian sees her as such, even though she must be condemned.

I am not prepared to say that any or all of you have overlooked any or all of these various phases of tuberculosis eradication that lie outside the technique of the testing itself. But I am prepared to say that you cannot afford to overlook them if you want to insure the safe progress of this work that is of such vital importance to our cattle industry.

Venturing further afield, there is one other matter that I would bring before you in connection with tuberculin testing of cattle. If farmers can vaccinate hogs to prevent cholera, why can't they test their own cattle with tuberculin? Now, don't jump clear out of your seats. I am not advocating anything of the kind. But I would warn you that competent men in the farm field are thinking along this line, and if the idea spreads and takes root what is there to stop it? I need only mention agricultural influence on legislation at the present time.

Meat and milk producers are prone to forget how deeply they are indebted to the veterinary profession. What would be the present status of our hog industry, for instance, without the discovery of a cholera preventive? And so we might go down through the list of achievements to your credit. One thing that helps the farmer to forget so easily is his contact with inadequately-trained, incompetent, country practitioners.
Another reason is that you can count on your two thumbs the agricultural editors who have ever made any serious effort to keep before the farming public the importance of maintaining a competent veterinary force as a protection against the spread of animal diseases—diseases already known and diseases still to come. This leads us right back to the importance of your making good on this job to which your hand has been turned.

To eradicate bovine tuberculosis! Do you realize what that means? It means not merely tackling an animal health problem. It is much more than a matter of detecting and eliminating diseased animals. It is a problem in economics and human welfare as well. The work must be practical. It must be so conducted as to pay in dollars as well as in improved health of man and beast. And so, if I can say any one thing to you, it is not to ignore the human element. Put yourselves in position to look at the matter through the eyes of the breeder. Your attitude needs to be one of helpfulness rather than direction. And when the victory is won, whether it is in this generation or the next, you will find your place in that everlasting hall of fame whose password is "Service to Mankind."


PROPER TIME AND KIND OF RETEST FOR HERDS THAT DISCLOSE TUBERCULOUS ANIMALS

By Dr. J. S. Healy

The objective in applying retests to herds at any time being the earliest eradication of tuberculosis from the individual herd, we must strive to use such tests singly or in combination that will accomplish our expectations and at such times that will avoid creating a condition in animals commonly referred to as tolerance to tuberculin.

The fixation for the proper time for retest in herds which have disclosed tuberculous animals calls for consideration of two important factors in tuberculosis control work, viz: tolerance and virulence of the invading organism. I believe it is generally admitted that we have strains of tubercle bacilli of varying virulence. In dealing with this phase of the question in the field we take into consideration the herd history in connection with the post-mortem findings in animals removed from the herd as a result of the tuberculin test or which may have died on the farm. The result of the test is no indication of the virulence of the invading organism as often we find the major portion of all of a herd reacting to the test and on post-mortem we find only slight lesions, mostly mesenteric. The history reveals no sales from the herd nor deaths in such herd but develops the fact that the animals have been fed skim milk from the creamery or skimming station. In others herds, by a survey of the possible avenues of exposure and infection, we are enabled to fix relatively the time of exposure and feel justified in assuming that we are dealing with a virulent type. Arriving at this conclusion and actuated to some extent by the pressure on the part of the owner, whose anxiety as to results of subsequent tests is to be pardoned, we have applied retests at ninety day periods. I claim the privilege of citing test history of a few such herds at this time not intending to lay down a rule of action but as an example of results obtained in a herd of large numbers, a heavy percentage of reactors and an apparently virulent organism.
TWENTY-SIXTH ANNUAL MEETING

The following data covers a herd which had a history of tuberculosis for a number of years in which the findings of the tuberculin test was not always adhered to—in other words, excuses were made for reactors. They were retested, passed and remained in the herd but all such animals were removed and slaughtered prior to our first test.

Summary*

<table>
<thead>
<tr>
<th>Date</th>
<th>No. Tested</th>
<th>No. Re.</th>
<th>Kind</th>
<th>I</th>
<th>O</th>
<th>S</th>
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<td>28</td>
<td>I</td>
<td>S</td>
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<td>14</td>
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<td>3</td>
<td>I</td>
<td>O</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>3/28-29, 1921</td>
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<td>5</td>
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<td>July, 1922</td>
<td>374</td>
<td>1</td>
<td>I</td>
<td>(No Les.)</td>
<td>1</td>
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*Each test was given credit for a reaction whether singly or in combination.
**All reacted to the intradermic in combination.

I also wish to cite history of another large herd having a history similar, only it was not definitely established that so-called suspects were retested and left in the herd, but forty-two reactors were segregated on another part of this farm when our first or initial test was made. These reactors were assembled from the parent herd from animals which were tested for sales or had been sold and returned, having reacted to the sixty day retest; this herd had a considerable heavier percentage of tuberculosis than the one cited formerly. In applying our retest to this herd we observed the semi-annual period provided for in the uniform agreement.

<table>
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<tr>
<th>Date</th>
<th>No. Tested</th>
<th>No. Re.</th>
<th>Kind</th>
<th>I</th>
<th>O</th>
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<tr>
<td>4/9, 1920</td>
<td>139</td>
<td>72</td>
<td>I</td>
<td>O</td>
<td>S</td>
<td>60</td>
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<tr>
<td>10/22, 1920</td>
<td>118</td>
<td>1</td>
<td>I</td>
<td>O</td>
<td>S</td>
<td>1</td>
</tr>
<tr>
<td>4/19, 1921</td>
<td>135</td>
<td>5</td>
<td>I</td>
<td>O</td>
<td>S</td>
<td>4</td>
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<tr>
<td>11/29, 1921</td>
<td>129</td>
<td>0</td>
<td>I</td>
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<td></td>
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<td>4/25-28, 1922</td>
<td>115</td>
<td>0</td>
<td>I</td>
<td></td>
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<tr>
<td>10/16-19, 1922</td>
<td>165</td>
<td>0</td>
<td>I</td>
<td>O</td>
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None reacted to the subcutaneous alone.
Ten reacted to the ophthalmic alone.
Four reacted to the intradermic alone.
**One subcutaneous alone.

Our attention was called to the next herd by animals which originated in this herd and reacted in other herds. On the first test we were surprised at the low percentage of reactors; on the first semi-annual we were very much surprised at the high percentage. The post-mortems revealed animals in all stages. One-third of the reactors were tanked. Ordinarily, a combination test would have been applied following this outbreak but it was not done in this case. The last test was a combination of the three tests, IOS. This is cited as it checks the efficiency of the intradermic in such herds.

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<th>Date</th>
<th>No. Tested</th>
<th>No. Re.</th>
<th>Kind</th>
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<tr>
<td>9/20-21, 1921</td>
<td>73</td>
<td>6</td>
<td>I</td>
</tr>
<tr>
<td>2/24, 1922</td>
<td>81</td>
<td>45</td>
<td>O</td>
</tr>
<tr>
<td>9/20, 1922</td>
<td>38</td>
<td>3</td>
<td>S</td>
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Just a few days ago we were informed from a reliable source that years ago the owner of this herd had a test made and several reactors were found. He never disposed of them and one of the old cows which reacted on the first semi-annual had been a previous reactor.

The provision incorporated in the uniform agreement for the accreditation of herds, providing for the semi-annual testing of herds revealing reactors judged by experience since the inception of the work has justified its incorporation and has been an effective factor in control and should be the rule of action in general.

We find on our semi-annuals in infected herds that our “no lesion” percentage increases considerably, an evidence that the test is coping with the progress of the disease. Were this not so it might be advisable to shorten the time between tests. Special cases based on history and supposed virulence could receive special attention. The majority of infected herds showing a low percentage of reactors and slight lesions on post-mortem usually are negative on the first semi-annual retest and remains so on subsequent semi-annuals becoming accredited; such herds should be handled by the intradermic test. In herds suspected of tuberculosis or known tuberculous herds we could use the combination IOS on the first or initial test followed by the intradermic for all intermediate tests and for the final test in herds that do not show reactors subsequent to the first or initial tests.

In herds in which reactors revealing visible lesions were found on intermediate tests, I would advise as the final test, the combination IOS but believe it is fully as effective to alternate the intradermic and subcutaneous tests on the retests, and such herds as have received all three tests in the process of accreditation should be accredited without making the final test a combination of the three.

I see no reason for using the ophthalmic after it has been once used in a herd unless additions have been made to the herd which have not received it. Our experience shows that whereas the ophthalmic may detect an occasional tuberculous animal that will be negative to the other tests in combination, in the majority of cases it does not corroborate the other tests. I do not remember a single instance wherein a reactor to the ophthalmic alone proved to be of a spreader type as evidenced by the post-mortem. Usually caseo-calcareous lesions are found. Our method in general for applying combination tests has been in accordance with the regulations, however, we have tried the following experiment to a limited extent and have been satisfied with the results. Inject the subcutaneous and intradermic tuberculin simultaneously, make your intradermic readings at the seventy-second hour or later. If the efficiency of either test were interfered with, logically it would seem that the interference would be with the intradermic. Such procedure might be expected to increase the efficiency of the subcutaneous test on the basis of increased dosage. The results of this experiment with us have been that such a large number of animals have reacted to the intradermic which were negative to the subcutaneous that we were astonished. I am informed that this has been tried in other parts of the country with indifferent results.

Simultaneous injection of intradermic and subcutaneous tuberculin.
Subcutaneous readings at the seventy-second hour.
19 herds tested containing 633 cattle with 24 reactors.
11 negative herds containing 419 cattle.
8 infected herds containing 214 cattle with 24 reactors.
24 reacted to the intradermic.
7 reacted to the subcutaneous.
In conclusion will say that I believe the time fixed in the uniform agreement is practicable and workable. Special cases merit special attention. Herds clean on the first test and infected herds revealing no infection after the initial test should be accredited by the intradermic method. Badly infected herds should have a combination IOS as the final test unless all three tests have been employed during the process of accreditation. For the combination, intradermic and subcutaneous test, I invite your attention to results of the simultaneous injection of the intradermic and subcutaneous tuberculin.

PRESIDENT MUNCE: Dr. L. E. Day will present a paper.

DR. DAY: Mr. President, Gentlemen: The experiments I have conducted were of a nature that I thought would probably clear up some of the questions with reference to no direct lesion animals. That is, animals in which no lesion is found on a post-mortem, after they have given a definite reaction to tuberculin.

It was also thought we might get some information concerning the reason why animals will react, and on retest not react. Or if we could not get any information concerning the reason why, that we might be able to get some information as to about how extensive the lesions might be in such animals; and about how long after they might cease to react, which would give us some information, probably, concerning about how long after the animals reacted, if they do react, that one should proceed to test them again, or how long it should be necessary to wait in order to get some results.

The notes I have made on this test are about as follows:

For the purpose of conducting such a test a number of cattle were bought, and they were tested in order to qualify them for subsequent tests, all three tests were employed, and if there was a suspicion of any kind that tuberculosis existed, the animal was rejected.

The first test applied was a very large dose of tuberculin subcutaneously; the after-tests were tests that were applied and the results and the findings of the tests were marked as near as we could according to the code that is used for marking. The tests were administered by veterinarians accustomed to testing in the field.

On the 28th of March, these 12 clean cattle, as we supposed them to be, were fed 2% ounces of tuberculous material. This material was diseased lungs, diseased lymph lodes, etc., that contained a large quantity of tubercle bacilli.

The first feeding, on the 28th of March, as I say, was 2% ounces, mixed with the food. On the 30th of March the same quantity was again fed. The material fed was run through a meat-chopper so that it was ground up very fine.

Some of the animals did not care to eat it; on the second feeding in particular they were a little bit particular, so they were drenched.

The first feeding was on the 28th of March and the last feeding was on the first day of April, a period of about five days. The total amount fed was 7% ounces.

These animals were all tested on the 1st day of May by the intradermal test, and it was found that two reacted. These two animals, immediately following were given the subcutaneous and the ophthalmic test, and one of them reacted to all three tests.

The two reactors were slaughtered on the second day after the test was completed, and no lesions found although a very careful examination was made.

On the 2nd day of June the remaining cattle were again tested
intradermically, and numbers 2, 5 and 26 reacted. We should get this point as we go along:

30 days after the completion of the feeding, two animals reacted.
60 days after the completion of the feeding, 3 more animals reacted. These animals, numbers 2, 5 and 26, reacted to all three of the tests and they gave a very decided reaction.

Number 26 was slaughtered within two days after the test was completed, and no lesions were found, although a very careful examination was made.

Number 2 and number 5 were held for future testing. The reason that we held these two animals, we began to think that if we wished to make a report, that someone would say why "possibly the material that we fed was not infected," and we had better hold these animals and give them sufficient time to develop lesions, so that they could be seen by the naked eye.

On July 1st, the remaining cattle were re-tested, and number 2 reacted. You remember number 2 reacted in June and in July, but number 5 failed to react.

August 1st the cattle were again tested intradermally, and none of them reacted. Number 5 and number 2 failed to react at this time.

In September the animals were not tested. On the 2nd and 3rd days of October, we again tested and number 2 gave a positive reaction. This cow reacted in June and July; and failed to react in August, and in October she reacted again.

All of the cattle were subjected to the triple combination test in October. Number 2 gave a positive reaction to the subcutaneous test, and negative to the ophthalmic and intradermic. Number 5 was negative to all three tests. Number 24, which had not previously reacted, gave a P-1 reaction to the intradermal test and was negative to the ophthalmic and subcutaneous. The remaining numbers, 3, 8, 10, 17, 27 and 29, were negative to all three tests.

All of the experimental animals were slaughtered on the 10th day of October with the following results:

Number 2, tuberculosis lesions were found in the anterior and posterior mediastinal lymph nodes which contained caseo-calcareous lesions about one-quarter to one-half inches in diameter, respectively; also two of the mesenteric lymph nodes contained caseous points about one-eighth of an inch in diameter.

Number 5, tuberculous lesions were found as follows: One of the cervical lymph nodes contained a caseous area, about one-eighth of an inch in diameter, and the anterior mediastinal a small nodule; two of the mesenteric lymph nodes contained small caseous calcareous nodules.

Number 8, which had never reacted, had a tuberculous lesion, which was caseo-calcareous, and about the size of a bean, which was found in one of the mesenteric lymph nodes.

Number 27, and number 10, which had not reacted to any of the tests, were found to be infected, a slight tuberculous lesion was found in one of the cervical lymph nodes, which was caseo-calcareous; also a caseo-calcareous lesion about one-quarter of an inch in diameter was found in one of the mesenteric lymph nodes.

Number 24, which had given a P-1 reaction, one of the mesenteric lymph nodes, contained a caseo-calcareous tuberculous nodule, about one-eighth of an inch in diameter.

Numbers 3, 17 and 29, no lesions could be found.

Now, it seems to me that while we do not claim very much for this experiment—that is, we do not claim that it is complete—we believe
that it has opened up something that should be followed up, and more
investigations made.

It shows us very clearly that although you may expose an animal
quite extremely to tuberculous material, for a very short time, it may
not become infected. That was the case in numbers 3, 17 and 29.

It also shows us the result of retesting animals after they have once
reacted. Of course, this Association, I know, does not tolerate anything
of that kind and it should not, but here is a test that shows us definitely
just what happens, and it is exactly what this Association has claimed
all the while, and we can put that matter up as an actual test.

Now, we have been finding a large number of skin lesions in some
localities very high and in other localities quite low, averaging some-
where in the neighborhood of about 12 per cent of lesions. There has
been some question brought up that these skin lesions were due to hidden
tuberculosis of the bovine type, or of the human type, or are they the
avian type? In order to get some light as to whether they were the
avian type or not, this sort of an experiment was conducted:

Seven chickens were fed skin lesions from cattle, beginning April
17th and ending August 7, 1922.

At the time the feeding experiment terminated, these chickens had
received lesions from 113 cattle in all. On November 1st, 1922, a post-mortem was held on all of the
chickens, and no tuberculous lesions were found. One of them
had a tiny little spot in the liver, and this entire spot was crushed up
to make a smear and examined very carefully, but no trace of tuberculous
bacilli could be found.

PRESIDENT MUNCE: This subject is now open for discussion, and
I hope it will be participated in by everyone who has anything to offer.

Chairman Jacob, of the Committee on Tuberculosis, will you open
the discussion.

DR. M. JACOBS: Mr. Chairman and Gentlemen:
I hardly believe that this is the proper time for the members of the
Committee on Tuberculosis to discuss these questions. As I see it, we
are here to listen and to learn, with the hope of getting some additional
ideas, that will be embodied in our Report, which will be presented later.

I hope therefore that everyone will take the liberty of discussing the
papers freely.

DR. O. H. ELIASON: Mr. President: I just want to touch some
of the high spots of the papers that have been rendered this afternoon.

Tuberculosis eradication at the present time, in my estimation, has
grown rapidly, and whether it will continue to grow as our friend Mr.
Snyder said this afternoon, largely depends upon the veterinary profession.

The success of this great undertaking cannot be attained without a
large degree of unselfishness displayed by all parties concerned. So far
as credit is concerned, if you are to depend upon the credit from the
general public for the work done, you will be disappointed. When you
go into public service, please remember that your public is very poor on
gratitude. Some of the greatest men in this country are examples of it.
Some of the most noted in services rendered while yet living are now
scarcely mentioned, and are lost in oblivion.

One of the most important factors that we have to settle at this
time is the getting of money for the purpose of eradicating tuberculosis.
This has to be done through publicity. A few years ago I heard quite
a number of men say: "Now, go slow, go slow, this thing is going to
cause trouble, very likely," and those were men to whom we should
say: "If this problem is too big, why just get out of the way of it,
because you either have to accept the responsibility of conducting it and be big enough for the job, or else get out of the way.”

So far as the laity is concerned in handling this proposition, I would say there is too much distrust between the breeders themselves to depend upon such interests to conduct the tests. We veterinarians know too much about that which has never been published and never will, and I will just say to the breeders that it is well that we hang together; if we do not we are likely to hang separately.

In the county eradication I would say that the getting of funds depends largely on how funds are collected in the state. In our state we have collected it from the state standpoint; some of the southern states have other methods, but that is a problem which is up to the state itself. But we must emphasize the need of larger funds. Gentlemen, we never had real funds, we had samples. We have never touched the problem. Imagine touching an industry as large as this is, with a few paltry hundred thousand dollars, an industry which numbers individually in the millions. It is ridiculous.

In Wisconsin it is not an uncommon thing to see the headline, “County so and so will spend one million and a half on roads next year”; we have $350,000 for indemnities for slaughtered cattle in an industry which represents something like three million.

The cost of tuberculosis eradication is not large when compared with the cattle industry you are tackling. The problem is not hard. We have the cooperation of the people, all we have to do is to go ahead.

While you are talking about the cooperation of the veterinary division, we are going on in Wisconsin, and hold to the only practical statesmanship idea of a Bureau man, side by side with the practitioner. Eighteen practitioners have worked side by side with us in our county eradication this summer.

We went through 11 counties, and the people did not know whether they were practitioners, state men or federal men, all we were there for was to test cattle. Only occasionally had we any question that the local man could not handle. Sometimes it is better that the practitioner does not test in his own locality, and I want to tell you right here that while it is more economical probably to put a man or two in a county and let them stay there, yet the success of tuberculosis eradication, after all, depends on a gang. If you put enough men in the field you will have less trouble than you would have with one or two. This has been absolutely demonstrated in our state.

In our last county we tested 32,860 cattle inside of 30 days; 18 veterinarians participating, some of them only one week, but 18 men had a hand in it; 503 cattle reacted, they were removed and the job was practically completed within 30 days. There were no complaints and no dissatisfaction.

PRESIDENT MUNCE: Pardon me, Doctor, I think it would help us to confine the discussion to the papers that were brought up. The question of indemnities is very properly one which the Finance Committee will report on, and the question of law I don’t believe has a present application, and it will be discussed later on.

DR. ELIASON: I understand that the first paper touched on that. There are one or two points that I just want to emphasize further, and I am through. One point that the first speaker brought out, and that was the certification of an area. I think that properly comes under this discussion, gentlemen, and I just want to make this statement, that I want to warn you that we may hang so much work on this tuberculosis eradication plan, that the very thing we are seeking will be broken down. What I mean is this: That you can hang an incentive in front of
the public, which will bring about so much work that it will break down. In other words, it will create so much unnecessary work that it will be impossible of achievement.

Tuberculosis eradication requires time, don't be in a hurry—consistent, regular tuberculin testing will bring about eradication, and if that is followed regularly, you will have your result, and in this certification plan, I hope that we will go slow. I thank you. (Applause.)

PRESIDENT MUNCE: If it is agreeable to the Convention I should like to announce that the discussions will be kept as much as possible to the papers, or the subjects, or points which are brought out in the papers, and I shall also confine the discussions to say five minutes. Now, it is not my intention at all to hamstring or shut off any discussion or the bringing out of any point for the development of the papers, but I would like to insure an opportunity for every person here to participate in the discussions. I hope you will take advantage of it, and discuss it promptly.

DR LONG: Mr. President, there is a question that I would like to ask. This question has been asked me and I cannot answer it. The question as put to me was: Will the test, positive or negative, from either standpoint, be 100 per cent correct, if the cattle had passed clean, what per cent, if any, can we figure that possibly were missed and may have lesions, out of say one hundred animals?

DR. DAY: After administering the test to a herd of one hundred animals, and none of them reacted, I think I would feel quite certain that there were no infected animals in that herd. But if you have a herd where you have a number of reactors, and you take all of those reactors out, I would feel that possibly some cattle were left in the herd that passed the test but were, nevertheless, infected.

DR. LONG: Personally I feel the same way, but I just wondered if there was any work done on that.

DR. BRUNER: If you look at the charts, you will note the 150 herds on the sixth day retest, 38 of the animals were classed as reactors, and 31 of the 38 showed lesions. In other words, upon completion of the second test of the 150 herds, it showed 1.8 percent.

DR.: Mr. Chairman, I would like to continue this discussion on that subject. I believe we are getting away entirely from the theory of exposure. Now, the fact that a certain number of animals were found on the second test, we should not consider that they were missed on the first test. These animals may have been exposed when the first test was applied and the disease had not progressed far enough to show a reaction and they were subsequently found when the disease had progressed far enough so they would show a reaction to the test. I think the test is quite efficient.

DR. CUFF: Mr. President, in the Corn Belt there are a lot of us who are very much interested in what shall constitute a certified area, for three reasons: first, because they want to get tuberculosis out, and on the humanitarian side of it, and last but not least, there is the 10 per cent premium that is offered by the packing companies; and I would like to hear a little discussion on what the people here would think would constitute a certified county. Dr. Moore has given his outline, that
all the breeding animals must be tested and that there should not be
over 2 per cent in which infection is found. I should just like to hear
a little discussion on that subject.

PRESIDENT MUNCE: Who would like to answer that question?

DR. WHITE: Since the subject of Dr. Moore's paper has a direct
and material bearing on the future progress of eradication of tuber-
culosis by the county area plan, I have devoted some study to it, and I
have reduced my views to writing, and I would like to read what I have
written in a very few moments.

PRESIDENT MUNCE: Dr. White, is it your purpose to answer the
gentleman's question, or present some other matter?

DR. WHITE: This really answers, in my way, at least.

PRESIDENT MUNCE: That is all right,

GEO. R. WHITE, State Veterinarian of Tennessee: From recent
 correspondence had with the U. S. Bureau of Animal Industry, I am
 convinced that the Bureau at this time has no practical workable method
 of "Officially Accrediting" counties showing on the initial test less than
 2% of the herds infected. Since at least nine-tenths of the area of the
 United States is in the less than "2% herd infected class," then to me
 it is apparent that the time has come when it is incumbent upon us as
 livestock sanitary control officials to formulate and present specific,
 practical, workable and reasonable recommendations to the United States
 Bureau of Animal Industry relative to officially accrediting counties after
 bovine tuberculosis has been eradicated from them.

I was gratified to note the practical manner in which Dr. Wm. Moore
 presented his logical views on this all important subject before the
 convention.

Under the present plan of officially accrediting counties it is easier
to accredit a county in which 15% or 20% of the herds are found on
the initial test to be diseased than it is to accredit a county in which as
low as ¼ of 1% of the herds are found on the initial test to be diseased.

As illustrative of what I mean, I mention in a brief manner condi-
tions as we found them in Marshall County, Tennessee. In January
last, Dr. E. I. Smith, U. S. Inspector in charge, and myself persuaded
the county court to appropriate a sufficient sum of money to employ a
county veterinarian for the purpose of eradicating cattle tuberculosis
from that county. These three veterinarians went from farm to farm
and made a "clean sweep test" of every head of cattle including both
 sexes, all ages and all breeds.

The result was that 3,199 herds consisting of 24,277 cattle were
tested.

Nineteen reactors in 11 herds were found; 10 of these 19 reactors
were in one herd. After the initial test was completed we retested by
the combination method, the 11 herds in which reactors were found on
the initial test. The result of the retest was the finding of no reactors
in 9 of the 11 herds, 1 reactor in 1 herd and 14 reactors in the other
herd. The herd in which 14 reactors were found is the same herd in
which 10 reactors were found on the initial test. Hence it will be seen
that the 34 reactors found out of 24,277 in 3,199 herds in Marshall
County, Tennessee, 24 were in one herd. The owner removed the re-
mainder of this entire herd from the county. All others reactors were
likewise removed. In my opinion the procedure followed freed Marshall
County of cattle tuberculosis as near as it is humanly possible for us to
free it. I here now state that it is unreasonable to the man or even
to expect the county court of Marshall County to appropriate more money
to hire veterinarians to again test all the cattle in that county before
the county is officially accredited. Such an idiotic procedure would be pronounced by any sensible man as useless waste of a veterinarian's time and service as well as a wanton squander of public funds.

So far as I am individually and officially concerned, I propose to go ahead eradicating tuberculosis along the lines followed in Marshall County, and when I have a county reasonably free from infection, I shall have no hesitancy in declaring it free and officially accrediting it as such. It is then up to the livestock sanitary control officials of the other states and the U. S. Bureau of Animal Industry to either accept my certificate or reject it as they see fit and proper.

DR. KIERNAN: Mr. President, replying to Dr. Cuff's question, I will say that in the accredited herd plan at the present time, there is a provision for accredited areas, and that provides that no area shall be accredited unless it passes through the same process as an individual accredited herd does now. I originated that plan at a tuberculosis conference held in the southern states in May, 1921, where a committee was appointed to devise a plan for accredited areas, free of tuberculosis, and it came from the states represented—North Carolina, Georgia, Alabama, Mississippi, Tennessee, and all other southern states. Now, personally, I am strongly of the belief of Dr. Moore, that the condition that exists in the southern states is different from the rest of the United States, that tuberculosis does not exist there, or does exist to but a limited extent, and we should look at that territory in a different light than we do the balance of the country where the disease is more or less prevalent.

DR. FERNEYHOUGH: I wish to state for Virginia that having been on the committee referred to, as I understand it, and as I understood it then, the accredited area has got to be identical with the accredited herd plan. It is only an enlargement of the accredited herd plan. That is what we passed on, and that was what we stand for down in our section, and I believe it is for our protection.

MR. MERCER: Mr. Chairman, it may be a little presumptuous on my part to discuss this proposition before such a distinguished gathering as we have here, but-as I have had some little experience officially in connection with this work for the last dozen years, it seems to me that this is the time for some action to be taken with respect to changing perhaps what has been done. I am certainly in accord with the position of the doctor who read the first paper here. I do not think that the accredited herd and the accredited area are comparable in any manner as to what action we should take as sanitary officers.

For instance, we are trying to work out something in our state with respect to this matter, and we recently completed the testing of one township, something like 3,000 cattle were tested, about 13 thereof were reactors.

Now, we went into that county in an educational way and led those people to believe that we would soon place them in a free area, at least, and that we would protect them as far as the improvement of the stock was concerned after the clean-up was made, and it was one of the main inducements to get those people to cooperate in getting this work done.

Now, that was the feature of our experiment, and the other one, as I have brought out here, was to determine about what the cost might be with respect to the local charges, the charges of the local veterinarian. It has got to that point, I think, with the Federal Government and the state, where we have got to hand back some of this work to the local men, and there have never been any fixed charges made by any of the states, as I understand it, and I have made inquiry in several of the
states to find out. That being true, there ought to be some uniformity of charges for the local men to carry on this work.

Now, you have gotten back to the free area discussion, where I think, and it is nothing more than justice to the several—perhaps 100, I don't know how many farms were tested out in this territory—that they should be protected as a free area, and not denied it because of the fact there were a few herds in that county where the disease was found.

Now, I think 2 per cent is large enough. I am not in accord with the views expressed by Dr. Kiernan, that the difference between the South and the North, with reference to this disease, should apply in any way whatever. It should apply with respect to the percentage of herds infected in the territory tested, regardless of whether it is west, north or south or east, and if we can have an established rule of that kind, going out of this Convention here at this time, why, I am quite certain with the move that is on now for the eradication of tuberculosis, all the states would adopt it, and I know from experience it would be a great incentive to get the people interested in getting their territory cleaned and declared clean, and protected as such, and I hope this Convention will adopt some measure along that line.

MR. SMITH: Mr. Chairman, may I say a word on that? I have in mind discussing with various packers on how clean a county should be before they would agree to pay that bonus or pay him a premium, and we all realize it is going to be impossible to get it all out. In talks already had with these men, they realize it is not possible to get it all out, and we propose now to take it up with them, to get their views on how clean a county should be before they are willing to pay a ten per cent premium.

PRESIDENT MUNCE: What do you mean by getting it all out, Mr. Smith?

MR. SMITH: In tuberculosis infection, there will be a certain minimum percentage that will pay at the present time, but I know they are willing to pay this premium, even though not all the herds are free, they will expect it reduced to a certain minimum, and it will be up to this Convention to decide what is the lowest minimum, a certain definite percentage of free normal cattle, or a per cent of herds uninfected, and I think this will come up probably on the regular report of the Tuberculosis Committee, which ought to be given a good deal of consideration, it seems to me. But I will say to you men here that the most of the packers have already agreed to do that, it is just a question now of what constitutes a tuberculosis-free county. I think it ought to be given very careful consideration.

MR. MERCER: Mr. Smith, what inducement do you think that is to tuberculosis work?

MR. SMITH: It has been a very pronounced inducement, very pronounced. We have had a very large number of inquiries from packers, and have had a very large number of inquiries, and it has been without question a very good incentive to people who are ambitious to have their counties cleaned up and certified. It might mean a good many thousand dollars to the men of Kansas.

MR. MERCER: I asked you the question because the packers themselves no doubt are favorable to that, but when you present your stuff for sale at the yards, the buyer will buy them as cheap as he can, and pay no attention to it, and I think that would be wasting time and money in this case.

MR. SMITH: I might say, Mr. Mercer, we have the packers down in black and white on that.
MR. MERCER: I understand that, but they also have them down in black and white that they will pay the outside price for tubercular reactors, and I know they have not been doing it, and I know that their buyers will buy them just as cheap as they can, I know that myself, and I know that they take advantage of the tubercular reactors. I have had case after case of that, so I don't believe there will be paid any ten per cent premium, or that it is any inducement at all to the people of this country to have the herds cleaned up. You will have to do it some other way.

MR. SMITH: I will say there is a definite understanding that after a lot of hogs were sold from a certain county, after the deal is consummated and the prices agreed upon, that upon the presentation of a proper certificate they will mail an additional 10 per cent, which undoubtedly will be remitted in a separate check. That is definitely agreed upon.

MR. MERCER: I will have to see the check before I believe it.

(Laughter.)

MR. SMITH: I would like to ask Mr. Mercer—I am not here to defend the packers, but I would like to ask you if you have ever known of any instance where the packers have bought hogs or cattle, where they failed to pay what they agreed to pay on those cattle or hogs?

MR. MERCER: I am not blaming the packers, they pay the price, but, Mr. Smith, if you want to know the records, come over to our county, and I will show you 100 records where they have bought reactors at from 50 cents to one dollar a hundred less than the market. I will show you, the packers or anybody else, the records.

MR. SMITH: If all the reactors that came from Kansas were properly tagged, they might be willing to be a little more fair than that.

DR. KINSLEY: I don't know what you mean by that because of the fact they are tagged, they are all tagged, the tags are put there for your information and for the information of the packer also when they go to market, and that tag is there.

DR. S. STEWART (Kansas City): I would like to corroborate the gentleman from Kansas in regard to the treatment the Kansas people have received from the packers when shipping tuberculous cattle to market. They pay less for cattle that are so tagged than they do for other cattle of the same grade untagged, and they do it right along. I have had that experience, and I know they do it, and they stand no chance to lose on those cattle which are brought subject to post-mortem. That being the case, I would like to say further, if you are going to give a premium, and want to encourage the eradication of tuberculosis, why not go straight forward, and say you will give a premium on car-
load lots of hogs free of tuberculosis shipped from an area of two or three farms. (Applause.)

MR. SMITH: That matter was discussed and I think they would agree to it. There was a convincing experience to that effect, but it is found absolutely unworkable, for the reason they would have to be kept over-night in separate lots, every consignment of hogs, and it simply could not be done in our local markets. We had to drop it on that account, and it was not on account of any unwillingness on the part of the packers. The packers say that hogs that come from a free area are worth from 10 cents a 100 pounds more than any other hog, but it would be impossible to run these hogs in separate lots, and I would like to call on Dr. Gibson, of the United States Bureau, who has made a careful study of the sale of reactors in all the markets. He can give us something worth while on that subject.

PRESIDENT MUNCE: Dr. Gibson, will you give that information to us, please.

DR. J. E. GIBSON: Mr. President and Gentlemen: I did not expect to be requested to speak upon that subject, consequently I haven't any figures to give you. I have them at the hotel, however, but I cannot give you the figures from memory. But I can say that there has been a very definite increase in the amount of salvage of cattle slaughtered on account of tuberculosis at most of the markets, not all. In some of the smaller packing centers I believe they are paying a less price for reacting cattle than cattle of the same quality untested, and I am informed by buyers for small packing companies that the reason they cannot pay as much for reacting cattle, is because they do not have the outlet that the larger packing centers enjoy.

I started on this work just a year ago, and I found at that time that there was very great cause for complaint, because of the price that was being paid for reacting cattle.

The packer is human, his buyer is human. The buyer will do the very same thing that I would do, or you would do—buy these cattle at a less price than he paid for other cattle, if he could do that he would very naturally do it, in order to make good with his house, so they would regard him as a good buyer, and probably pay him a little better salary. That is what buyers are looking for. If you were a buyer, that is what you would be looking for. But I have found the packer has been very, very reasonable, and when this matter was brought properly to his attention, and when it was pointed out to him, as I endeavored to point it out to him, that he was interested in the eradication of tuberculosis, and that we needed his cooperation, and his assistance; that we needed the money that we were losing on the price that he was paying us for the reacting cattle, he agreed very readily to pay the price, and I believe he is doing it at the larger packing centers.

If I had my figures here, I think I could convince you that the packer is paying a fair price. Last Monday I saw eight carloads of reactors sold in St. Paul, and I saw cattle in adjoining pens sold on the market, and the reactors brought as much, quality considered, as was paid for the untested cattle. Thank you. (Applause.)

PRESIDENT MUNCE: We have our distinguished Veterinary Director-General of Canada, Dr. Frederick Torrence, who has been a very attentive listener this afternoon. I wonder if he might not say something on tuberculosis, not necessarily this particular point, but any phase of it. Dr. Torrence. (Applause.)

DR. FREDERICK TORRENCE (Ottawa, Canada): Mr. Chairman, Gentlemen of the Convention:
I am very pleased indeed to be with you today, but I would have preferred to remain in the attitude of a humble listener, as I feel there is a great deal to learn in this gathering, from the wisdom of the men who are engaged in this work of eradication of tuberculosis.

You have two years' start of us in Canada and your experience is extremely valuable to us. We expect shortly to begin some restricted area work, what you call county work in the United States, and these problems which you are discussing here today are of great importance to us in Canada, so that we may take advantage of your work and start right along in this work.

I hope that some definite agreement will be reached with regard to some of the problems which have been left for the consideration of the Committee on Tuberculosis, and for further discussion. Particularly that question of When is an Area to be Accredited? What are the conditions which are to govern the entrance of fresh cattle into a restricted area, and so on?

I would like to take advantage of the opportunity of saying how fully I concur in some of the remarks made by Mr. Snyder with regard to the importance of keeping the public with us in this work. Up to the present time, the attitude of the public has been one of friendly assistance. They are the people who are paying the bills, and the bills are getting bigger all the time. I am a little afraid that some time the public will say, "This is costing more than it is worth."

Now, it is incumbent, I think, upon the veterinary profession to keep the public well posted as to the progress of this work; as to the importance of it; and as to its probable ultimate success. But it is necessary, if it is to succeed, that we do not allow the public to get cold feet, and think it is going to cost too much. We must keep them well informed, we must keep them behind us, keep under our feet that solid basis of public opinion, without which our efforts are doomed in the long run to fail.

I am very glad to be with you as a Canadian, and to tell you that we are heartily with you in all these efforts made to conserve the value of the livestock of America, and to eradicate disease. I thank you.

(APPLAUSE.)

PRESIDENT MUNCE: Is there any further discussion? Do the men who presented papers want to add anything further, emphasize any points in connection with the papers?

DR. MOORE: The subject I presented rather briefly, the facts and figures which I know are correct, and mean that we are facing a serious problem, which will call for the solution of the problem of how we will conduct tuberculosis eradication in the future. As Dr. White has said, we can adopt a policy of our own, but the accredited herd rule provides a county must be accredited as a herd is; and if we follow Dr. White's suggestion, we will have to take the accredited herd rule as though it were the 18th Amendment, and we had rather not do that. We would rather have the Association give some uniform ruling. I am trying to say we will have to make some change. We have come to the Association, asking for relief, and I think we have presented a case here where it should be given. I think it should be considered that way.

PRESIDENT MUNCE: Any other gentlemen who presented papers who wish to emphasize them or amplify them? Do the members of the Committee on Tuberculosis wish to say something?

DR. M. J. REYNOLDS: Mr. President, I have been wanting to ask Dr. Moore a question, and have been hesitating for quite a long time. I think I will ask it.
As I see this, I would like to say that I have given some thought to this problem of area eradication work, and I think I have endeavored to approach it with a perfectly fair open mind, and as I see the difficulties, they do not appear to come to light, especially with the first enthusiastic sweep across a county, or even the work that is necessary for a county or area to become accredited. They will fall along the road later on. Now, Dr. Moore argued that where the disease had been found, herds tested and certain herds had been found which did not have it, it was not necessary to retest those herds. The question I want to ask him is this: Why, if we are going to do it at all, how frequently will he retest those herds?

DR. MOORE: You mean the balance of the herds in the county? You mean the herds that were free?

DR. REYNOLDS: Yes, the herds which showed no reactors.

DR. MOORE: I would think you would retest them in three to five years, you might go over the county again.

PRESIDENT MUNCE: Any further discussion? The Chair would like to announce at this time the Committee appointment, which was authorized this morning, on drafting a policy for the Association: W. J. Butler, Chairman, M. Jacob, J. R. Mohler, R. R. Welch, B. H. Edgington. In the absence of two members of the Resolutions Committee, Dr. Staley and Dr. McLeod will please serve on that.

If there is no further discussion we will adjourn.

(Whereupon the convention adjourned to 9:00 o'clock A. M. Thursday, December 7, 1922.)

THIRD SESSION
Thursday, December 7, 1922, 9:00 o'clock A. M.

PRESIDENT MUNCE: I would like to ask if there are any committees ready to report? Dr. Reed, is the Committee on Credentials ready to make a report at this time?

DR. REED: Nothing to report at this time.

PRESIDENT MUNCE: The same order will be followed this morning as yesterday. This meeting deals principally with hog problems, diseases of swine, interstate shipments of swine, and so forth, and the program has been arranged by the Chairmen of those committees—Dr. Stange and Dr. Houck. They think it advisable to defer Dr. Stange's report until after the presentation of Dr. Van Es' address. They have also suggested that we postpone the discussion of the papers until after they have been presented, the same as was done yesterday with tuberculosis. If that is agreeable, I will call upon Dr. Van Es, on "Control of Swine Diseases by Sanitation."

"CONTROL OF SWINE DISEASES BY SANITATION"
Dr. L. Van Es, University of Nebraska.

Mr. Chairman and Gentlemen: As the paper is given on the program, it embodies the whole field of sanitation. I have only attempted to cover one phase of it, and the paper as presented does not attempt to cover the whole field. I feel I am not quite adequate to put it all in a paper, so the paper is entitled:

SOME PHASES OF SANITATION IN THE CONTROL OF SWINE DISEASES

By L. Van Es, University of Nebraska.

In connection with almost any discussion having to do with the transmissible diseases of swine, something may be heard about the practice of sanitation and its great value. Not uncommonly it is stressed
the most when there is the greatest doubt as to one's ability to cope with a given situation or when there is the least confidence in its efficacy. The word "sanitation" often is a mere commonplace uttered when the problem in hand is especially baffling, while often something alleged to be sanitation is undertaken merely because it yields a certain degree of comfort of the conscience when something is done or said with the best of intentions. There may even be a faint hope that desired results may be achieved by whatever is undertaken.

The things done in the hope that they constitute sanitation are frequently bizarre enough. Sometimes disinfectants are promiscuously scattered about premises and this is called sanitation, when in reality nothing more is accomplished than the creation of a smell. In other cases, stables, yards and pens are divested of their rubbish and this completes the process of sanitation as if disease would disappear at a mere gesture.

With the prevalence of such ideas it is not surprising that the results are often far from those hoped for, that sanitation so frequently inspires but little confidence and that farmers are so commonly induced to pin their faith on the useless nostrums, biologic or otherwise, which are constantly dangled before them by the clever salesmen of our day.

Sanitation thus is often given a rather vague and indefinite position among the measures of disease control and this is further enhanced by the fact that the most costly of all swine diseases, hog cholera, is probably one which is least amenable to purely sanitary methods.

Yet there is no fallacy more potential of costly mischief and of far reaching bad results than the belief that sanitation is only of a subsidiary importance among the various factors of our disease fighting machinery. In fact, in the case of a certain group of highly important swine diseases real sanitation is as yet our only hope in coping with rather disastrous situations.

It is commonly assumed that 90 per cent of all disease losses of swine as recorded by our statisticians can be charged to the account of hog cholera. While our statistical methods may be somewhat crude, perhaps, there can be no doubt that this estimate is fairly correct. On the other hand, observation compels us to believe that our statistical efforts leave a large proportion of our swine population and its losses by disease unaccounted for. We fear that they pertain too exclusively to swine of maturity or of shote age and take but little account of the younger stock. We suspect that the small pig, the potential hog, is largely neglected and that the more or less severe losses occurring among them do not appear in our census reports.

Statistically recorded or not there is no doubt that on many farms in our swine breeding states it is becoming increasingly difficult to raise a profitable proportion of the pig crop to maturity. From birth on to the age of three or four months, the morbidity rates are conspicuously high on such farms and this may constitute a marked feature during a series of years.

While it is safe to say that in many instances of this kind hog cholera is the all important factor in the problem, there is a considerable number among them in which this disease can be excluded. We frequently observed cholera susceptible herds in which the spring crop of pigs dwindled to a small number of stunted, gaunt, unthrifty and unfit animals, while shotes and more mature swine remained exempt from sickness. In some of such cases it was found that the pigs surviving had retained their susceptibility to hog cholera either in field outbreaks or when they were artificially infected with this disease.

It may indeed be difficult to correctly eliminate hog cholera in all
cases, but many observations compel us to give consideration to certain diseases peculiar to pig age. Many such have been described, surmised or commercially exploited, but as we draw from our own observations, we are forced to give special recognition to the paratyphoid infections, ascaris invasions and that form of B. necrophorous infection, which is commonly called "bullnose." In our experience this trio stands out pre-eminently among the factors responsible for losses among young pigs.

Not uncommonly we find all three occurring side by side in the same herd if not in the same animal.

We do not know if there is any relation between them, but it does not seem impossible that during the migration of the Ascaris larvae, the latter play a part as inoculators or vehicles of such organisms as the paratyphoid bacillus.

However, it is not the purpose of this discussion to deal with details peculiar to the conditions mentioned, but rather with the circumstances under which they arise and the more important factors which may enter into their prevention.

In that part of the country where the growing of corn and the breeding of swine constitute a well established agricultural practice, it is common that the animals, young and old, are kept confined in enclosures set aside for this purpose. In those enclosures the animals are fed and watered and whatever provisions for comfort or shelter are furnished, they are as a rule connected with such yards. In some cases, when the swine are kept at pasture, the latter communicates with the yard in order to give the animals free access to the water supply. Not uncommonly, that part of the farmstead which is low or deficiently drained and which for this or other reasons cannot well be utilized for other purposes is given over to the hogs.

In this type of enclosure, the pigs arrive shortly after being farrowed and there they are provided with food and water for a considerable period if not during their entire existence on the farm. On a comparatively small area of soil thus a considerable number of swine are kept for a series of years, practically without interruption. On this patch of soil the solid and liquid body wastes are being continually deposited, while in addition hog wallows and other pools are permitted to exist because of lack of drainage.

In such yards, altogether too common, even the more or less feeble attempts at tidiness for decency's sake, do not prevent the animals from being in constant contact with their own sewage and from being compelled to seek their food and water in this veritably questionable, if not highly dangerous, medium.

Experience in public health promotion during the last fifty years has amply shown the dangers of sewage contamination and of even the mere proximity of open privies and cesspools to human habitations. A community of people, yes, more or less isolated families may truly be said to live under a more than ordinary disease hazard, when no provision is made for proper sewage disposal, or the harmless storing of the same. This in a measure is also true in connection with our domestic animals and especially so in the case of swine.

We have no hesitancy to recognize as a sanitary axiom, that no species of higher vertebrate can exist in a more or less enduring contact with its own body wastes, without the imminent risk of sooner or later being involved in outbreaks of disease.

This, however, is precisely the condition which prevails in the average hog yard. Year after year the excreta of many animals are voided on a comparative small area of land and when infection once becomes
a factor a truly vicious circle is at once established. The soil, as it were, becomes glutted with organic materials and pathogenic organisms in quantities far in excess to its digestive powers, while the diseased animals or virus carriers of one generation uninterruptedly are contributing their quota of pathogenic factors to do mischief to the next one.

Under ordinary conditions the soil rids itself in time of most of the pathogenic elements with which it becomes contaminated by the process of biologic purification, but in the case just now cited, its digestive powers are overtaxed; more disease providing factors are added than can be destroyed, while it is by no means impossible that the mineral products of decomposition accumulate to the extent of becoming a hindrance to the growth of the very microorganisms which create them and upon which soil purification is dependent.

It need not be emphasized that the conditions described furnish the principal factor to the pollution of food and drinking water and that combined they must be regarded as being widely responsible for the appalling death rate among the pigs on certain farms. Nor is it necessary to point out the great need of effective measures to cope with this rather widespread problem.

Prior to devising ways and means to that end, two facts should be given recognition. In the first place that no relief can as yet be procured from therapeutic or immunizing methods. The use of "necro" cures, worm expellers and so called and alleged mixed infection bacterins is mere piffle, by which nothing of material assistance can be accomplished. In the second place, that soil cannot be effectively and economically disinfected.

The solution of the problem is entirely a sanitary one. It is a question of sanitation throughout and by the term sanitation is meant the creation and maintenance of an environment which is safe to animal life.

The measures proposed must center themselves upon the soil as the principal factor in our problem.

One of those measures consists in the avoiding of the infective ground or yards by pigs from birth on to an age of not less than four months. This method has been proposed in a very effective manner by Ransom and his associates as a means for the control of ascariasis in swine and to them belongs the credit for first pointing out a way for relief. In brief it is proposed to establish clean and parasite free farrowing quarters, to remove by thorough cleaning all filth from the body of the sow and by transferring the pigs to non-contaminated pastures, without permitting the least contact with the ordinary hog yards and pig pens. Not only is this method of great promise in dealing with ascariasis, but for the prevention of pig typhoid and bullnose as well.

The other measures for the control of the filth diseases of pigs pertain to the contaminated lots themselves, because of the potential elements of mischief associated with them. Three factors may be caused to cooperate for this purpose: 1st, the cessation of further contamination by the withholding of swine; 2nd, by adequate drainage; 3rd, by cultivation and cropping of the areas involved.

While in a practical way soil cannot well be disinfected, it will effectively rid itself of most of its pathogenic bacteria, which are not spore formers by the process of biologic purification. The speed of this purification is subject to seasonal fluctuations of moisture and temperature. When the soil is frozen, it is practically suspended while during the warm and moist months of summer its capacity is the greatest. In
the case of the spore formers it is probable that they are never entirely eliminated by the digestive powers of the soil. They are quantitatively reduced by their gradual subsidence into the deeper layers, especially so in soil of loose texture.

The eggs and embryos of the gross parasites are likewise apt to persist for long periods in spite of the purifying functions of the soil. They are also subject to subsidence into the ground structures although little is known on this subject as well as that pertaining to the adverse influence of a biologic nature to which they may be subjected in the soil.

In order to afford the soil of hog yards a measure of time to dispose of its pathogenic elements, it is tentatively proposed to establish what may be called a three year pig-lot rotation. Provision is made for space sufficient for three distinct yards, one to be in use for a year and the other two to remain uninhabited by livestock and to be devoted to cropping or garden purposes. Each year a fresh lot is put in use, so that two years elapse between successive occupations.

A similar arrangement is proposed in the case of the land to be used for pasture purposes, even if in that case there is a less degree of infection concentration.

In all hog lots and pastures, there should be provision for adequate drainage. Storm waters should have the means for a prompt run off, while no pools should be permitted to form or to exist. Hog wallows are not only superfluous, but positively detrimental for their capacity as infection centers.

As a general rule the improvement of hog lots should not be permitted to involve a considerable outlay of money; yet there are many areas requiring tile drainage as a principal means of sanitation, while it is probable that all hog lots could be improved by this means.

Subsoil drainage facilitates a perpendicular flow of precipitation water and hence also the subsidence of undesirable organisms and substances; it promotes the aeration of the soil and it helps to eliminate the end products of decomposition, the accumulation of which is apt to inhibit the microbic life upon which soil purification depends.

The resting hog lots should be used for cropping of some sort, preferably with crops requiring a maximum amount of cultivation. As soon as possible after the swine have been removed from the lot, the latter should be deeply plowed in order to bury the noxious substances as far as possible below the surface and to loosen the upper soil layer, after which the seeding or planting can be undertaken whenever the season becomes favorable for the purpose. The repeated stirring of the soil enhances it biologic activities and at the same time it facilitates the subsidence of those undesirable factors which are the least subject to microbial action. The growing crop is an important means of removing the mineral end products of decomposition because the latter can be generally utilized as plant foods.

In connection with hog lot sanitation, attention must be given to the manner in which food and water are offered to the animals. The drinking water should always be provided in special containers, which can be readily cleaned and from which the water can be periodically flushed out and changed. The drinking from water accumulations on the ground should be rendered impossible as such sources of supply are never free from the dangers of contamination.

Feeding from the ground should be avoided for the same obvious reasons. From a sanitary viewpoint it is probable that the self-feeder is the most suitable means of offering concentrated feed to swine.

Concrete feeding floors may also obviate some of the dangers which
are associated with feeding from the ground, provided that they be kept clean and free of filth accumulations.

The concreting of entire hog lots would help to solve many of the problems of livestock hygiene but unfortunately this can only be done in exceptional cases, owing to the high cost of construction. On rented farms it would be very difficult to consider this type of improvement and in proposing sanitary measures against the diseases under consideration all suggestions of costly improvement better be omitted. Enough can probably be accomplished in the manner indicated.

PRESIDENT MUNCE: Dr. Eichhorn has been unavoidably detained at home and will therefore not appear on the program this morning. Dr. Stange, will you present your report now.

REPORT OF COMMITTEE ON HOG CHOLERA CONTROL

Dr. C. H. Stange, Ames, Ia., Chairman.

Your Committee on Hog Cholera Control has attempted to supply a report that would contain some suggestions of a practical, constructive nature. We have attempted to eliminate any questions that have no practical bearing on control work or those of a research nature.

The control of hog cholera as any other contagious disease must be based, if successful, on certain fundamental principles. These may be briefly outlined as follows:

ESTABLISHING AND CONTROLLING INFECTIOUS DISEASES

Necessary Factors. Control Measures.
1. Susceptible host. Immunization.
2. Etiological factor. Cleaning and disinfection.
3. Channel of infection. Destruction of infected animals.
Quarantine measures.

The operation of the three necessary factors is readily apparent and needs no further explanation except to note that all three are necessary before an infectious disease can establish itself.

We wish to emphasize the fact also that the removal of one or more of these factors is necessary in order to control the disease. Considering the control measures it is readily apparent that all our quarantine laws, rules and regulations are designed to remove the third factor or keep the susceptible host and causative factor separated. This is very effective in many diseases and is usually accompanied by an effort to remove the second factor also in order to be most effective. In removing the second factor, sanitary and disinfecting measures are principally used but in some cases animals infected must be destroyed in order that we may be certain that all infectious material is totally eliminated. We have as examples foot-and-mouth disease control in the United States and hog cholera in some other countries. The only means we have of eliminating the first factor is by immunizing the exposed animals by some of our various methods. This factor has been the aim of most of our research and commercial effort since the possibility of immunity became an established fact.

The wide dissemination of hog cholera in this country and the public attitude toward strict control measures and our lack of knowledge, at the present time, regarding the mode of its transmission in many cases has made it practically impossible to control the disease as successfully as we had hoped. When the serum treatment was discovered it was justly hailed by all interested in our livestock industry as the salvation of pork production in this country.
In order to have a reliable basis for a report your Committee deemed it wise to make a general survey of the situation as it exists in the United States at the present time. This was done by sending a questionnaire to the control men in all states in the Union. The responses to this questionnaire were very satisfactory, as only in a few cases did they fail to reply. The Committee at this time wishes to thank the men of the various states for their cooperation in this matter.

A summary of the replies to the questionnaire is very interesting and is attached to this report. It is not possible to outline in this brief report all of the deductions that may be drawn from the replies. A few are offered for your consideration.

As to whether the states had any restrictions on interstate movement of swine other than the regulations of the U. S. Department of Agriculture, perhaps was of more interest to your Committee on Interstate Shipment of Swine. We found that twenty-eight states indicated in the affirmative and thirteen in the negative. Twenty-six states indicated that our regulations in regard to shipping from markets to farms were adequate. Ten states indicated that the regulations should be modified, while two indicated that they were in doubt. We made no effort to find out what modifications were suggested. It may be noted in this connection, however, that twenty-three states have regulations affecting the intrastate movement of swine, while fifteen do not. Whether or not many of the states feel that such regulations are unnecessary in the control of the disease or whether they feel that they could not be enforced if adopted, or both, your Committee is unable to say. We are of the opinion, however, that the present extensive traffic in breeding animals and the present attitude of mind where practically entire dependence is placed on immunization, makes it impracticable to recommend anything sufficiently drastic to be effective in successful control work unless the interests of the owner are guarded in some manner.

The question concerning the control of virus in connection with vaccinating has caused more reactionary legislation than any other factor. There seems to be little difference of opinion on this question among control men as forty states reported that they considered virus restrictions an important factor in the control of the disease, while only two report that they did not consider that an important factor and one state was doubtful. It would seem to your Committee that inasmuch as practically all states agree that virus restrictions are necessary it should be possible to agree on some general plan for its control.

As to whether their state placed restrictions on the distribution of virus, thirty-three states reported in the affirmative while nine reported in the negative. This indicates that there are a number of states and several of these are in the Corn Belt swine producing area, which believe such restrictions are necessary but they do not have them at the present time. The question may be raised as to whether there may be states that have laws which place restrictions on distribution of virus but which do not operate effectively. A restriction, for example in regard to laymen use of virus where permits for such use are issued by the thousands is defeated in its own application. As to restrictions on the use of the virus, the proportions were almost the same, being thirty-five affirmative and eight negative. Practically the same states indicate that they place restrictions on the use of virus as those that place restrictions on its distribution. There is but one state that does not place restrictions on the use of virus but does place restrictions on
its distribution, while there are two states that do not place restrictions on its distribution but do on its use.

It seems to be the plan of some organizations to use the most liberal states as examples to break down the restrictions of the more conservative. Two years ago names of two states without virus restrictions were used as examples to repeal the virus law in a heavy hog producing state. Information is now at hand showing that the last mentioned state is being used as an example in neighboring states which still maintain restrictions.

There seems to be such a wide variation in the policies that have been adopted in the various states that it is very difficult to draw any satisfactory conclusion. From the replies received, we were unable to decide that there was any definite plan or policy in regard to the control of hog cholera in the United States that had been generally adopted or was in effective operation. If we accept 40 cc, as an average dose serum for hogs vaccinated it will be apparent that the amount of serum produced in the United States as stated in subsequent paragraphs is sufficient to vaccinate not more than one-seventh of our hogs. In the light of this fact it is not surprising that the losses among hogs have not been more materially reduced. In this connection, it is interesting to observe the losses for the five-year period preceding and succeeding the last "wave" this country experienced. If we take the five-year period just preceding and just succeeding this wave we find that the losses among swine in the United States from 1907 to 1911 inclusive were an average of 48.4 per 1,000. I think it may be safely said that serum was not used in sufficient quantities during this period to be considered a factor in the control of the disease. If we compare this average, however, with the years 1917 to 1921 inclusive we find we have losses due to cholera averaging 46.5 per 1,000 for the five years. This would be a difference of approximately .2 of 1% on the average. It is possible that these two periods may not be representative but the last period referred to is the only one that is available where the serum treatment could be considered a factor and is certainly more representative than any single year that could be selected. One unknown factor in making the above comparison is what the incidence of the disease would have been during the second five-year period had no serum been used. For this reason the figures should be considered only as estimates. In addition to this, according to figures published in the publications from the Bureau of Animal Industry, we find that during 1921 serum produced was 457,441,946 cc and virus 24,575,474 cc, the two together total approximately 482,000,000 cc. The cost of administration added to the cost of this product will approximate probably in the neighborhood of $7,000,000.

In addition to that, the questionnaire revealed the fact that there are about one hundred men in the United States on full time engaged in hog cholera control work and about two hundred engaged on part time. The question naturally arises as to whether in view of these facts, the hog cholera serum is actually doing all it can be expected to do in eliminating the one important factor in control of animal diseases, that is the susceptible animal, thereby controlling the disease.

In the interest of promoting hog cholera control work, it might be well for men in sanitary work to decide whether or not hog cholera vaccination has become something that is not applied as a control measure from the standpoint of the community and the state. Is it not at present almost entirely a question of individual wishes on the part of the numerous owners and our entire scheme of immunization of
swine a "hit and miss" proposition without any definite plan or policy? The figures would seem to indicate that as a country we are not making a very profitable investment in our vaccination work. Your Committee, however, does not wish to be understood to feel that there is more serum used than there should be, on the other hand, it is quite possible that additional serum could be used to advantage. Hog cholera serum intelligently applied is as satisfactory as any biological agent we have but organization and judicious control are also necessary. We do feel, that this Association could and should agree on a definite general policy and so far as possible on a detailed plan regarding the most effective control of hog cholera which would necessarily include the entire vaccination problem.

The questionnaire referred to in the beginning of this paper also revealed the fact that so far as the Committee is able to judge the problem of swine diseases, not only hog cholera but associated and complicating diseases are practically the same throughout the entire country and the only real differences in the problem of control lie in political and to some extent economic phases of the work.

In view of the information above outlined, your Committee recommends that—

1. The intrastate movement of swine be considered an important factor in hog cholera control and that such regulations be adopted as are in harmony with the interstate regulations. It seems to your Committee that one hog shipped from one point to another, presents the same problem in hog cholera dissemination as any other hog, whether he crosses a state boundary or not.

2. Since practically all states have indicated that they believe virus restrictions to be an important factor in the control of hog cholera, that restrictions be adopted as rapidly as possible in all states. We believe that these restrictions should place the entire matter of distribution and use of virus under the control of sanitary officials of the state. We recommend that these restrictions include the distribution of virus to and its application by persons responsible to the State Livestock Sanitary official.

3. We recommend that veterinarians and control men be urged to give more attention to sanitation and management of swine since some of the other diseases and many complications can be avoided in this manner.

4. We recommend that the Secretary of this Association or a committee gather all available data regarding the losses in the various states and such other information as may be of assistance in preventing the repeal of laws in states which yet maintain reasonable restrictions.

Dr. C. H. Stange, Chairman.
Dr. W. W. Dimock.
Dr. L. Van Es.
Dr. J. W. Connaway.

PRESIDENT MUNCE: Dr. Van Es's paper and the report of the Committee on Hog Cholera Control are now open for discussion. I hope you will take hold of this important subject, analyze it, and discuss it fully.

DR. STANGE: Mr. Chairman, I want to raise the question whether it would be well to have Dr. Houck's paper on Interstate Shipment of Swine.

PRESIDENT MUNCE: I understood you wanted that considered separately. That will be very satisfactory. Mr. Houck, Chairman of the Committee on Interstate Shipment of Swine, will present the report of that Committee.
Mr. W. J. Carmichael, Secretary of the Swine Breeders' Association, read an excellent paper at the 1919 meeting of this Association, entitled "Regulations for Interstate Shipment of Swine in Crates," in connection with which he presented a chart showing the state requirements for 1919 and called attention to the variations in state transportation regulations. In his remarks relating to the subject, Mr. Carmichael said:

"If you will glance over this chart you will find that there is a wide difference in the requirements of the different states. This wide difference is very confusing to the hog man who is planning to sell and ship to the various states. It is confusing, because he may carry on his operations within his herd to the best of his knowledge and belief, and he may sell hogs to go to certain states, and find at the time that he goes to ship them that it is absolutely impossible for him to ship them except subject to certain regulations.

"I seldom get in a group of purebred hog men, but what some man raises a question as to these regulations. He asks what he will have to do to ship into this, that or the other state, and it is mighty hard to get information, and I have to tell them in most every case that the best information I have been able to get is as follows, and then I proceed to give them the information which I have secured from the reports which have come in to me; but I would like to see something done to get more uniform regulations than we have at the present time, particularly covering these interstate shipments of purebred hogs in crate by express.

"I am not here asking that that be enforced or that that be adopted in the several states. What we would like to see is a fair, just and uniform regulation, whatever that regulation may be."

At the same meeting I read a paper entitled "Report of Progress in Hog Cholera Control," in which I stated:

"There are a number of matters of importance in connection with the hog-cholera work that might be discussed—one of the most important of which is state laws and regulations. Various state authorities and prominent members of livestock associations have commented liberally on the variations in state laws and regulations affecting the movement and supervision of livestock to prevent the introduction and spread of disease, and suggestions have been made in regard to the desirability of uniformity. Under present conditions shippers of breeding animals are frequently subjected to inconveniences and annoyances and have a reasonable excuse for their mistakes in shipping interstate. The radical differences that exist in the requirements of different states are bewildering and inexplicable, and give opportunities for just criticism on account of the apparent contradictions expressed in official regulations. The agents of transportation companies can scarcely be expected to keep themselves informed on the varying requirements and frequent changes in the different states, and in general there is confusion and considerable dissatisfaction.

"It seems reasonable to suppose that laws and regulations which have been found necessary to protect one state against the introduction and spread of hog cholera would prove equally effective and desirable in any other state."

I also presented in my paper a tabulation showing at a glance the wide differences that exist in state requirements, and it was suggested that this Association might consistently give some attention to this mat-
ter. As the first step in attempting to secure more uniform state regulations affecting the movement of swine, it was suggested that the Committee on Hog Cholera might prepare for the consideration of the Association a tentative draft of regulations which would seem generally adaptable for governing interstate and intrastate movements of swine.

In compliance with the recommendation of the Executive Committee, a Committee on Inter- and Intra-State Shipment of Swine was appointed by the President. This Committee submitted a report at the next meeting held in Chicago in November, 1920, in which the following statements appear:

"The variations that exist in state laws and regulations affecting interstate movement of livestock is a subject of much concern to livestock shippers. This matter has been discussed at previous meetings of this Association, and, as a result of the agitation, your Committee on Inter- and Intra-State Shipment of Swine was appointed and instructed to report at this meeting (1920).

"The general subject of livestock transportation laws and regulations was approached through the swine phase probably on account of the prevalence of hog cholera and the facility with which the infection is carried from place to place.

"Although it is recognized that each state has the right to promulgate such regulations as it deems necessary, best to meet its conditions and to protect its swine industry, various state authorities, transportation officials, officers of livestock associations, and shippers have criticised severely the variations that now exist, and suggestions have been made in regard to the desirability of uniformity.......

"It is very evident that an effort should be made by the states to modify their laws and regulations where necessary to bring about more uniformity in shipping requirements if it is possible to do so. In the way of suggestion, your Committee has prepared a tentative outline of such regulations as it believes would be adaptable to the needs of the various states for the proper protection of the swine industry."

In presenting the outline of tentative regulations, it was recommended by the Committee that the next step toward securing the desired action by the states would be the preparation of tentative regulations by a committee composed of representative state regulatory authorities from different sections of the country, and it was suggested that the outline prepared by the Committee on Inter- and Intra-State Shipment of Swine might be used as a basis for the preparation of these regulations. In accordance with the recommendation, a motion was passed and a Committee was appointed to prepare a draft of regulations. The report of the Committee, including a draft of tentative regulations, was presented at the meeting of this Association last year. A motion was carried to defer action on the report until this year in order to give the members of the Association an opportunity to study the regulations.

In order to refresh your memories, I will read the tentative regulations, which are yet before the Association for consideration.

STATE REGULATIONS GOVERNING THE MOVEMENT OF SWINE
Definitions of terms used in these Regulations,

1. Public Stockyards.—All stockyards where animals are bought, sold or yarded.
2. Official Stockyards.—All stockyards where the U. S. Bureau of Animal Industry maintains inspection.
3. Certificates of Health.—Such certificates are acceptable only when issued by an authorized veterinarian. Certificates of health shall
be issued in duplicate, the original copy to accompany the shipment and the duplicate to be sent to the State Veterinarian or other designated official at destination, as soon as the inspection is made or treatment is completed.

4. Affidavits of Owners.—Such affidavits shall be issued in duplicate, the original to accompany the shipment and the duplicate sent immediately to the State Veterinarian or other designated official at destination.

5. Authorized Veterinarian.—A veterinary inspector of the B. A. I., a veterinarian in the employ of the state, or a licensed veterinary practitioner acting under authority from the proper regulatory authority of the state.

SWINE INTENDED FOR IMMEDIATE SLAUGHTER

Reg. I. To be IMPORTED into the State:—

Sec. 1. Swine intended for importation into the state for immediate slaughter shall meet the requirements of the federal regulations, both in regard to health and manner of shipping.

Reg. II. INTRASTATE MOVEMENTS:—

Sec. 1. Healthy, unexposed swine.—This class of swine may be shipped to market and to slaughter centers without restriction.

Sec. 2. Diseased swine.—Swine affected with hog cholera, swine plague, or other infectious or contagious diseases, shall not be moved from the infected premises for any purpose.

Sec. 3. Exposed swine.—Swine exposed to hog cholera or swine plague, but which on physical examination by an authorized veterinarian show no symptoms of hog cholera or other contagious or infectious disease may be shipped to recognized slaughter centers within the State of on permit from the State Veterinarian or an authorized deputy. Such exposed swine shall not be driven or trailed on public highways; if they are loaded into cars through pens and chutes, the pens and chutes used shall be thoroughly cleaned and disinfected immediately after the exposed swine are loaded. Shipments of such exposed swine shall not be diverted en route for any other purpose.

SWINE INTENDED FOR STOCKER, FEEDER OR PUBLIC SALES PURPOSES

Reg. III. To be IMPORTED into the state:—

Sec. 1. From Official Stockyards.—Importations of swine from official stockyards into...for stocker or feeder purposes shall be made in accordance with the provisions of the federal regulations. Such swine shall be held in quarantine, apart from other swine, at destination for 3 weeks.

Sec. 2. From Points Outside of Official Stockyards:—

(a) Swine from public stockyards other than official stockyards.—Such swine shall enter the state only on permit issued in advance by the proper state official; they shall be inspected, immunized, disinfected and shipped by or under the immediate supervision of an authorized veterinarian in the same manner and under the same conditions as similar shipments are handled at official stockyards. Swine which are positively known to have been immunized before arrival at the yards may be shipped after disinfection without treatment.

(b) Swine immunized at a point of origin outside of official or other public stockyards.—Such swine shall enter the state only on permit issued in advance by the State Veterinarian or other designated official; they shall be accompanied by a health certificate issued in duplicate by an
authorized veterinarian in the state where they originate, showing that no hog cholera or swine plague existed on the premises where they originated at time they were examined for certification, and that they were immunized, prior to the date of shipment. The original health certificate shall accompany the shipment and the duplicate copy shall be forwarded to the State Veterinarian at destination. Such swine shall be dipped or sprayed in a 2 per cent solution of cresol compound within 24 hours prior to loading; they shall be transported in cleaned and disinfected cars, loaded and unloaded through specially provided or freshly cleaned and disinfected pens and chutes, not unloaded en route, and held in quarantine at destination apart from other swine for 3 weeks.

(c) Swine allowed to be imported without immunization at point of origin.—Importations of such swine may be made in case of emergency on special permit secured in advance from the State Veterinarian or other designated official of . . . . . . . . . . . . They shall be accompanied by a health certificate issued in duplicate by an authorized veterinarian of the state in which the hogs originate, showing that the swine are free from hog cholera, or other contagious or infectious diseases. Such swine shall be hauled in wagons and loaded direct from the wagons into cleaned and disinfected cars, or through specially provided pens and chutes; they shall be unloaded in the same manner at destination, but not unloaded en route. The original health certificate shall accompany the shipment and the duplicate shall be sent to the proper state official at destination immediately when the inspection is completed. Such swine shall be immunized within three days after arrival at destination and held in quarantine apart from other swine for 3 weeks.

Reg. IV. INTRA-STATE MOVEMENTS:—

Sec. 1. Swine originating at Official Stockyards.—Such swine shall be immunized by an authorized veterinarian and handled in the same manner as similar interstate shipments.

Sec. 2. Swine originating at public stockyards other than official stockyards.—Hogs for stocker or feeder purposes may be removed from such stockyards only on permit issued in advance by the proper state official or his authorized agent. Such swine shall be inspected and immunized by an authorized veterinarian, disinfected and shipped in the same manner as required for similar interstate shipments and they shall be held in quarantine at destination for 3 weeks.

Sec. 3. Swine originating on premises within the state other than stockyards.—The requirements for shipping such swine intrastate are the same as for importations of the same character. Special instructions will be given by the proper state authority in instances, where deemed necessary, for moving such swine short distances by wagon or truck.

Reg. V. SWINE INTENDED FOR PUBLIC SALES:—

Sec. 1. The regulations governing the inter and intrastate movement of swine for stocker and feeder purposes shall apply also to the movement of swine to be sold at public sales.

SWINE INTENDED FOR BREEDING PURPOSES

Reg. VI. To be IMPORTED into the state:—

Sec. 1. Swine shipped loose in cars.—The regulations governing the importation of swine in cars for stocker and feeder purposes shall apply to swine imported for breeding purposes.

Sec. 2. Swine shipped in crates.—Such swine shall be accompanied by either a health certificate issued by an authorized veterinarian or by the affidavit of the owner stating that no hog cholera or swine plague existed on the premises where the swine were kept for 60 days prior to the
date of shipment, and that they were properly immunized either with serum alone within 21 days of shipment, or by the simultaneous treatment not less than 21 days prior to the date of shipment. The swine and crates in which they are shipped shall be disinfected with a 2 per cent compound cresol solution immediately before shipment and the swine shall be held in quarantine at destination apart from other swine for three weeks after the date of arrival.

Reg. VII. INTRASTATE MOVEMENTS:

Sec. 1. Swine shipped loose in cars.—The regulations governing importations shall apply also to intrastate movements.

Sec. 2. Swine shipped in crates.—The regulations governing similar importations shall apply also to the intrastate movements.

SWINE INTENDED FOR EXHIBITION

Reg. VIII. Sec. 1. To be IMPORTED into the state.—Such swine shall be accompanied by a health certificate issued by an authorized veterinarian or by an affidavit of the owner that no hog cholera or swine plague existed on the premises where the swine were kept for 60 days prior to the shipment; that the swine were immunized by serum alone within 21 days, or by the simultaneous method not less than 21 days prior to the date of shipment; that the swine were dipped or sprayed with a 2 per cent compound cresol solution within 24 hours before loading, and that the crates or cars in which they were shipped were disinfected immediately before loading.

Reg. IX. Sec. 1. Intrastate movements.—The same regulations shall apply as for interstate shipments of like character.

The present Committee, of which I have the honor of being Chairman, has reviewed the conditions in shipping requirements which have been brought to the attention of this Association in the reports of previous committees, by officials of livestock organizations, and by livestock shippers and find that there have been no material changes in conditions during the past year. In view of this, together with the fact that no action has been taken by this Association on the regulations now before it, the present Committee has no further report to submit.

U. G. Houck, Chairman.
B. H. Edington.
P. Malcolm.
R. C. Julien.
F. R. Woodring.

PRESIDENT MUNCE: This report of the Committee last year referred to by Chairman Houck is printed on pages 138 to 141 inclusive of the proceedings of the 1921 meeting. As Dr. Houck says, it was presented in the form of recommendations, and no action has been taken in reference to them, so it remains for the Convention to determine as to this question. The matter of hog cholera control, and interstate shipments of swine, presented by the two committees, and Dr. Van Es' paper, are now open for discussion.

MR. MERCER: Mr. Chairman, I would like to make inquiry, if it is the policy of the Committee to ask that action be taken on the report submitted this morning at this Convention?

PRESIDENT MUNCE: Do you refer to Dr. Houck's report?

MR. MERCER: Yes, sir.

PRESIDENT MUNCE: Dr. Houck, will you answer that question?

DR. HOUCK: Yes, the report was submitted last year—I believe you were a member of the Committee. It was not adopted by the Association. I believe it was on the motion of Dr. Birch, who suggested the
Association should have some time to review these regulations and look over them before the Association took action on them. Therefore, action was deferred until the present time. Now they are before the Association for such action as it desires to take, whether to accept the report, or some other action.

DR. HOUCK: I move that this be adopted, and that a copy be sent to the State Regulatory Officials of every state in the Union, the State Veterinarian or Chief of the Bureau of Animal Industry in every state, with the recommendation that they use their influence in so far as they can to have them adopted by other states.

PRESIDENT MUNCE: With a view of bringing about uniformity?

DR. HOUCK: Yes, sir.

MR. MERCER: Mr. Chairman, as a substitute for the motion, I desire to offer the following: That all of the report in respect to the movement of hogs be stricken out, other than in respect to the movement of hogs for immediate slaughter, and a health certificate for the shipment of hogs in crates, and the affidavit of the owner. I want to present that as a motion in view of the fact that with all of the requirements submitted in this report, it would be almost impossible for the sanitary officer to keep them in his mind. I do not think that it is practical. I do not think very many of the states could put it in operation, as a requirement for the movement of hogs. A majority of our people who ship for particular purposes, their shipments are not subject to exposure, and it is an embargo upon these people to ask them to go through a lot of requirements, when a simple requirement such as the affidavit of the owner with respect to diseases on the premises, or a health certificate from a veterinarian authorized to issue same, should be sufficient. So it seems to me that this can be all simmered down to those two propositions in a very simplified way, and not embargo the layman with a lot of requirements that it will be impossible for him to comply with. You are hampering the industry in this country when you exact such regulations.

PRESIDENT MUNCE: As I understand the proposition was merely submitted with the idea that it would bring about uniformity. It is absolutely optional with the individual states whether or not they will adopt it.

DR. ELIASON: Mr. President, I wish to second Mr. Mercer's motion, and further say that I think it is a very inopportune time to hamper an industry with a multiplicity of regulations such as this. It is not a question of the unworkability of it, but I would challenge any freight agent to be able to decipher what he should do with a shipment. If you are going to have any regulations, they must be simple, therefore, I second Mr. Mercer's motion.

DR. HOUCK: Mr. President, I just wish to say a word in regard to these regulations. Any committee or any individual who attempts to get up a model of regulations or an outline of regulations as a guide, has got to take in certain principles, in forming those regulations. As the Committee has brought to your attention, it is not obligatory for any state to adopt these regulations, but we merely attempted to lay down certain principles as a guide to work along in forming state regulations. It is not anticipated that states will adopt these regulations to the letter, but they can adopt the principle, for instance, in regard to a certificate for shipment. We have had a great many suggestions in regard to the certificates that should be required in the shipment of hogs. We have stated that there should be two health certificates, or whatever they may be, adopted; one to accompany the shipment, another to be sent to the state regulatory authorities at destination. If the
states could adopt that thing it would do away with a great variety of requirements. Some states require four certificates, some three, some two, some none. It is not intended that these regulations should be adopted in toto, but it would lead towards more uniformity in formulating state regulations. That is what they were intended for, not to be adopted and followed to the letter.

PRESIDENT MUNCE: It might be perhaps considered my duty to call attention, before you dispose of this notion, not for the purpose of discussing it at all, that a similar report, in fact, an identical report was made by the committee last year, composed of Dr. Houck, Dr. Dyson, Dr. Malcolm, Mr. Mercer, and Dr. Luckey, and now we have a similar report, recommended by a similar committee, composed of: Dr. Houck, Dr. Edgington, Dr. Malcolm, Dr. Julien and Dr. Woodring.

Any other remarks on the motion of Mr. Mercer? I understand the first motion was not seconded. Mr. Mercer's motion is a substitute. Mr. Mercer.

MR. MERCER: Mr. Chairman, just a word before you put the question. I made that motion with this proposition in mind seriously, that the report that was submitted while I was a member of the first committee, Dr. Houck understands and knows I was opposed to a great many of the propositions submitted. It does seem to me that if we have any consideration for our people in the different states, for their reliability and responsibility, that any state should accept a certificate of health from an accredited veterinarian. That is all it would mean with respect to the shipment of hogs for breeding purposes; or, in other words, if there were no veterinarian available, that the man could make an affidavit that there had been no disease in his herd, or it had been properly immunized by an accredited veterinarian, and that would simply mean it would be so safe that it would seem useless to hamper the industry with requirements to go outside of that. That is the main reason I made this proposition, and I hope you gentlemen that are interested in these state matters will think about it, because I know that you have inquiries made from various sources, what is your requirement? They do not know. A uniform requirement would be a splendid thing, but I do not believe that it is possible to get all of the states in the United States to adopt the proposition submitted by this Committee, and it does seem to me that it is safe to go on simplifying the matter through affidavits and certificates.

With regard to the movement of hogs at stockyards, I think especially interstate, the Government should have entire jurisdiction.

PRESIDENT MUNCE: Will you please state your motion again? I do not know that I exactly understood it.

MR. MERCER: That all of the report as submitted by the Chairman of the Committee be stricken out, with the exception of that which relates to the interstate movement of hogs for immediate slaughter, and the interstate movement of hogs from public stockyards, with the exception of the health certificate of an accredited veterinarian and the affidavit of the owner for the shipment of purebred hogs interstate. That covers the proposition which I have in mind.

DR. HOUCK: I cannot agree with the gentleman about its being so complicated. It looks to me very definite. In the matter of shipping hogs in crates requiring disinfection and a health certificate or affidavit, there is nothing complicated about that. In the matter of shipping stock hogs, it requires a health certificate and disinfection. There is nothing complicated about that. Although it is a long report and covers
many separate, distinct, and different matters, personally I feel that the report either ought to be rejected in toto, or else adopted.

DR. TURNER: Mr. President, I would like to second the gentleman's motion here, and say a word as to Mr. Mercer's motion. I cannot see, with such a loose motion as Mr. Mercer suggests, simply on a veterinarian's certificate—he has not taken care of his animals enroute; he has not looked up anything except a certificate of health on the premises, or an affidavit from an owner. We all know what the affidavits of owners heretofore have been. Therefore, I suggest that we adopt the motion, or this report.

PRESIDENT MUNCE: Dr. Turner, Mr. Mercer's motion has the right-of-way. The question now is on the adoption of Mr. Mercer's motion. Is there any further discussion on that?

DR. COTTON: Mr. Chairman, I would like to hear the Committee's report relative to shipment interstate on the affidavit of the owner re-read.

(The section of the report was thereupon re-read by the Chairman of the Committee.)

DR. BELL: Mr. Chairman, it speaks there of the affidavit of the veterinarian who vaccinated the hog. Some of our states are recognizing farmers' vaccinations. What are you going to do in that instance where a farmer vaccinated hogs or a Farm Bureau agent vaccinated a shipment? You cannot get a veterinarian's certificate on that.

DR. REED: I do not think that man can ship hogs.

DR. HOUCK: Many states now allow hogs to be shipped in crates on the affidavit of the owner, but it must be approved by the state veterinarian. If you were going to allow them on the affidavit of the owner, there should be some affidavit by the sanitary authorities of the state of origin.

DR. --------: Mr. Mercer, I understood you said the affidavit of the owner and the statement that they had been treated.

MR. MERCER: I did not mean it that way.

DR. --------: Did you mean that the hogs might be received simply on the affidavit of the owner?

MR. MERCER: That is the suggestion of Mr. Carmichael's paper, representative of the purebred breeders of this country.

PRESIDENT MUNCE: That would eliminate any requirement then for treatment or inspection by an accredited veterinarian.

MR. MERCER: I do not suppose generally there are very many farmers in any state in this country who are vaccinating hogs without some authority from the state sanitary authorities. I would imagine that is true. Therefore, if a man has authority to vaccinate his own hogs, he must have some connection with the state sanitary authorities to get his authority to do that. I am not familiar myself with the laws of the various states, but I am sure that there are a great many of those states where farmers are vaccinating their own hogs; very few, however, where they are shipping them on their own certificates. They either get their local veterinarian to certify to the healthy condition of the hogs, or else they get a certification from the sanitary authorities, giving them authority to use the virus. As I understand it—if I am wrong I hope to be corrected—there is not any law, federal or state, prohibiting anyone from using serum. It is virus that is commonly covered by the law and regulations. Hogs cannot be immunized as I understand it, without the use of the virus. Therefore, the state authorities in almost every state that I know of, have jurisdiction over that virus. I do not want it to be understood that I am opposed to these restrictions. I think probably it would be better if Dr. Houck would read the regula-
tions, section by section, if you want to deliberate on them. It is a great big proposition, and the hog breeders of this country are very much interested in it, especially the purebred breeders. I do not think it makes so much difference to the feeders, because they make their own arrangements to get these hogs to the markets from other states, and they will continue to do that; but to hamper the purebred breeders with unnecessary restrictions, seems to me to be wrong. If it will present the proposition more clearly, I will withdraw that motion, but I do not think that it would.

PRESIDENT MUNCE: I am inclined to feel that a majority of the members here do not understand exactly your motion, and that they may not fully understand what they are voting on.

MR. MERCER: I have made it as plain as I can. If you can make it plainer, go ahead.

PRESIDENT MUNCE: I cannot do it. If they want to vote on it, that is for them to determine. (The question was called for.)

The question is on the adoption of Mr. Mercer's motion. (Mr. Mercer's motion was put to a vote and lost.)

DR. HOUCK: Mr. President, the motion that I made was seconded, and I call for a vote.

PRESIDENT MUNCE: The question now is on the adoption of the recommendation of the Committee, which means the adoption of this report as the official regulations of the Association. (The question was called for, and the motion was put to a vote and carried.)

Returning to the discussion of Dr. Van Es' paper, and the reports. Dr. Cahill, would you lead off in the discussion of this problem? You are well informed on the subject.

DR. CAHILL: Mr. Chairman, I was unfortunate enough not to get in in time to hear Dr. Van Es' paper, which I regret very much. Regarding Dr. Stange's report, I have heard only a portion of it. The portion I did hear was exceedingly interesting. I believe that it is one of the best reports from the Committee on Hog Cholera Control which we have had for several years. The reports offered by the Committee for the past few years—I can say this with impunity, because I have been a member for the past few years, with the exception of this year—have been cut and dried, and had very few suggestive or helpful thoughts. There isn't any question, Mr. Chairman, in my mind, but what if we control sanitary conditions on the hog lots, the hog-feeding premises, that we will make a very material advance in the control of swine diseases. I would be more inclined to say the control of diseases other than cholera. There isn't any question but what parasitic infestations in swine in this country are very rapidly increasing. There isn't any question in the minds of a great many of us but what complications closely allied to hog cholera have materially increased. Whether or not this can be carried to the logical conclusion suggested by this Committee, controlling hog cholera to a greater extent by sanitation and disinfection, is a very serious question in my mind. I am not certain that I got the true import of Dr. Stange's remarks regarding the amount of cholera which has existed for the last five years compared with the preceding five years. I am loth, exceedingly loth, from the disease control point of view to feel that we have had as much cholera in the past five years. I think that there are many diseases which have been diagnosed as cholera which may have been parasitic infestations. There may have been many other things—the so-called "flu"—which have probably been diagnosed as cholera and charged to this condition. I cannot believe that the excellent conditions which now exist in so many herds
where cholera formerly was rampant, and where now it has been completely eliminated, can be upset by figures such as Dr. Stange has reported for that Committee.

PRESIDENT MUNCE: Any further discussion? I understand that Dr. Atherton, of Maryland, has had some experiences with reference to hog cholera control. I would like to hear from Dr. Atherton.

DR. ATHERTON: Gentlemen, I came here to be a good listener. The excellent paper by Dr. Van Es, I regret very much was confined to the rotation of hog lots. I believe that the big thing and the only thing that is going to solve the hog cholera proposition for us is sanitation. According to the figures given in the pamphlet of the susceptible host, the report showed about one-seventh have been removed. I guess it is possible one-seventh have been vaccinated, but that does not necessarily mean that we have always removed the susceptible host, because many a time a susceptible host, by the use of the double treatment, has become an infected animal. There was only a difference in the two five-year periods of two-tenths of one per cent. If we are gaining, according to that rate, our grandchildren in twenty years from now, or forty years from now, will be sitting here shaking their heads and talking wisely about this proposition.

The second proposition is sanitation. If any of you have read that excellent book recently issued by Dr. Birch, you will sit up and take notice. In our investigations in Maryland, we are finding the infected pork as the big factor. I can trace it out to the farm, not only to the garbage pit and dumps, but out on the farm. The proposition that was offered by the Committee on the Shipment of Swine provides for the shipment of exposed swine for immediate slaughter. Gentlemen, that is one thing that has got to be stopped, because Dr. Birch has proven that exposed swine in a badly infected herd are usually infected swine.

The next proposition I wish to find fault with in the report of that Committee—I know it is not going to meet with favor with the people from the central states, but we must not make all our recommendations to meet public favor, and that is the shipment of swine from public stockyards for feeding purposes.

Gentlemen, any proposition that leads to the introduction of more hog cholera germs into any locality is inconsistent with sanitation, and either you are going to stop it, or you are not going to get anywhere.

The third proposition that was taken up by the Committee on Diseases, showing the steps that are being taken in some states to control the use of virus—I am an Illinois man—I have worked in Iowa, Illinois and Indiana. I went to the Inspector in charge of Illinois this morning, a man in Bureau work, to get the data on the administration of the double treatment by laymen. Gentlemen, that is a backward step, but it is going to be a good thing in helping us to get data for the future. Sanitation means everything that can be done to prevent the introduction, the importing and the spread of hog cholera infection. (Applause.)

PRESIDENT MUNCE: Gentlemen, this is a big proposition, and some very good points have been brought out. No doubt there are others if we could only uncover them.

DR. COHN: Mr. President, reference was made to the losses in two five-year periods, showing practically the same loss before the use of the serum treatment, for the period from 1907 to 1911, inclusive, and that following the use of the serum treatment, the time covered by the period from 1917 to 1921. The five-year period prior to the use of the serum treatment was selected because of the fact that it was the lowest five-year period. The latter period, subsequent to the use of the serum treatment
in the control of cholera, covering 1917 to 1921 inclusive, I think most of you are acquainted with that. We found that cholera had swept over the country last fall at a time when serum was not available, when there was a serious shortage, and many thousand hogs died because of the fact that it was impossible to secure an adequate serum supply at the time when it was most needed. That, it seems to me, would have a very great influence on raising the average of loss in the 5-year period since the serum treatment has been used.

It is seldom that the Committee has outlined as definite a report as they have today, which surely shows three important factors and measures that are absolutely necessary for the control of cholera. No one alone can control it. All three must be employed.

The second point on the chart there, the etiological, with reference to the discharges of the body, or the body discharges in sick hogs—if we are to control hog cholera we must control the means of disseminating the cause of hog cholera, and that brings us to the question of controlling the sick hog, and its relation to other susceptible hogs.

If it be true—and I think it has been well established that it is true—that the body excretions of sick hogs are a dangerous factor, then let us control those hogs. Let us put him under cover and keep him there, where his body discharges will not be exposed to the ordinary and average means of dissemination. Then apply the other two measures of immunization, disinfection and quarantine, and the question is solved wherever it has been applied to this work.

DR. KINSLEY: Mr. President, I wish to compliment this Committee for some remarks made at this Association a year ago, which points were well taken, and this is a splendid report, but there are a few points we must not lose sight of. Should the sanitarian control the disease by eliminating the industry, or should he diminish the extent of certain diseases to an economic limit where the producer and the consumer will be benefited?

Our friend from Maryland has given us a system that if applied in the central states will so hamper the swine industry that the sanitary control officers will be eliminated; within two years there will be no control officers.

PRESIDENT MUNCE: I dislike very much to be obliged to call on different speakers. I would rather have you get into this voluntarily. Dr. Owen.

DR. OWEN: Mr. President, I think this subject has been pretty well covered, but I will state that in the State of Virginia we have a great deal of infection, due to garbage feeding, and it seems to me that there should be some control from these garbage-fed herds. The infection, of course, has been confined to feeding infected pork, and it seems to me there should be some regulation, whereby garbage-fed hogs are immunized from time to time. Since the War a great many very large herds in Virginia being fed garbage, have been vaccinated regularly, but the garbage which is being fed to those which have not been immunized is a constant source of infection, and I have no doubt that this is true in other states. I hope that there will be some provision whereby our state commissions will require a treatment of these herds. I think that garbage feeding is really the greatest source of infection in our state.

PRESIDENT MUNCE: Does any member of the Committee or the Chairman desire to supplement the report, or to add anything further?

DR. STANGE: Mr. Chairman, I might say just a few words. I wish the members to know that we have confidence in the serum treatment, and heartily believe that it is doing a great deal of good in many cases, but we feel this very important and effective agent is not being applied
principally as a control measure; that it has got to the point where it is
more like treating a case of cholera, or a case of pneumonia. It is an in-
dividual proposition. We feel, furthermore, that at the present time there
is no definite plan or policy; there is no goal, in other words, towards
which we are working in the hog cholera work, and it seems to me that
we ought to have something in mind, that is, some plan or some method
in mind towards which we can work if we are going to accomplish any-
thing. I feel, furthermore, that you cannot plan for a year. You must
plan your work over a series of years, and I would like very much to
see a committee on preventing diseases—a recommendation that such a
committee be provided for, and I feel that hog cholera control could be a
part of this committee’s report.

Reference has been made to those figures. We say in the report that
those figures should be considered only as estimates. There are too many
factors involved there that are uncertain, factors that we cannot estab-
lish definitely. We simply gave them because they were the only figures
available, and to stimulate interest in comparing or looking into the ques-
tion as to what we are actually accomplishing at the present time.

So far as the Committee’s report is concerned, the Bureau of Agri-
culture’s figures for the year 1921, which are referred to, show that there
was an average of 48.7 per thousand, while in 1920 it was 51.2; in other
words, 1920 was higher than 1921, according to those estimates. 1917
was 48.6. What I attempted to do was to use a series of years. 1921 were
the last figures available. I went back to 1916, and there I found it jump-
ed up to 66.2. By including that, I could have shown that we are losing
more hogs now than we were then, which I do not think would have been
quite fair, because that was the tail-end of that wave, so I would not sug-
gest that you take those figures seriously. It is simply an estimate based
on the only figures available, and it should be accepted as an estimate
only.

I simply wanted to stimulate interest to look into that phase of con-
trol work, and just in this connection I would suggest that in most states
no accurate figures are available regarding losses.

Here is a suggestion that might be of assistance. In 1917, I went to
the auditor of the state, and suggested to him that he put in the assessors’
report two columns, one column, number of hogs, and the other column,
number of hogs lost that year; so we get our assessors every year to take
a census in regard to the number of hogs and the number of animals
lost. Every year we have an accurate record since 1913 in the state of
Iowa, in regard to the hogs and the number lost. I think those figures are
valuable, because you can get some idea of what you are accomplishing.
Personally, I wish it had been possible to include all other classes of live-
stock in that report. Of course, these other figures are simply estimates.

DR. WHITE: Mr. President, I move the adoption of this Report.
(Motion duly seconded.)

PRESIDENT MUNCE: It has been moved and seconded that the Re-
port of the Committee on Hog Cholera Control be adopted by the Associa-
tion. Any remarks? (Dr. White’s motion was put to a vote and carried.)

DR. ELIASON: Mr. President, I do not wish to be put on record as
being opposed to the restrictions put on the movement of hogs, but I do
believe that we ought to make them as simple as possible.

Another thing I wish to bring out, which I have not heard anybody
touch on, and that is that if the present tendency is continued on the part
of some areas to allow anybody or everybody to use hog cholera virus,
you are going to have plenty of data to work on in the future. I thank
you, gentlemen.
TWENTY-SIXTH ANNUAL MEETING

DR. L. H. HOWARD: Mr. Chairman, with your permission, and on behalf of the Committee on Resolutions, I want to take a few minutes of time from the consideration of strictly Association affairs to refer to a matter which I am sure will command the sympathetic attention of everyone here. While we are a quasi-public institution, and assembled here primarily for the consideration of the public welfare and the discussion of matters pertaining to the public good only, yet we never have been unmindful of certain more strictly personal affairs, especially when misfortune has come to any of our individual members.

We are without the presence of two highly-respected and esteemed members, on account of personal misfortunes. We certainly miss them, and I think each one of us feels that the success of any meeting of this Association is not entirely complete without the presence in our midst of Drs. Eichhorn and Schroeder, two members who for a great many years, have contributed in great measure to the interest and pleasure and enjoyment of these gatherings. We have learned of a serious accident which happened to Mrs. Eichhorn, and also have learned of the death of the beloved mother of Dr. Schroeder. Therefore, Mr. Chairman, I want to submit, for the action of this meeting the following Resolutions:

Whereas, we have learned with deep regret of a severe accident to the wife of our esteemed member, Dr. Eichhorn,

Be it Resolved, That our President be requested to transmit our sincere sympathy to Dr. Eichhorn and his beloved wife, the sufferer, and to express our earnest hope for her rapid recovery.

Whereas, we have learned with deep sorrow of the death of the beloved mother of our esteemed member, Dr. Schroeder,

Be it Resolved, That our President be requested to express to Dr. Schroeder our sincere sympathy in his bereavement. (Motion duly seconded and carried by a rising vote.)

PRESIDENT MUNCE: The meeting now stands adjourned until 1:30 in this room.

(Whereupon, an adjournment was taken until 1:30 o'clock P. M. of the same day.)

FOURTH SESSION

Thursday, December 7, 1922, 1:30 P. M.

INFECTIOUS ABORTION

PRESIDENT MUNCE: The first paper on the program of the Infectious Abortion Section is: "The Practical Control of Infectious Abortion in Cattle Herds," by Dr. J. W. Connaway, Columbia, Missouri. Dr. Connaway, (Applause.)

DR. CONNAWAY: Mr. President and Gentlemen: I have written this title that the Secretary prescribed that I should take. If I were choosing it myself I might have chosen something different, but he thought it was a timely time for research men to put out something practical. Most of us have been coming here with very abstruse subjects that shot over the heads of the control men, and he thought there was a demand for something that should be intensely practical and interesting.

THE PRACTICAL CONTROL OF INFECTIOUS ABORTION IN CATTLE HERDS

By J. W. Connaway,

Missouri Agricultural Experiment Station, Columbia, Mo.

Mr. President and Gentlemen: In the opinion of many cattle breeders, infectious abortion does not hold a second place, even to tuberculosis,
in economic loss to the livestock industry. Its prevalence in many states, and its increase by spread through traffic and otherwise demand more serious consideration than has yet been given; and there is need for closer cooperation among breeders, veterinarians, livestock sanitary officers and scientific investigators, in order that this menace to cattle breeding may be overcome.

This Association is the clearing house through which practical measures of disease control can most quickly find general application, and proper coordination, for the good of the livestock industry of the entire country. Your Secretary, however, and many other members, especially non-professional members, have felt that on some of the subjects that have been presented at previous meetings we have not held closely enough to the practical phases of the problems to be solved; and perhaps have given too much time to the details of technical research papers which are of special interest to research workers only, and which would find a more appreciative group of hearers in a pure scientific society, or in a sectional meeting. Moreover, in the opinion of many, too much valuable time has been wasted at some of our sessions in disputatious discussions that have been aroused by papers of commercial veterinary origin—papers whose purpose is trade promotion in biologics, rather than the real advancement of livestock sanitary science.

We all know that our Secretary has a high appreciation of scientific research and realizes that progress in disease control is impossible without it. But his viewpoint that the large purpose of this Association is to bring about more effective cooperation in the general application or practical, well tested, and safe methods of disease control, for the mutual benefit of the livestock interests of all the states, and neighboring countries, is a viewpoint with which we must all agree. And our meetings should not be diverted from this practical purpose. And above all they should not be prostituted to serve special commercial interests.

While it is important to have the substance and practical bearings of pertinent researches presented before this Association, the investigator should, as a rule, confine his paper as much as possible to a summary of the points which have an immediate practical bearing on disease control. At least this is the opinion of the Secretary, and he has laid upon me the injunction to present a practical paper. And in carrying out his wishes and your wishes, I think I cannot do better than to draw largely, if not wholly, upon a paper I read a few months ago before the Section on Sanitary Science and Police of the American Veterinary Medical Association, under the title of “Facts Relating to Infectious Abortion in Cattle and Swine; and their Practical Application.”

At that meeting I made the statement that in the control of any disease it is evident that the more complete our knowledge is of the nature of the disease, its cause, modes of transmission, and the conditions necessary or favorable for its propagation, the more easily can effective measures of control be devised and applied; and that infectious abortion in farm animals is no exception to the rule. But I expressed the opinion also that there is no justification for withholding the practical relief that is now possible, even though certain phases of the problem are still in the experimental stage, and the last chapter relating to research has not been written.

It does not matter in what stage of progress our science at any time may be, the demands of the livestock breeders are that we use to the best of our ability, and in a safe manner, the essential facts that are available, be they few or many. And in my opinion, we have at the present time sufficient well-established knowledge concerning the nature of abortion,
particularly in cattle, to successfully control this disease. A review, therefore, of the facts which have a practical bearing, with suggestions as to the application of these facts, I believe will prove not only interesting but also of real value to the members of this Association, upon many of whom large responsibility for disease control rests.

The question is pertinent—What facts of practical utility have been established?

The facts in the list which I shall give, although they have not as yet been put to as large practical use as is desirable, I am confident are already quite generally accepted by veterinarians and investigators as having been proved; or at least as being supported by a sufficient weight of evidence to justify their tentative acceptance and practical use. A number of these facts have been established or verified by me and my research associates, and many by other scientific workers; but as this paper is written for purely practical purposes the summaries are presented as a statement of useful facts, and without special reference to the sources of information concerning the particular points. It must suffice to make general acknowledgment to all who have contributed facts of practical utility in the control of abortion disease.

Important Facts Concerning Infectious Abortion in Cattle and Swine

1. The first important fact is that there actually exists a true infectious disease, specific in nature, which causes the majority of abortions in cattle, and probably also in swine.

2. This infection is transmissible, under certain conditions, directly from an infected female to a healthy female, when kept in close association.

3. The infection is transmitted from the infected female to healthy animals through the uterine discharges: namely, the aborted fetus, the afterbirth, and the subsequent lochial discharge; also by the milk.

4. An infected female which is sufficiently resistant to carry viable young to full term also discharges abortion infection at time of parturition, on the coat of the live calf, in the afterbirth, and later in the lochial flow, and in the milk.

5. The infection remains alive outside the body of the infected animal for a considerable time, under favorable conditions; and in the soiled tail and hair of rump of the infected female, and the bedding, contaminated by the uterine discharges, may transmit the infection to healthy exposed animals.

6. The period of discharge of infection from the uterus is comparatively short—from three to six or eight weeks.

7. The disease is contracted under natural conditions by ingestion of infected materials.

8. Transmission by copulation is also possible, but probably not of frequent occurrence.

9. In the majority of cases, a mature infected female remains a permanent carrier of the Bang abortion infection during life, and is liable to abort at any pregnancy; and is a potential spreader of the disease at each parturition, and for a period thereafter.

10. Bulls occasionally become infected systemically, and the generative glands and passages may discharge abortion germs and infect females through copulation, or by the latter licking the soiled sheath of the bull, or the vulva of a cow which has been recently served by an infected bull.

11. The milk of abortion infected cows is not liable to transmit infection to mature cattle—except from gross carelessness in handling the
milk. The probabilities are not great that many sexually mature cows will have an opportunity to ingest sufficient infected milk to cause harm.

12. The danger of transmitting abortion infection from the milk of an infected cow through the fecal discharges of calves nursing infected mothers, has not been determined experimentally. (Field observations of a few cases have shown no bad results.)

13. Occasionally the young of an abortion infected mother becomes permanently infected with the Bang abortion organism in utero, or from the milk after parturition; as a rule, however, the young animal overcomes the infection before reaching sexual maturity, and may be reared free from the Bang abortion disease.

14. Infected non-pregnant cows, free from uterine discharge, do not transmit the abortion disease to healthy pregnant or non-pregnant cows.

15. Infected pregnant cows do not transmit the Bang abortion infection to pregnant non-infected cows before the period of parturition (or abortion).

16. Some infected cows develop a considerable degree of immunity or tolerance to the Bang abortion infection, and do not abort more than once or twice; while others may abort repeatedly.

17. The artificial inoculation of the living B. abortus germs in sexually mature females causes a permanent infection identically with the naturally acquired disease. The effects upon the animal are the same.

18. Healthy heifers and cows artificially infected before breeding are not so liable to abort as when infection occurs after breeding. Such inoculation, however, prior to breeding causes abortion in some of the inoculated animals after they are bred; and any case so treated and infected permanently is liable to abort during a future pregnancy. And in all cases they are potential spreaders of abortion infection at time of parturition.

19. The bacillus abortus (Bang) is the specific cause of the majority of cases of abortion in cattle and probably also in swine.

20. The serological tests—Agglutination and Complement Fixation—are reliable, practical, diagnostic tests for detecting infected animals in a herd. The abortion test properly used is as accurate for its purpose as the tuberculin test is for detecting tuberculous animals.

21. Other organisms than the Bang bacillus occasionally cause cows to abort; as for instance, the tubercle bacillus may produce lesions in the uterus that result in the death and expulsion of the fetus; but this organism and the pus formers which occasionally gain access to the uterus, do not have the selective invasive properties that are possessed by the B. abortus Bang, and which entitle the latter to hold the chief place as an abortifacient organism in cattle and swine.

Spirilla or vibrios have been found associated with abortion in cattle; but thus far there does not appear to be any indication that these organisms will prove a serious menace to cattle and swine breeding, as a specific or primary contagium transmissible from herd to herd through infected animals.

22. Sterility is at times a sequel of an abortion due to the Bang bacillus infection; but this sterility is probably the result, in most instances, of the post-invasion of the open uterus with pus formers, and other wound infections, following a retained and neglected afterbirth.

23. Infectious abortion in swine, if not identical with that of cattle, is a closely related infection with clinical evidence of intercommunicability. Moreover, in experimental work, abortion has been produced in cattle by inoculation with the abortion germs of swine; and in swine by inoculation with the abortion germs of cattle. The swine organisms seem to be the more virulent in experimental work thus far done.
Practical Measures of Prevention and Control

The facts summarized in the foregoing paragraphs supply the basis for measures of control which have been put in practice with success on a number of stock farms, and which it is believed can be adapted to any condition that may arise. An outline of these measures is given herewith.

1. If an abortion occurs in the herd, isolate the animal promptly. Do not take the risk that the abortion was due to an accidental injury or shock, or to some non-specific infection.

2. Destroy the aborted fetus and afterbirth; burn, or bury them deeply, adding quick-lime before covering with earth.

3. Disinfect the stall and litter where the abortion occurred. Use compound cresol (U. S. P.), or other good disinfectant. If the abortion occurred in the open field, or cattle-yard, cover the spot with freshly slaked lime and sprinkle with a disinfectant which has a disagreeable odor, to prevent healthy cattle from licking up infected material.

4. Give attention to the quarantined cow. If the afterbirth has been retained, give proper treatment to prevent complications leading to chronic metritis, and other conditions that may result in temporary or permanent sterility. Day by day disinfect thoroughly the uterine discharges and contaminated bedding. Do not permit these to come in contact with healthy mature cattle and swine; and especially in contact with healthy pregnant females.

5. Keep the aborting cow in quarantine until uterine discharges have ceased. Before releasing from quarantine, spray the rump and tail with a disinfectant which has a sufficiently disagreeable odor to prevent healthy cows from licking the soiled parts.

6. While the cow is in quarantine, draw a blood sample and send it to the State Laboratory, or other properly equipped laboratory, where the diagnostic tests for abortion disease are made.

(a) If the first sample, drawn soon after the cow aborted, proves negative to the test, draw another sample in ten or fifteen days and have a retest made. (It occasionally happens that the blood serum of a cow that has recently aborted does not contain sufficient reacting antibodies—in a free state—to give the specific reaction. If convenient, also send a sample of colostrum. This fluid contains the antibodies even when they are apparently absent from the blood of an infected cow or sow. The blood as a rule reacts strongly, both at time of parturition and at later periods. If therefore a negative reaction is reported on samples, drawn on the fifteenth or thirtieth day, the probabilities are that the cow is not infected with the Bang abortion disease.)

(b) If the blood sample, however, shows a positive reaction to the abortion test, proceed to test all the sexually mature breeding cows in the herd, as well as the mature bulls. There may be other infected animals in the herd that are not suspected, but which are carriers and distributors of abortion infection at an apparently normal calving; or, in the case of an infected bull with a diseased genital tract, a more continuous discharge of infection may be occurring.

7. After the test of the herd has been made—(a) Mark or identify in some plain manner all the reacting individuals. (b) If convenient, separate all the reactors from the non-reactors, in different pastures and barns, to facilitate proper handling and observation, as well as to lessen the risk of spreading infection to the healthy animals. (c) Make a careful appraisement of the worth of the reactors as breeding animals, or as milk and butter producers. (d) Sell to the butcher all reactors that are not of special merit; such as old cows that have about reached the end of their usefulness; animals of defective conformation, poor
milkers, unthrift hard keepers, uncertain breeders, cows with bad udders, cows affected with persistent leucorrhoea, metritis or other genital ailment that has not yielded to expert treatment; and other reacting "boarders" in the herd, the disposal of which would lessen the leaks in the business.

The greater the number of reactors of the class mentioned that are sent promptly to the butcher, the better it will be for the owner of the herd—and for the industry. It will lessen the number of potential distributors of abortion infection to be kept under surveillance, and hasten the day when the herd will be free from the disease. The ultimate elimination of all reactors is the end to be striven for.

8. Do not sacrifice abortion infected animals of exceptional merit. They can be handled without great danger of spreading the disease. Some of them will abort more than once, and in widely separated pregnancies; and practically all will remain potential distributors of the infection; but many of them will become quite regular breeders, and their progeny with but few exceptions, can be reared free from abortion disease. A careful watch, however, must be kept on all abortion infected pregnant cows, and if one should show signs of premature calving, she should be removed promptly from the herd into the quarantine quarters, and handled as described in a preceding paragraph until safe to return to the herd.

All abortion reactors retained in the herd should be regarded as dangerous distributors of the infection at calving time; although the calving may appear to be in every way normal, and the calf fully developed and vigorous. Virulent infection has been demonstrated in the afterbirth of abortion reactors in such cases. (The same is true of abortion infected sows which farrow living litters of pigs.)

To avoid danger from this source, separate the abortion reactor from the herd, several days before she is due to calve. Place the cow in a calving stable so constructed that it can be kept in proper sanitary condition. Isolated paddocks may be used if the drainage can be controlled. When the cow has calved, dispose of the afterbirth and contaminated bedding in the manner already described. The vaginal tract and uterus should receive such treatment by the attending veterinarian as the circumstances may require. Disinfect the tail, and soiled hind quarters, as often as seems necessary while the cow is in quarantine. Spray the infected stable litter daily with a disinfectant before cleaning the stall, so that infection may not be carried on the feet of the attendant to the stalls of susceptible cattle; and to prevent cattle from eating the contaminated bedding.

Disinfect the coat of the calf before transfer to quarters where the young animal may come in contact with mature susceptible cattle. Keep the cow isolated from mature non-infected cattle until free from infectious discharges—three weeks to six or eight weeks. And when released from quarantine, sponge or spray the tail, vulva, and hind quarters with an ill-smelling disinfectant to prevent other cattle from licking the parts mentioned.

The use of the spray on the hind quarters is especially applicable in the handling of beef-bred cows which are reactors, and which have recently aborted or calved. The period of detention in quarantine may be lessened, if after release from quarantine the infected cows are sprayed frequently until the danger period is past.

In the case of milk cows, the use of an ill-smelling disinfectant applied as a spray is objectionable, on account of its contact with the teats and udder and the danger of tainting the milk; but the application can
be made more carefully by the use of a sponge, and the objections mentioned can thus be overcome.

9. The handling of the calves from abortion reactors is not a matter of much concern, prior to sexual maturity, so far as the permanent infection of these calves is concerned. And no special changes in herd management are necessary during this period so far as the calves are concerned. For, although the young of abortion infected mothers are exposed to the danger of infection in utero, and subsequently from ingesting infected milk (for a period of several months in the case of beef-bred calves), the infection is nevertheless, in the great majority of cases, effectually overcome by the young animal before sexual maturity is reached.

The young heifer on reaching breeding age should, however, be carefully protected from "open cases" of carriers of abortion infection; namely, cows that have recently aborted and abortion reactors that have recently calved.

Both heifers and gilts when sexually mature are susceptible to permanent infection before breeding, as well as after becoming pregnant, although the susceptibility is probably greater during the pregnant state. Proper protection therefore should be given to all sexually mature animals both before and after breeding.

1. While the bull, as a rule, is not an important factor in the spread of abortion infection, it is preferable not to use an abortion reactor; and no reacting bull should be allowed to run free with the herd. If from necessity, or other valid reasons, a reacting bull is used, a special breeding pen should be provided to be used for this purpose only. The sheath of the bull should be flushed out a half-hour or more before service. And a canvas-bag muzzle should be placed over the mouth of the cow while in contact with the bull. Moreover, after service, the coat of the cow (and especially the rump, tail and vulva) should be sprayed or sponged with a coal-tar disinfectant. The cow should then be isolated a few days and sprayed again with the disinfectant before she is returned to the herd.

11. In the management of a herd of cattle or swine, a rigid rule should be adopted and adhered to by every breeder—requiring the temporary isolation of all sexually mature breeding animals that are purchased; and the application of the serological abortion test before admission to the home herd. This also applies to nurse cows that may be needed in show herds; and to cows and sows sent in from other herds to be bred. Clean herds of purebred cattle, and of swine, have become infected and suffered severe loss from these sources of infection.

12. A systematic testing, and retesting, of an abortion infected herd should be carried out until the herd is free from the disease. All the young heifers should be tested after reaching breeding age, and especially after they have been bred a few weeks. The entire herd should be tested two or three times yearly, or oftener as circumstances may require. The drawing of the blood samples is such a simple matter and the disturbance to the animal so slight, that these tests should not be neglected in valuable purebred herds.

13. The health certificate for interstate shipment of sexually mature breeding cattle and swine should include an affidavit that the abortion test has been applied and that the animal has been found negative to the test.

14. As vaccination with live B. abortus organisms, for "immunizing" cattle and swine against infectious abortion, increases the number
of permanent carriers and potential spreaders of abortion infection, its general and unofficial use should be prohibited.

The use of such products should at least be surrounded by the strictest measures of governmental control, and not allowed the loose tolerance, and even assumption of official endorsement, that is now permitted by a defective federal system of licensing, which has compelled spokesmen of the licensing department to disclaim moral responsibility for the legal act of licensing vaccines the value of which is questionable, or which on subsequent investigation have been found to be worthless.

"Immunization" (even the imperfect immunization that may be secured by vaccination with virulent cultures of the B. abortus organisms) would be desirable were it not for perpetuating the infection in the herd, and spreading it to other herds by traffic in the vaccinated breeding cattle. Allow me to present a parallel or two.—

Cattle can be "immunized" against Texas fever—I have immunized a great many myself—but unfortunately such cattle are thereafter permanent carriers of Texas fever infection, and under certain conditions are dangerous to susceptible cattle; and for this reason the southern stockmen have chosen as a permanent solution of the problem the large-scale plan of controlling and ultimately eradicating the disease by quarantining the infected bovine host when carrying "open infection"—fever ticks—and by destroying these intermediate infection bearers over large areas by systematic dipping or spraying under official supervision.

The South is destined to be a great market for many years for purebred breeding cattle from the North, and it would be unfortunate indeed to inflict the cattle raisers of that territory with another serious plague after they have suffered so long from the Texas fever blight, and labored so diligently to get rid of it. But that will happen unless adequate measures are applied to prevent it.

Cattle can also be "immunized" against tuberculosis, in the same sense that they may become tolerant to the presence in their tissues of the living tubercle bacilli; and may not suffer seriously from the toxic products of these microbes, and may even grow fat. But no sensible breeder of the present day would allow his herd of purebred cattle to be injected with the Behring Bovo-vaccine or other highly praised vaccine containing the living germs of tuberculosis. On the contrary he prefers the drastic method of slaughter and eradication to that of attempted immunization, since he knows that an apparently healthy (or immune) tuberculous animal is liable to become an "open case" of tuberculosis, and an active distributor of tubercle bacilli.

The parallel I have drawn between the Bang abortion infection, and Texas fever, and tuberculosis, is not a fanciful sketch; but is the presentation of a practical lesson to which livestock raisers should give due heed.

15. In conclusion, I would emphasize the fact that effective measures for the control of abortion disease in individual herds are now available, and that these measures are practical. It only remains to apply them in a proper manner and more extensively.

It is evident, however, that success cannot be attained unless the special though simple details of herd and stable management, which have been mentioned, are carried out in an intelligent and diligent manner. And, although the burden of this work must be borne by the owners and the herdsmen who are in immediate charge, a special obligation rests upon the veterinary practitioners, and the livestock sanitary officers, in the course of their professional or official duties, to give to
the men in immediate charge of a herd practical instruction in the
details of what to do, how to do it, and when to do it.

There is another phase of the problem, aside from that of dealing
with the disease in individual herds, that is not less important, and
upon which I wish to lay special emphasis, since it is pertinent for this
Association as an organized body to take cognizance of it; namely, the
prevention of the spread of the Bang abortion disease from state to
state through traffic. It is not premature to emphasize the vital im-
portance of early action upon this matter, by the Federal Bureau of
Animal Industry and the livestock sanitary boards of the several states;
since cattle breeders quite generally look upon this disease as a specific
transportable infection of not less economic concern than tuberculosis.
And sooner or later they will demand that it be dealt with in much the
same manner as tuberculosis, so far as interstate traffic is concerned;
that is, that the health certificate shall show that all sexually mature
breeding animals have been tested for abortion disease as well as for
tuberculosis, and found negative. I predict also that they will welcome
the establishment of a system of accrediting "abortion free" cattle herds
and swine herds. These measures will hasten the eradication of the
Bang abortion disease.

Let me repeat that this Association is the clearing house through
which practical measures of disease control can most quickly find general
application and proper coordination. And I am confident that through
its fostering influence (which brings together for conference livestock
men and veterinarians from the various states), the federal and state
livestock sanitary boards will be led to place the Bang abortion disease
in the list of eradicable diseases, alongside of Texas fever and tubercu-
losis; and that effective cooperation between these agencies on the con-
trol and eradication of this disease will be established. The work already
accomplished by the cooperative programs that are being carried out
against Texas fever and tuberculosis is ample proof of what can be done
when a serious effort is made toward solving the simpler problem of
eradicating the Bang abortion disease.

It is outside the purpose of this paper to attempt to present a perfect-
ed plan for the interstate cooperation suggested. That duty lies in the
province of others. But if I have succeeded in gathering together, in
serviceable form, a bit of sound material that can be utilized in build-
ing a plan that will find general and successful application, I shall be
content.

PRESIDENT MUNCE: "The Importance of the Sequelae of Abor-
tion Disease," Dr. J. F. De Vine, Goshen, N. Y.

THE IMPORTANCE OF THE SEQUELAE OF ABORTION DISEASE

By J. F. De Vine

The importance of the sequelae of abortion disease must necessarily
be reckoned largely from the financial side. To estimate with any de-
gree of accuracy the financial loss occasioned by abortion disease among
bovines is next to impossible, since it involves so many intricate questions.

The loss of a calf could be regarded as the first and most observable,
but the estimated value of an individual calf might vary from a few
dollars as veal value to at least $10,000, in the case of a purebred. This
being so, it is at once apparent that accurate deductions are well-nigh
impossible. Unfortunately, however, serious as is the loss of a valuable
calf by being dropped before it has reached a viable age or in a weak-
ened condition so that it dies later, this loss is usually associated with, or followed by other serious disasters.

When a bovine affected with abortion disease carries her calf into the sixth or seventh month of pregnancy or full term, the act of abortion or parturition is usually followed by retention of the placenta, due to placentitis and cotyledonitis, which constitutes the main, maternal evidence or lesions of the disease. Unless such animals can have prompt and skilled attention, the action of secondary invaders on the membranes leads to pathological changes of the uterus, tubes and ovaries that too often follow in the wake of retained placenta, inhibiting subsequent, regular breeding or producing hopeless sterility.

The sequelae, as they might be styled, combined with the loss of calves, lead to a monetary loss that places this disease at once in the very front as one of the fearful scourges of our livestock industry.

The losses occasioned by this disease must also take into account the valuable sires that are lost to the cattle industry due to pathological conditions occasioned in the genital organs by the Bang organism. The slaughtering of a ten or twenty thousand dollar purebred sire that has been rendered impotent by this disease is not an uncommon occurrence.

Anyone who is familiar with purebred cattle could probably recite instances where sane, reliable stock owners have estimated their losses from abortion and subsequent sterility as running into hundreds of thousands of dollars. We could recite a concrete case where a reliable, shrewd business man set forth the following information:

After figuring the cost of his animals and the small percentage of calves that were raised during the year of 1919, subsequent infertility of many of his most valuable females during the year of 1920, some of which were considered hopelessly sterile and later proved to be; comparing all this with results in the same herd during the year of 1921, when abortion had been suppressed and the impediments of breeding in certain animals relieved, his loss for the year of 1919 was placed at $120,000.

We are of the opinion that these figures, as submitted by this owner, would not be regarded by any experienced stockman as unreasonable and this in a herd of less than one hundred purebred animals. We have seen herds where just from general observation, we have felt that the losses were even greater than in this herd.

It would seem, therefore, that without a very exhaustive and exacting survey, an accurate knowledge of the cost of this plague to our country is out of the question. On the other hand, its seriousness to our stock industry is so patent to everyone that has to do with cattle, that its control, with the ultimate hope of its irradication, must not be delayed one moment longer than necessary, as the propagation of blood lines that are priceless stand imperiled from its ravages which, unfortunately, are so often hidden in diseased ovaries, tubes and uteri. It seems unnecessary to recite here the pathological phenomena that trail this disease, excepting to point out that those who are giving more or less of their time and attention to sterility, find that at least 80 per cent of the impediments of breeding, such as cervicitis, endometritis, pyometra, salpingitis, ovarianitis, cystic ovaries and diseased corpora lutea are the result or sequelae of this infection and that the hundreds of thousands of dollars worth of valuable animals that go to the block each year as hopelessly sterile, will continue and must continue unless the prevalence or virulence of this disease is lessened or conquered. Therefore, educators should make it plain to stock owners that the loss of calves and diminished milk supply are not the only losses associated with abortion
disease, but reproduction is ever in jeopardy. Suppress abortion disease and the sterility problem will at once become insignificant.

Abortion disease can be controlled in America through the offices of this Association where the scientists and the stockmen meet on common ground and work in harmony. My personal feeling is that abortion disease is at present at our mercy by the intelligent application of sanitation, biologies and proper nutrition.

FACTS CONCERNING THE ETIOLOGY OF ABORTION DISEASE IN CATTLE

Dr. R. R. Birch, Cornell University, Ithaca, N. Y.

This Association was organized to deal for the most part with regulatory measures to prevent spread of communicable animal diseases, but my brief contribution to the program of the day is but indirectly in line with this accepted function. Instead of considering, as such, sanitary regulations to prevent spread of abortion disease in cattle, which, for the purpose of this paper, is to include all abortion caused by infection, I have chosen rather to call attention to a few facts regarding its etiology, for knowledge of its cause or causes will ultimately determine whether the disease is one that lends itself to official sanitary control measures.

In the broader sense, knowledge of the etiology of an infectious disease includes much more than mere demonstration of its cause. It embraces as well many essential and intimate facts regarding the causative agent itself; its biological characteristics; its natural habitat and geographical distribution; its location and span of life in the animal body; the channels through which it enters the body of a second host; the channels through which it is eliminated from the animal it invades; the degree and duration of the immunity which its attack establishes; the degree and duration of the artificial immunity which can be produced against it; and recognition of its effects, that is, the diagnosis of the disease it causes, by field and laboratory methods.

To the modern sanitarian these are commonplace considerations, but they will bear frequent repetition lest we forget. Given this essential knowledge regarding the cause of an infectious disease, sanitary control measures faithfully founded on it, and formulated with due regard for convenience in moving livestock can be made to serve a useful purpose; lacking any essential part of such knowledge on which to found regulations, our efforts will probably fail and the failure will prevent or annual further attempts in the same direction long after the necessary facts to justify them have been supplied. The question before us, then, is, Do we possess those essential facts in regard to abortion disease in cattle?

There has been and there is still divergence of view as to the cause or causes of this disease of which the most prominent manifestation consists of abortion. One extreme is represented by the expressed belief that B. abortum is the one and only relatively important cause of abortion in cattle: the other is responsible for the assertion that there are several bacterial causes; that these are practically omnipresent; that they exist in practically all herds and that the variations in their manifestations from year to year are explained principally on the ground of variation in virulence. That these extreme views will never be reconciled is evident and it is to be regretted that they are responsible for frequent assertions on the part of those who have not had opportunity for first-hand observations, that practically nothing is known regarding the cause of abortion disease in cattle.

Members of this Association are not particularly concerned with
these conflicts of opinion regarding the cause of abortion. We are, though, vitally interested in any reliable data on which these opinions may rest, for it is only through the accumulation and careful interpretation of such data that we are beginning to emerge from the confusion which has surrounded us, and that we may hope to leave behind prejudices and controversies of which we are already exceedingly weary.

We do not know where researches regarding abortion disease in cattle will ultimately lead, but we do know approximately when and where exact knowledge of the disease began and how far it has progressed; and a clear presentation of some of the more important data thus far compiled seems to be of primary importance at this time. We desire to know exactly what each investigator has done, and what results he has secured. We are interested, of course, in his conclusions, but usually we prefer to study the data ourselves, and draw our own conclusions.

A short time ago I learned that Dr. J. Traum of the University of California had completed a paper which included data such as I have just mentioned, and after reading his manuscript I invited him to include it as a part of this contribution to the program. He very generously accepted and this explains the origin of the mimeographed copies which have been distributed among you, and which constitute the lion’s share of what I have to offer. It is, of course, impossible for any one to read the paper now, for its very nature requires that it shall cover many pages, but it is an exceedingly valuable reference to read and preserve, for it is the basis of a clear understanding of what has been done to learn the causes of abortion disease in cattle. Also it may aid in dispelling the belief that because controversies have occurred, very little is known regarding the subject.

Summarizing results of previous investigations directed toward learning the causes of abortion disease in cattle it may be said that the researches fall into two general classes: first, isolation and identification of bacteria present in aborted fetuses, fetal membranes and uterine exudates; second, efforts to determine the pathogenic powers of organisms isolated from these sources. By the first we learn which organisms we may regard as possible causes of abortion and kindred manifestations; by the second and by it only, can we learn which ones actually to incriminate.

Substitution of proof of the presence of organisms in lesions observed in many infectious diseases for demonstration of the pathogenic significance of these organisms has caused and is still causing the greatest confusion. No better illustration of this truth exists in veterinary medicine than is found in the confusion which has prevailed regarding the etiology of our most prevalent swine diseases. Despite the fallacies revealed in numerous examples of this kind there still persists a tendency as far as abortion disease in cattle is concerned to judge the relative effects of certain organisms by the relative number of times these organisms are isolated from aborted fetuses, fetal membranes, and uterine exudates. Careful and extensive examinations to learn which organisms are present in these parts are an important and necessary contribution to our knowledge of genital diseases, for they are the only safe foundation on which more conclusive investigations may rest, but in any correct appraisal they are to be regarded only as a means to an end. The end is to affirm or deny the power of a suspected organism to produce the manifestation or disease we are studying.

If we apply the criterion we have just outlined to organisms associated with diseases of the genital tract, it must be said that we
have credible proof that just two, the Bang organism and the Vibrio fetus of Smith, are capable of producing in cattle, otherwise in good health, the manifestation called abortion. There is no doubt that the former is widespread, and among those who have conscientiously investigated its pathogenic powers, there is no doubt that it is an important cause of abortion; but nevertheless it must be recorded that its power to produce a specific infection manifested principally by the expulsion of the dead fetus is not universally accepted. Much less is known regarding the Vibrio fetus of Smith. Published proof of its power to produce abortion in cattle in reality hangs by a thread awaiting further confirmation, and many of the most elementary facts regarding the manifestations produced by it are not yet revealed. So far as we know no extensive experiments have been conducted to determine the abortion-producing power of other organisms frequently isolated from the genital tract and at best the data so far recorded are fragmentary and inconclusive.

If, therefore, we broaded our conception of the bacterial causes of abortion to include the possibility of incriminating several organisms, it is at once evident that our knowledge of the group as a whole is not such as to suggest to thoughtful men the possibility of formulating any far-reaching regulations that will serve a useful purpose. Even if we narrow our conception to include only B. abortum, which so far is the one organism which has been proved to be widespread and also a cause of abortion, we may as well admit that all of the essential facts which in the beginning we outlined as a basis for sane sanitary regulations have not yet been supplied. Nevertheless, encouraging and substantial progress is being made. Means have been perfected for isolating and identifying B. abortum; we have fairly complete knowledge regarding the channels through which it is eliminated from the animal body; much is known regarding its resistance to destructive agencies, both natural and artificial; there is a fair understanding of its location and span of life in the animal body. But, who among us will say when a cow becomes a dangerous spreader of abortion disease and when she ceases to be a spreader? Who has even a fair understanding of the immunity which may or may not be associated with the disease? And who will tell us the channels through which infection takes place and submit extensive checked data to support his assertion? Our belief is that the original questions which we raised in beginning must for the present be answered in the negative. We do not know enough regarding the etiology of abortion disease to enable us to formulate and enforce sound official regulations that would materially limit its spread. Are we then to assume that this Association is not further concerned with the disease?

If we view the situation from a somewhat different angle we have before us the fact that the appearance of abortion disease in herds which previously have not suffered frequently dates from the introduction of infected recruits from without. Thus, the traffic in aborters is an undoubted and serious menace to our cattle industry, and the question naturally arises as to whether it is not feasible to apply official restrictions and limit them to include only those cows which are recent aborters. If we accept the oft-repeated assertion that the expulsion of the dead fetus is merely a symptom of abortion disease, the fact remains that when it is produced by infection the organism which causes it in one cow is capable of causing it in another. Even if we accept the view that abortion is essentially fetal death followed incidentally by its expulsion and that death is not a symptom, the technicalities involved do
not materially alter the situation. We do not want the organism that caused such a symptom as abortion in one herd introduced into another, nor do we want an organism which has invaded the uterus of a pregnant cow and destroyed the fetus introduced into the uterus of a second. Vesicles on the tongue or between the digits of a cow are merely symptoms of foot-and-mouth disease, but they usually speak for the presence of a virus which we will do well to avoid.

But the limitations of our knowledge regarding the etiology of abortion disease are such that for all practical purposes official restrictions could be placed only on the movement of recent aborters, and these as a matter of fact are very difficult to identify except under such circumstances as would render their status perfectly obvious to any prospective purchaser. Granted that the standard we should apply to any sanitary police measure is that it shall be of some definite value rather than all-inclusive and free from objection, I do not pretend to known whether even the severely limited regulations in question would prove to be an asset or a liability.

But of this I am certain. If I were the owner of a herd free of infectious abortion and its kindred manifestations, I would not jeopardize the breeding life of the females in it merely for the sake of securing what appeared to be a bargain in the form of a few animals of unknown history. Neither would I adopt the promiscuous breeding practice which is encouraged by the use of a community bull. The number of cattle that entered my herd would be severely limited to include only those actually required to improve it and these would be purchased only after a careful investigation of their breeding history and from men who were breeders of cattle, and not dealers.

If I were the owner of a herd infected with abortion disease I would not recruit the herd from outside sources as long as the disease remained active. I would segregate all recent and prospective aborters even in full recognition of the fact that immediate results would not be manifest, for one cannot accept interherd contact as a means of spreading any infectious disease and deny the menace that exists in its spread from animal to animal in the same herd. I would keep my barns clean. I would use separate maternity stalls. I would burn aborted fetuses and fetal membranes, and endeavor to use disinfectants intelligently as a means of limiting the progress of the disease, rather than as a panacea, or as a substitute for other measures somewhat more difficult to apply. I would obtain skillful veterinary service so that cows that aborted, retained their fetal membranes or suffered with metritis and kindred manifestations would be re-established as breeders within a reasonable time, or else sold for beef. In short, I would in the protection of my herd employ to the fullest extent the incomplete knowledge which now exists and for the time being concern myself less with the limited and doubtful official protection which might be available. I would do these things because I believe that in measures voluntarily initiated and intelligently guided we find sanitation at its best.

Pending a more complete understanding of the causes of infectious abortion and the ways in which these causes operate to produce disease, what more or what better can this Association or its individual members do than to aid in the dissemination of the established facts regarding the disease, and to urge their application at every opportunity? What greater service can we render individually and collectively than to sustain the efforts that are now being made to enlarge our knowledge of abortion disease; than to employ and protect the agencies through which this knowledge finds its final application in our cattle herds.
PRESIDENT MUNCE: As in the case of the other diseases we will now have the report of the Committee on Abortion Disease, by the Chairman, Dr. C. B. Fitch of Minnesota.

REPORT OF THE COMMITTEE ON ABORTION OF THE UNITED STATES LIVESTOCK SANITARY ASSOCIATION 1922.

Your Committee for this year has had considerable correspondence and two meetings have been held. The present knowledge of the control of infectious abortion has been considered. As a result it is quite clear that it is exceedingly difficult to formulate practical regulations respecting this disease. Last year your Committee presented a report giving data as to the regulations already in force in the various states. A careful study of these shows the great diversity of opinion respecting regulatory procedures. Nearly all the states have few if any regulations covering the sale and distribution of animals affected with this disease. New Hampshire and South Dakota are the only states reported as having definite laws governing infected animals. Many states have general regulations, but in most instances they are not applied and if applied are not enforced.

It has been clearly demonstrated in the past that it is impossible to legislate disease out of existence. Statutes applied in the control of infectious diseases are efficient, only so far as they are supported by public opinion and based on known biological facts. Experience has shown that before a disease can be efficiently controlled, it is necessary to have a thorough understanding of its nature, its cause, channels of infection and elimination, and how it is spread. It is far better to proceed slowly in respect to regulation than to attempt to enforce laws which are not scientifically correct. It is also true that conditions vary markedly in different states so that one set of regulations would not be applicable to all our Commonwealths.

The history of infectious abortion reveals many interesting facts. The disease has been present for many years in this country and has now spread to every state in the Union. In economic importance it is second to no other disease. During the past fifteen years much time and study have been devoted to this affection and many important facts have been learned. Following certain lines of thought, this disease has been unfortunately named. It has been designated by its most prominent symptom, namely, an abortion or the expulsion of an immature calf. Studies of the past few years have shown that many animals are infected with Bacillus abortus Bang which never abort. Also animals giving birth to viable calves at full time, may have the germs in their uteri. It has also been shown that not all abortions are due to infection with Bacillus abortus Bang. The study of the dairy herd at the University of California failed to show evidence of the presence of this germ, although abortion was not infrequent. Hart and Steenbrock’s studies in Wisconsin indicate that abortions may result from feeding rations deficient in certain necessary food requirements. It has not, however, been demonstrated that abortions of this last character occur under modern or usual methods of cattle feeding.

The committee on abortion of the American Veterinary Medical Association has recommended and the Association has adopted the recommendation that the term bovine infectious abortion be restricted to the disease associated with Bacillus abortus Bang. The blood tests to detect the presence of this infection have reached a reasonable state of perfection. Experimental studies have shown that it is the pyogenic group
of bacteria which are responsible for most of the sterility. The Bang germ does not remain in the uterus for longer than sixty-five days following the act of abortion, but it may remain in the udder indefinitely. Experiments have not demonstrated that the germs located in the udder, or given off by it, are responsible to any considerable extent for the spread of the disease either to the uterus of the infected animal, or to other bovines or porcines. However the evidence is insufficient on this question to warrant definite conclusions. Researches have shown that the most fertile source of the germs is the recent aborter, and in this connection it must be kept clearly in mind that some animals abort early in pregnancy and usually pass unnoticed.

To control an infectious disease, it is necessary to decrease the sources of infection. To eradicate a disease, it becomes mandatory to eliminate all sources of infection. Therefore, before bovine infectious abortion can be controlled it becomes necessary to reduce the carriers of the virus or to keep susceptible animals away from the virus. Up to this time immunization methods have not demonstrated their practical value on a large scale. Published reports have failed to show that biologics will eliminate the disease from a herd. The vaccine constantly keeps the infection alive.

The two known factors which are the most important in the control of this disease at the present state of our knowledge, are (1) the recent aborter and (2) stable hygiene and sanitation. Some measures should be taken to prevent traffic in animals recently aborting from any cause whatsoever. It is not an uncommon practice for a farmer to sell an animal within a week after an abortion. Such animals not infrequently, find their way to the public stockyard from which they are purchased by of bacteria which are responsible for most of the sterility. The Bang introduced into healthy herds. It is clearly recognized that an animal which has not aborted may be a carrier of the virus, but the relative percentage of infected animals in these two groups is vastly higher in the aborting class. If the dangers lurking in the traffic in aborting animals except for immediate slaughter is impressed on the minds of breeders of stock at every opportunity the practice of making careful inquiry concerning the breeding history of animals to be purchased will become more general. It is not so many years past that little if any attention was paid by cattle breeders to the prevalence of tuberculosis in a herd. Now not only is the animal required to pass a satisfactory tuberculin test, but the careful buyer always inquires concerning the past incidence of tuberculosis among the other animals of the herd. It is going to take time, money and an infinite amount of labor to impress on the general animal industry public, the need of the greatest care as to the health of the genital organs of purchased animals. The diseases of this group of organs even in the human family are most difficult to control because of certain deep seated prejudices against a free and frank discussion of such infections. Knowledge always clears the horizon of the shadows of mysticism and is the most powerful weapon we have to defend us from the attacks of disease in its multitudinous forms. The specific measures which shall be adopted by each state to lessen traffic in aborting animals, cannot be formulated in this report. As has been stated heretofore, conditions vary widely and an exact outline for official adoption is not feasible at this time. It is, however, recommended that educational measures concerning the dangers of the traffic in recent aborters be adopted by the different agencies interested in livestock. Such measures should be given the widest publicity, and it is further recommended that each state utilize to its fullest capacity,
all its publicity agencies to spread information concerning this infection. The importance of stable hygiene and sanitation in the control of any disease of domestic animals, and especially bovine infectious abortion, cannot be overestimated. We have been striving to find the "easy way" and in so doing have temporarily lost sight of the natural laws governing disease and its dissemination. Our people have been looking, hoping for and expecting some efficient biological or pharmaceutical agent which would relieve them of responsibility for the welfare and health of their livestock. By the use of typhoid vaccine in the late war it was demonstrated that vaccination alone was not sufficient, but that along with it must continue the eternal watchfulness for sanitary conditions and a guarded water supply. The use of anti-hog cholera serum does not relieve the hog raiser of the responsibility of keeping his animals in the proper lots and feeding the proper rations. If we are to be successful in our efforts to alleviate the losses from animal disease, we must ever keep in the foreground the known biological facts concerning the distribution of the virus of that infection, and with these in mind, erect efficient barriers against its spread. Let us not be derelict in our duty to employ the principles of disease prevention, which are exemplified in good stable hygiene and sanitation.

It is, therefore, further recommended that those interested in livestock use every effort by education, regulation or otherwise to encourage the proper stable hygiene and sanitation to control bovine infectious abortion. In this connection the authorities should make their efforts specific up to the limit of our present knowledge. For example the use of maternity stalls or pens for all cows, the isolation and segregation of all aborting cows, all animals with diseased genital organs to be removed from service, and the male animal to be kept apart from the herd. These and many other simple, inexpensive and practicable measures will materially aid in the suppression of this disease.

Finally we must keep in mind that in the ultimate analysis, disease prevention depends on knowledge and its efficient application. Many links in the chain of facts necessary to completely control bovine infectious abortion are still very weak or have never been forged. Research and experimentation must continue with renewed vigor to give us the equipment necessary to combat more successfully this cattle plague. Our earnest efforts should be devoted to aid in the further study and development of new knowledge concerning this disease.

Respectfully submitted,
C. P. Fitch, Chairman.
W. L. Boyd,
R. R. Birch,
M. F. Barnes,
J. F. De Vine,
T. H. Ferguson,
E. C. Schroeder,

PRESIDENT MUNCE: The Committee has arranged for the discussion of these papers and the Committee's Report, to be opened by Dr. W. J. Butler, of Helena, Montana.

DR. W. J. BUTLER: Gentlemen, before discussing this subject I desire to thank all the speakers for the information that they have brought to me.

I was impressed with the papers dealing with conditions as you have them in the East. You talk of sanitation and providing separate maternity stalls, and of isolating your aborters. That is good sanitation. It is proper, under your eastern conditions; with cows out on
the range, however, you may not know that they have aborted. All that you are positive of when you round them up in the fall is that they are dry cows instead of cows with calves running alongside of them. So in the range country it is impossible to follow many of the suggestions that have been offered.

A number of years ago, North Dakota, Minnesota and Montana got together and formulated regulations relative to handling this condition in our respective states. We provided that aborters when located should be isolated, and they should not be bred until sixty and preferably ninety days after aborting. That we were able to follow out in dairy herds, also in some purebred herds, but we were not able to follow that out in herds running on the range.

I want to supplement what Dr. De Vine said, "That this loss is an enormous loss to the stock industry." We probably do not have infectious abortion to the same extent that you have in the East. Nevertheless we have the disease and it takes the pep out of a man when he has turned a bull in with his cows and expects to get a pretty good calf crop, to find next spring instead of having 70 or 80 per cent with calves, it has run down to 40 per cent. That is taking money away from him pretty fast.

With reference to the blood test regulation governing the interstate movement of cattle. There is a doubt in my mind as to whether or not that is practicable. I realize, for instance, that if a man should bring in a shipment of cattle, and they were all to be subjected to a blood test before they could move interstate, it would be quite a hardship on that particular stock grower to hold his cattle awaiting the decision of the test.

There is one thing that we are not in accord with, and that is the use of the living organism as vaccine. Probably you can control that in a number of the eastern states, but it would be impossible for us to control that type of vaccination, and we cannot at this time agree with anyone who would recommend the use of the living organism as a vaccine under range conditions.

Another point brought out, "Cattle that have recently aborted should not be permitted to get into stock herds." This is a good point but you must remember we have men trailing cattle forty or fifty miles to the railroad. On the road several cows may abort, due to accidents or other conditions. The question from a practical standpoint is, would you prohibit all these cattle from being shipped interstate, or could you permit any of them to be shipped? You know that in Montana we ship in a good many cattle from Texas and other southern states. Oftentimes when they reach our state we find a great many of them have aborted en route.

I feel that we should go very slowly with our regulations as conditions in our country are radically different from what they are in the East. Conditions that will apply in Massachusetts will not apply in Montana. We cannot have one regulation that will cover all of the different conditions. You deal with individual farms that are connected one with another. We have ranches of 20, 40, 50 and 60 thousand acres and more and probably the man who owns one of these ranches hasn't a neighbor within 10 or 15 miles, so that conditions and regulations must necessarily be different.

You cannot expect to jump into Utopia, and have regulations that will take care of all these points.

I believe that the point Dr. Fitch brought out relative to education is exceptionally well taken. Education will do more for us in controlling this condition than any other one factor. It is true that as we go along, we may acquire knowledge; but at the present time, if the
herd owner can be impressed with the necessity of knowing more of the history of the herd from which he desires to purchase cattle; if he knows the danger of introducing aborters upon his particular ranch or premises, that that will go very far to lessening this disease. It will lessen the spread of infection very materially.

One other point based upon observation and not upon scientific data, I desire to mention briefly. We always find good cattle and lots of calves around alkali flats; in other words, where we have lots of mineral salts deposited by nature, we have a good calf crop, and the calves are generally well boned and big and strong. In other districts up in the foot-hills where we do not have alkali flats, or any mineral salt deposits, we have a very poor calf crop; and oftentimes in these districts deficient in mineral salts calves are born with goiter. Mineral deficiency may not have anything to do with abortion. We know that cows which graze on these foot-hills where there is a deficiency in calcium and phosphorus, do not produce calves to the same extent as they will when they are down on the lower flats. It is our belief that the feeding of cattle, and especially the feeding of mineral salts, has a great deal to do with the prevention of abortion.

Do not misunderstand me. I am not saying that this abortion would be infectious abortion, but nevertheless a considerable number of cows grazed on areas deficient in mineral salts abort, and when you take these same cows and put them down on alkali flats, or where there are mineral salts, they raise healthy calves in a great majority of cases. Thank you. (Applause.)

PRESIDENT MUNCE: The discussion will be continued by Dr. C. H. Case, Akron, Ohio.

DR. C. H. CASE: Mr. President and Gentlemen: I do not know how a practitioner can say anything more than has been said this afternoon in these papers. It is certainly a treat to me to come here each year and listen to these papers, and get the new ideas to take home to my clients.

There was one thing in particular this afternoon that has been different in years past when I came here, and that is we have had harmony. Every thought has been for harmony. I do not know that I should speak about past experience, but a great many of you were here last year and heard the papers, and just speaking as a practitioner, what do we get when we get back home and tell our clients the things we have learned here. Then a paper prints an article and my clients read it, and they come to me and they say: "We did a lot of work cleaning up this fall, and here the Committee comes along in an article and says it is absolutely no use." Well, they just jumped all over me. I did not know hardly how to get around that. Fortunately, just a little before that I had an example—I will tell this to show you how I got around it—I had a client who bought thirty head of dairy cattle. He had no trouble with abortion to speak of, it was very rare for him to have a cow abort. He had a bull he kept in a separate barn from the rest of the cattle, no connection in the pasture or any way. He had a neighbor that lived down the road about a mile with a Jersey cow, a fellow who had just moved in there, and he wanted to breed this Jersey cow to that bull. He had taken her to four or five different bulls. Following that time, after breeding his own cows to that bull, five or six of them, every one of them aborted in three or four weeks. He tried to save one or two more later on and that was all there was to it.

I agree with Dr. Connaway in his paper when he mentioned about washing the bull. I am very glad that he brought that out. It was the thing to do, because I am almost positive I could go on and mention instances just like that that come up in practice that we are called on all
the time, and that is one of the things that as far as I am concerned I am going to keep on preaching to do with the bull.

I do not know that there is anything more—Dr. Butler took all the ideas I had put down—and I thank you. (Applause.)

PRESIDENT MUNCE: Gentlemen, I will appreciate it if you will save my calling attention to the five-minute limit when you are speaking. Dr. Cassius Way, of New York City, is the next.

DR. CASSIUS WAY: Mr. President and Gentlemen: I assure you that it is with a good deal of temerity that I attempt to discuss the papers that have been presented this afternoon, in view of the fact that they are so scientific, so complete, and they have left so little to be said, and it would be presumptuous on my part to endeavor to add anything very illuminating to the presentation.

Men working in the field, however, are confronted with practical problems that are oftentimes very hard indeed to explain. I think the practitioner, or the man who is working in the field, for that reason is very reluctant to discuss scientific papers of this kind before such audiences. as this, due to the fact that his conclusions may not be scientific, and undoubtedly in many cases they may not be accurate, but it is results that the owner of livestock wants. The owner of livestock wants a 100 per cent calf crop if possible; the owner of horses wants a 100 per cent foal crop, if possible, and the owners of all classes of livestock from the standpoint of breeding efficiency want results, and it is results that make the practitioner, in his particular endeavor a success.

It has been very interesting to listen to the discussion this afternoon, and the points that have been brought out. The economic importance of this disease, the sanitation, isolation, and various phases of breeding hygiene are to my mind essential. I was very glad to hear Dr. Case refer to points in reference to the control of this disease so far as the practice of breeding hygiene is concerned. The impression has gone out among many breeders and owners of livestock that breeding hygiene methods and sanitation are of very little avail. Apparently the pendulum is swinging the other way in certain localities.

The question of the male is just as important as the female. The male plays in my opinion an equal part in breeding diseases. The simple act of abortion or the expulsion of a premature or infected fetus is not all that is involved in this subject. The question of the entire symptoms and complex of breeding diseases is involved. It has been brought out this afternoon that the sequelae of abortion, or the sequelae of infection due to organisms, cause abortion. I might illustrate individual cases, which would be superfluous at this time. We have instances, however, of bulls that apparently transmit abortion to practically every female that is served, while in some herds, females handled under exactly the same conditions of sanitation, hygiene and pasturage, brought to sound bulls, do not abort. I can cite several instances in herds that I know of that that has occurred.

I hope you men will pardon a personal allusion, and then I think that I can conclude my remarks. I said in the beginning that the owner wants results. I personally own a fairly good-sized dairy herd, as herds go. For two or three years we were troubled with abortion, an excessive amount of abortion, and we decided to give immunal vaccine or serum treatment, or whatever you may call it. For two years every animal in this herd of 130 to 150 cows has been vaccinated. The percentage of abortion prior to that in animals that were held over for milk production—and by being held over I mean we do as the average commercial herd owner does who buys many fresh cows. The majority of those cows
do not abort, because they are bought and held over. For two years this herd has been treated in this way. For two years we have had four abortions in a herd of 150 head. I know of several other large herds where the same result prevails. It may be due to sanitation. Maybe they would not have aborted anyway, but they did stop aborting.

The question comes to my mind in reference to the character of a herd. In many instances, dairy herds of large numbers are more or less a commercial proposition, when it comes to buying and selling individuals. Is it better for the owner to have a free herd, or to have a herd that may be immune, and if those animals are sold and go into another herd, is it better that they should carry their calves and be normal, or take up a new infection, and possibly abort in this new herd?

I believe that the transfer of animals from one herd to another, taking up a new strain, or a new family of these organisms, is important, and I believe that the other invaders—I do not believe it is correct to call them secondary invaders, because they are in many cases primary invaders, because of the effect produced by the Bang organisms; but I think the pathogenic group plays almost as important a part in breeding diseases in herds as the Bang organism and the sequelae. I thank you. (Applause.)

PRESIDENT MUNCE: Gentlemen, the Committee would like to substitute in the absence of Dr. Boyd, the presentation of some work done, which was reported, I understand, at the annual meeting of the Illinois Veterinary Medical Association, in relation to congenital disease control, by Dr. King. I understand that Dr. King will favor us with a brief synopsis of the vital points. (Applause.)

DR. KING: Mr. President and Gentlemen: As the President has said, this report was given over at the Illinois Association last Tuesday. I am very glad, however, to reproduce a summarized statement of this preliminary work, in order that you may consider the results for what they are worth, in the present discussion of abortion.

In order to make a clear explanation, it is necessary to state that the glandular life of female animals may be divided into five distinct periods:

First: The period of youth,
Second: The period of sexual maturity,
Third: Pregnancy,
Fourth: Lactation, and
Fifth: Old age, or senility.

The practical idea concerned in this project was involved in the preparation of an experimental balanced mixture of the glands entering into sexual maturity for experimental clinical treatment of non-breeding animals. The glands making up the important glands which enter into the sexual life are the ovaries, the thyroid, the adrenal, and the pituitary. The important glands in the pregnancy growth are the placenta, the mammarys, the corpus luteum, and the foetus. An experimental mixture has been used consisting of the extract of the four important glands in the sexual maturity growth—that is the ovaries, adrenal, thyroid, and pituitary, prepared from average glands and properly balanced experimentally. The problem involved was that of finding some way of standardizing such preparation, and among other things that experimental preparation was injected into pregnant guinea pigs.

Now, I can give the results in just a word: Such a preparation injected subcutaneously into pregnant guinea pigs at any period of gestation, got these results in this preliminary report: Produced an abortion in 80 per cent of pregnant guinea pigs. When the preparation is given in successive injections, abortion occurred in from two or three to five
days following the first injection, and the dosage consists of one to two
to four c's, and given at 24-hour intervals.

This glandular group we know from general data is antagonistic to
the pregnancy group, as well as the glands in the pregnancy growth being
antagonistic to the sexual maturity growth. Therefore, from these pre-
liminary results, and from general data which exists, the conclusion may
be reached that it is not beyond the range of probability, to be conserva-
tive I will say possibility, that the female domestic animal may abort when
there is in those conditions clinically such that the endocardinous glands
of the pregnancy group are inhibitive, and the endocardinous glands of
the sexual maturity group are simulated. I thank you. (Applause.)

PRESIDENT MUNCE: I overlooked the name of C. E. Cotton, of St.
Paul, Minnesota, and I will ask him to tell us something about this sub-
ject.

DR. C. E. COTTON: Gentlemen, I rather hesitate to enter the dis-
cussion in the face of the scientific men who have preceded me. I par-
ticularly wish to state that Dr. Case has taken some of my thunder from
my notes.

The breeders of our central states realize that from a money stand-
point this disease is costing us more, and is causing more loss than prac-
tically any other disease that we have to meet. Particularly it has been
demonstrated that with proper sanitary precautions and hygienic care,
you can at least control it in individual herds. Our argument in the con-
trol of tuberculosis is that if we can control it and eliminate it in the
individual herds, we can do so in a larger number of herds. To me it has
been demonstrated that if we can control it in individual herds, why not
apply some of the rules and methods that are recommended particularly
from a sanitation standpoint as regulatory measures, going slowly at first.
In other words, the cattle owners are depending on us to recommend some-
thing that will keep them from herds that are badly infected. We can
at least formulate regulations controlling the movement of the animal,
which has given birth prematurely within the last sixty days prior to ex-
hibition at our fairs and expositions, and particularly our breeders' con-
signment sales.

The breeders' associations in various states are willing to adopt any
regulations that will assist them in preventing the spread of this disease,
particularly in their show-rings and their consignment lots, but we should
be careful, in making such regulations as we propose, that we do not make
regulations that are impractical and unfair, which is too often the case.

But it is our duty to protect the livestock industry, and I believe that
we could make such a regulation, even though it was simply to be ad-
ministered from an educational standpoint, and I believe that we are jus-
tified at this time in making some regulations controlling the movement
of recent aborters, at least. I thank you.

PRESIDENT MUNCE: The next, Dr. E. T. Hallman, of East Lan-
sing, Michigan.

DR. E. T. HALLMAN: Mr. President, I do not know that I can add
anything to this discussion. Personally I would like to see the recom-
dendation as to regulatory measures discussed more fully, but I am not
going to discuss them, because I am not engaged in regulatory work.

There is one statement in Dr. Connaway's paper that I would like to
see fully discussed, in addition to the regulatory measures, because it is
of considerable importance in control measures. I do not doubt the ac-
curacy of the statement, but I want to hear it discussed, because I know
the point has not been satisfactorily settled in the minds of a great many
investigators. I do not want to go on record as contending that the state-
ment is not correct.

The point that I refer to is the statement that infected pregnant cattle
are not disseminators of abortion infection before abortion or parturition.
I have never felt that way about this. I do not know what experimental
work he bases his statement on, but in the limited amount of clinical work
that I have done in examining cattle for pregnancy in infected herds, I
have found cattle with open cervical canals that did not abort.

I wonder if we know just how soon or how long an infected pregnant
cow may disseminate infected discharges through the cervical canal prior
to abortion or parturition? I have not done any experimental work on
that; my opinion is not based upon clinical observation, but I have an
impression in my mind that an infected pregnant cow is a potential danger
at any stage of pregnancy. I feel certain that such men as Dr. De Vine,
who are conducting a great deal of experimental work along this line,
will be able to give us some more definite information on this particular
subject.

PRESIDENT MUNCE: I will call on Dr. M. F. Barnes, of Phila-
delphia.

DR. M. F. BARNES: I do not think
that I have anything to add to what has already been said. Dr. Conna-
way's paper covers the subject thoroughly, of sanitary measures, and I
practically endorse everything that he has said.

Dr. Hallman brought out the point about the pregnant cow up to
the time of parturition. I have had very little experience on that point,
but I would just like to recite one case.

It was a pregnant cow that showed symptoms of abortion, there
was a discharge from the vagina and she was placed in quarantine. Dur-
ing all that time she was discharging a flaky material, similar to the char-
acteristic discharge of abortion. This material was not examined, but it
was a clinical confirmation.

Dr. Boyd brought out one very important point, when he said the
Livestock Breeders demand that we use tested safe measures for disease
control. If they demand that we use the best safe measures, it occurred
to me it becomes our duty to use those measures.

The plan referred to in Pennsylvania by Dr. Connaway was outlined
for the purpose of giving a few breeders of cattle the opportunity to adopt
some form of a plan when they demanded it. The following is an outline
of the plan proposed:

THE PENNSYLVANIA PLAN FOR THE PREVENTION, REPRESSION
AND ERADICATION OF BOVINE INFECTIOUS ABORTION
January 1st, 1922

The Bureau of Animal Industry, Pennsylvania Department of Agri-
culture (formerly the Pennsylvania Livestock Sanitary Board), ever since
its organization has studied the disease of cattle now known as "bovine
infectious abortion," always with the hope that suitable methods for its
prevention and repression would be devised.

Soon after 1896 when Professor Bang discovered the cause of in-
fec tious abortion, Pearson outlined some principles for its control, which
were dependent upon isolation, sanitation and disinfection. With the
foundation already laid an increasing study has added much to the knowl-
dge of the nature of this disease, thus making possible the employment
of more effective methods of prevention and control.

In November of 1919 the officials of the Bureau of Animal Industry,
Pennsylvania Department of Agriculture, conceived the idea of establish-
ing a health standard with respect to bovine infectious abortion. The adoption of such a standard would benefit the livestock industry in several ways:

1. Improve the quality of the herd. Increase the quantity and decrease the cost of production.
2. Would stimulate stockmen to establish abortion-free herds.
3. Provide a safe place for prospective purchasers to obtain new animals.

This plan, to some extent, is experimental; and it is not intended that the Bureau shall issue certificates at the present time, although a "Certificate of Approval" was issued December 16, 1921.

The following is a copy of the certificate which was issued:

CERTIFICATE OF INSPECTION AND TEST FOR BOVINE INFECTIOUS ABORTION

Certificate No. .......................... Issued .............. 192

This is to certify that the entire herd of ..............................................

of ........................................... P. O. ...............................................

County, Pennsylvania, consisting of ........................................... cattle has
undergone inspection; has passed the required number of blood tests; the owner has complied with the requirements prescribed by the Bureau of Animal Industry for the prevention, repression and eradication of Bovine Infectious Abortion; and the history indicates the absence of infection with Bovine Infectious Abortion.

The above-mentioned animals have been found free from all evidence of Bovine Infectious Abortion and are approved by the Bureau.

.............................................. State Veterinarian.

This certificate is good for one year from the date issued unless revoked.

OUTLINE OF PLAN

1. The owner must place his herd under supervision of the Bureau of Animal Industry, Pennsylvania Department of Agriculture, for the prevention, repression and eradication of bovine infectious abortion.

2. If the history of any herd placed under supervision does not indicate the presence of bovine infectious abortion, the agglutination test shall be applied. If on the application of the agglutination test reactors are found, the complement fixation test shall also be applied to the same lot of blood. If the history indicates the presence of infection, both the agglutination and complement fixation shall be applied as the initial test. The final test on all cattle for addition to the herd shall be both the complement fixation and the agglutination.

3. A herd in which there are reactors to the first test, all reacting animals shall be either placed on a separate farm and will be known as the "Infected Herd," or shall be disposed of in a manner satisfactory to the Bureau of Animal Industry. The animals which pass the test, if separated from the reactors, shall be known as the "Clean Herd."

4. A herd in which reactors are found as described in Section 3, a retest must be applied to the clean herd in at least 60 days subsequent to the date of first test, and additional reactors must immediately be placed in the infected herd or disposed of as provided in Section 3.

5. In one year from the date of the last test, both the infected and clean herds shall again be tested, and if additional reactors are found in the clean herd, they shall be handled as provided in Section 3. Animals in the infected herd which do not show a reaction shall be placed in isolation and retested in 60 days, and if they pass the retest may be placed in
the clean herd. Individual animals shall be subjected to such test or tests and at such intervals as the Bureau of Animal Industry deems advisable for the effectual working of the plan.

6. Herd bulls must not be used for service to cattle in other herds.

7. All milk and other dairy products fed shall be either produced by an improved herd or shall be properly pasteurized.

8. Cattle from approved herds may be added without test. If shipped, the car must be cleaned and disinfected, and public stockyards must be avoided.

9. All cattle to be added must have passed a blood test approved by the Bureau of Animal Industry, must be isolated for a period of at least 60 days and must have passed the second test applied in accordance with Section 2.

10. Cattle removed from the farm for exhibition or any other purpose shall be provided with separate quarters and shall not be exposed to cattle other than those from approved herds. If shipped, Section 8 must be complied with.

11. Any animal which aborts in any herd under supervision must be immediately isolated and reported to the Bureau of Animal Industry. The place where the abortion occurred must be immediately cleaned and disinfected; the fetus and membranes must be properly disposed of.

12. The premises must be in a sanitary condition. After the removal of affected animals the stable must be cleaned and disinfected under supervision of the Bureau of Animal Industry.

13. No herd will be placed under supervision, the owner of which is not practicing measures against tuberculosis.

14. The work of the Bureau of Animal Industry will be conducted cooperatively with owner and his veterinarian.

AGREEMENT OF OWNER WITH THE BUREAU OF ANIMAL INDUSTRY PENNSYLVANIA DEPARTMENT OF AGRICULTURE

I hereby agree to the terms of the above plan for the prevention, re-pression and eradication of Bovine Infectious Abortion. I also agree to observe and fulfill the foregoing requirements, and I agree further: That failure on my part to comply with the foregoing shall be sufficient cause for revocation of this agreement.

My herd consists of the following cattle:

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<th>Breed</th>
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<td>Purebred</td>
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<td>Females over 1 year of age</td>
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<td>Predominating Breed</td>
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Date .................. 1922 Owner ..................
Witness .................. Address ..................

In 1919 the State Veterinarian, Dr. Munce, conceived the idea of accredited herds for abortion, similar to the way herds were accredited for tuberculosis. In 1920 we worked out this plan on a few herds. In December of 1921 we issued a certificate to one herd. It was not the intention of the plan of a certificate—it was not thought it would be a practicable plan to be applied on a wide scale, but it is practical in cer-
tain of the herds where they can separate the herds into two, and it would be practical in every herd, with a certain modification, to apply to different classes of cattle.

PRESIDENT MUNCE: I have been asked to throw this open for general discussion and limit it to five minutes.

DR. RICE: Mr. Chairman, I am rising to discuss the question from the standpoint of vaccination. In speaking about vaccination, I want to speak about vaccination for Bang's disease; in other words, that disease caused by the Bang organism.

There was a statement made in Dr. Connaway's paper that vaccination itself induces carriers. I am perfectly willing to accept the statement on proof of the fact that vaccination with live organisms actually makes carriers. I particularly remember the discussion years and years ago, about carriers of hog cholera virus following vaccination. We have all lived through that, and I think we are all agreed that if vaccination is properly done, the carrier problem falls to the ground.

We have there the instance of using very highly virulent virus for the purpose of vaccination, an altogether different matter as compared with anthrax, where the moderately virulent organism is used in vaccination, and the question of carriers in anthrax vaccination is not a serious one. We do not hear of anthrax carriers using live organisms.

I am prepared, of course, to hear it stated in both of those conditions we have very acute infection, whereas in abortion, Bang's disease, we have chronic infection; but if an organism is used, a live organism, non-virulent, proof has yet to be brought forth that that can set up infection, or establish that animal as a carrier of that infection.

I want to get that statement clearly on record here, that this proof is wanting. If this statement is correct, then the statement included in the report seems to be a little far-fetched and I possibly did not understand it correctly, that vaccination keeps the virus alive. I take it that the report really intended to convey that vaccination itself did not eradicate disease, or virus; but I do not think the statement as it is included is intended to be worded just that way, that vaccination keeps virus alive, because that surely is not the case, as that is unknown to the art of vaccination.

It seems to me very important when you are talking about vaccination in abortion disease, that we clearly keep in mind that vaccination, if effective, must be specific. We can only vaccinate against disease of which we have the first cause in mind. I am presenting these statements on infection caused by organisms applying to Bang's disease.

DR. BIRCH: Mr. President, I just want to say that I think that was a very important point that Dr. Hallman raised in regard to the time which a cow may be a spreader, before she actually aborts. I can add very little to that. I know in a few instances, where we had infected cows, experimentally, and where we were watching them every day, that I would not want to say the length of time that discharge began before abortion actually occurred, but probably between two and three weeks in a great many cases—several cases, I should say—and I would not be surprised if that fact accounts in some measure for the statement that we hear so many times, that the isolating of aborters does no good. I think that if we get down and examine the facts real closely, that we will come to the conclusion that real good isolation, considering this one factor, has not been tried, and of course, we do not expect in isolation to take out of a herd animals that are already infected at the time we take them out; and I think in a great many instances, the seeming lack of results that we get
from isolation is due to the fact that these spreaders go unnoticed before the abortion takes place.

DR. FERGUSON: Mr. Chairman, relative to just that particular question, I have noted in cows that I considered apparently free from abortion disease, when the uterine seal started to break up and to discharge from the vagina, the appearance of it was usually clear; but in cows that had abortion disease, I considered that the brownish-looking discharge was an indication that they were discharging probably abortion bacilli, due to the difference in the color. Although a cow might calve normally, she might or might not drop her placenta normally. I have not in raising the question of the difference in the color of the seal, given up the idea of isolating cows previous to parturition. I have always used that as more or less of a guide. The appearance of the discharge after the uterine seal is broken up, occurs in cows from a week to two or three weeks before parturition.

Mr. President, I simply want to say a word or two in support of the claim that the Bang bacillus has something to do with abortion, to say the least. The laboratory man is faced with all sorts of difficulties in proving certain statements that he would like to prove. If you can get anyone who has as yet proven that the typhoid bacillus is the cause of typhoid fever, I will be very much surprised. Where is there evidence absolutely unquestionable in every way of that fact? And yet how many of us question the relationship of the typhoid bacillus to typhoid fever? Our sanitary measures, our inoculation measures, and so forth, are not proof that the typhoid bacillus causes typhoid fever direct, but they certainly are indirect proof. There is still, I believe, a feeling on the part of some that many of the laboratory men are barking up the wrong tree; as regards the Bang bacillus. I will as a laboratory man admit the Bang bacillus perhaps in many instances has nothing to do with abortion, or has no direct relation to the act of abortion; but in all of our work at the State College of Connecticut we cannot keep away from the conclusion forced upon us, even if we were opposed to that conclusion, that the Bang bacillus is a real important factor.

We have worked on perhaps 30 or 35 herds in the State of Connecticut, trying to bring out, if we can, some definite etiological basis, but we have not been able to do so. But if you take investigations thoroughly scientific, carried out on infectious abortion from the standpoint of etiology, I think you will find that the relative proportion of cases where the Bang bacillus has been demonstrated to be absent, is really small, taking the herds over a large amount of territory.

I feel that the bull is a very important factor, and I am glad to see today that you are coming back more or less to the same view. But my plea is for harmony, not to discourage anything that works for harmony. The laboratory man has his difficulties. I believe as far as etiology is concerned, that in 80 or 90 per cent of the cases we are on the right track when we put our bet on the Bang bacillus; but when it comes to the channels of infection, it is a different story, and there we are very much in disagreement; but even then that does not offset any plan of sanitary control. I wish this organization would take up or advocate some simple system of sanitary control, even if you cannot advocate making blood tests, and a number of other things that Dr. Connaway mentioned. I believe that the time is coming when you will advocate that. I believe the time is coming when you will take the same attitude towards abortion that you all take today with regard to tuberculosis. (Applause.)

PRESIDENT MUNCE: Gentlemen, I am very sorry that I was not able to introduce Prof. Rettger to you when he started to address you.
Prof. Rettger is from the Connecticut State College, and is also bacteriologist at Yale University. The discussion he gave you just now was well worth listening to, and I wish to extend to him a word of thanks for the organization.

DR. CONNAWAY: Mr. President, I wanted to make a remark, to correct if possible some misunderstanding on the matter of dissemination of the germs of infection from pregnant cows. I may have given the impression that it was not possible to distribute those organisms from pregnant cows; that the distribution came only at the time of calving, and after that. I am quite in agreement with Dr. Hallman, in the possibility of this occurring at least a short time before this, and in our practical recommendations we advise them to take the cow out of the herd at least a week before she calves; or if she shows signs of abortion, get her out at once. It is possible that in the case of some of those cows which have shown signs of abortion, that they may have been eliminating organisms, and some cows in the herd may have become infected from that cause, thus showing premature signs of it; but we have the abortion test to back up those, and by following up that, by the use of the test, we can surely pick these out, and the probabilities are that we will not have very many infected cows from that one, and that when those signs come, we ought by all means to make the test.

Now, another point that was brought up by our representative of the Mulford Company on the matter of the establishment of permanent carriers, this, I think, is a very important thing, and I am glad to be able to cite him to practical proof of my statement. In our experimental work—and I must apologize for going back to some of this experimental work. I had assumed that in this body there has been so much talk about this matter for several years, that the facts that I contend for would be understood, and I believe by the sanitary officers of this Association, those men who are charged with the eradication and control of disease, I believe that all of those things that I set forth as facts, are accepted, with the possibility of our friend Dr. Williams, who has some, what we might call bizarre notions about these matters; although there is in the writings of Dr. Williams, an immense amount of good, practical, common sense, and I know of no man who has done greater service for the livestock industry than Dr. Williams. I say this in all sincerity. Unfortunately, however, he has injured that fine work by not knowing more bacteriology than he does.

In 1916 we got some fine calves, non-reactors from non-reacting mothers, and put them in isolation, and those calves never came in contact with any cow or bull that had this disease. We inoculated those heifers with laboratory cultures and they became reactors. Two of them that we injected into the veins became infected; one that we injected into the vagina became infected, and this is a specific test which we regard as proof of the fact that this organism was the cause of their becoming aborters.

We always expect these men who are interested in protecting their biologics to get up here and speak for them, but the unfortunate thing about it, Mr. President, is that many of the men back behind here who come from distant parts, and have not been in the habit of meeting with us, do not know who these people are that speak. I believe every man who gets up to talk in this audience, when he gets up to make a speech, should be asked: "Who are you," just like they do in court, so that we may know some of their leanings. I think with Dr. Rettger that this is an exceedingly important thing, and it is a matter of regret to me that our veterinarians, the ones who can do the best and finest work along
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this line, do not take a forward movement in it. While I was sitting back here just now a man asked me: "Can you prove all those things that you said?" I said: "Yes, I can prove them." Another man said: "I can prove them, too. Those are practical things." "Well," he said, "it looks to me like the farmers themselves have got to take this up. I am going back to my state and organize the farmers of my state and the breeders of my state to carry out your proposition."

That is their point in all these things. The breeders want protection, and in my state we are not going to let any stuff go into any other state that are reactors, if we can help ourselves.

Not very long ago a veterinarian over in the western part of the state sent in some samples for testing. We tested them and found them all negative, and sent back word, asking what were the circumstances which made him suspect those cows to be infected. He wrote back and said that there were no circumstances which led him to suspect it, that they were bulls; but he said there was a breeder up there from New Mexico who was buying a lot of bulls, and he did not want to take bulls out on the range until he had them tested, so he drew blood samples and sent them over to a laboratory in Kansas City, and the report came back that five were reactors, and another one was suspicious. It was rather hard for them to believe the bulls were infected, so they sent us these samples to be tested. We found them negative. Just what laboratory that was, I do not know, and I am not going to make any inquiry.

DR. WEED: Mr. President, just a short time before I attended this meeting I received a letter from one of our former speakers, a graduate of an agricultural college, the contents of the letter can be given without comment, for what it is worth. This young man is building up a purebred dairy herd. He had never had any abortions, had been very careful with his herd and introduced no new stock, and had found no carriers of the disease. In order to be sure not to have any abortions, he took eight of his young heifers and had them vaccinated with a living organism sixty days before breeding. In due time six of the eight heifers aborted. His cry was, "How did abortion get in my herd?".

DR. MILLER: Before we get too far away from the subject I desire to move the adoption of that report. In moving the adoption I desire to call your attention again to two factors which you are asked to adopt. One is measures to curb the traffic in recent aborters, and second, to do everything possible to get the educational factors necessary for the breeders to understand the importance of this disease all over the country. Therefore, I move the adoption of the report. (Motion duly seconded and carried.)

PRESIDENT MUNCE: Unless there is something that somebody wishes to bring up, the meeting will stand adjourned until nine o'clock tomorrow morning.

And thereupon, the meeting adjourned to Friday, December 8, 1922, at nine o'clock A. M.

FIFTH SESSION

Friday, December 8, 1922, 9:00 o'clock A. M.

PRESIDENT MUNCE: Gentlemen, we are ready to proceed with the morning program. The first paper this morning is the Report of the Committee on Livestock Diseases, including certain contributions to cover particular phases of transmissible diseases. The Chairman of the Committee, Dr. Traum, is unable to be here, and he has asked Dr. Records, a member of the Committee, to act in his place, so the session, so far
as handling these diseases is concerned, will be under the supervision of Dr. Records.

DR. RECORDS: Mr. President and Gentlemen: Before starting to read this, a word of explanation might be in order to connect it up better with the program as arranged.

When this program was prepared, I imagine it was the idea to have these various subjects dealt with more or less separately by various members of the Committee. Later on that plan was abandoned, and the four subjects listed on the program will be dealt with briefly in this report, sections of which were written up by the four members who were to handle the subjects printed in the program. It is not the idea, of course, to exhaust the subject in this report. It is only prepared to open the matter up for further contributions and discussion.

REPORT OF THE COMMITTEE ON LIVESTOCK DISEASES, 1922

Since early this summer your Committee has been in correspondence regarding a plan for its work and the nature of its report. It was agreed among some of us that it would be desirable to bring to your attention a group of diseases of cattle not infrequently referred to in veterinary literature and also frequently a subject of inquiries. This group includes hemorrhagic septicemia, the so-called red water disease of Nevada and California, the loin disease of Texas and two acute unidentified diseases reported from two widely separated parts of the country. There appear to be great similarities in these and as a result there has arisen a great deal of misunderstanding. Fortunately, the Committee has in its membership men who have had considerable experience with most of these diseases, and it was thought desirable to take advantage of this experience and point out to you briefly what is known concerning symptoms, etiology and autopsy findings, and also the similarity and difference of these diseases, and suggest if possible criteria for diagnosis and separation.

HEMORRHAGIC SEPTICEMIA

This term has, for some time, been used very loosely to designate many forms of acute infectious diseases in which hemorrhages of the subcutis, skeletal muscles and internal organs are conspicuous.

Practically all investigators who have concerned themselves with the other diseases in the group under discussion, at some time either tentatively or finally, diagnosed in several instances the diseases which they were studying as hemorrhagic septicemia. Frequently anthrax was the diagnosis reached. However, bacteriological searches for Bacillus anthracis yielded negative results and in most instances, anthrax is now eliminated in any of the outbreaks where an opportunity to examine suitable material is available, negative results being obtained. Such, however, is not the case with the diagnosis of hemorrhagic septicemia. In spite of the failure to definitely establish the presence of the Pasteurella bovisepctica, the specific organism, in the lesions or in the general circulation, hemorrhagic septicemia is not always eliminated because the investigators or the diagnosticians feel that the organism is present but that they are unable to find it.

In endeavoring to review the findings in hemorrhagic septicemia in this country one is often confronted with difficulty of determining in which outbreaks the diagnosis was based upon actual demonstration of Pasteurella bovisepctica and in which the diagnosis was based entirely upon history and character of lesions.

Probably the first, most authentic, and most extensive acute non-
pectoral form of this disease in this country was reported by Brimhall, Wilson and their co-workers in Minnesota during the period from 1900 to 1903. Since their description is often quoted and considered as typical and since it is the form they encountered, which is frequently confounded with the other diseases under consideration, their findings become of prime interest to us in our present discussion. A very brief review of their extensive publications shows that in 91 outbreaks, 996 out of 2,851 cattle were affected and of these, 664 died. Briefly they give as the symptoms: loss of appetite, fever, stiffness, swelling of the legs and throat and a black, tarry or bloody discharge from the bowels. Symptoms of meningeal involvement were also found in several of their outbreaks. As the chief lesions they mention ecchymoses, small and large hemorrhagic areas in the subcutaneous tissue, muscles, lymph glands and throughout the internal organs. The cervical lymph glands, the heart muscle and alimentary canal were most affected. The spleen was rarely enlarged or darkened. In the cases which exhibited meningeal symptoms there was a distinct meningitis with, in some cases, a plastic exudate almost filling the spinal canal and involving also the base of the brain. The disease in Minnesota was found in all seasons of the year and under a variety of conditions. In other portions of the country, for instance in Pennsylvania, the disease is reported as a seasonal one, occurring in late summer and fall and cattle in mountainous regions are mostly affected.

In view of the fact that difficulty had been expressed by many in isolating the causative organism from the lesions and heart blood, it is of interest to note that the workers in Minnesota, from 27 outbreaks where specimens were received from 47 animals, isolated in pure cultures the Pasteurella boviseptica in 42 of these cases. In 5 of the remaining cases in which this organism was not found, they were all in a very advanced stage of decomposition. "It is worthy of note," they state, "that in all cases in which the cultures were sown immediately after death, Bacillus bovisepcticus was obtained unmixed with any other organism." A reading of their individual case reports gives one the impression that no difficulty was experienced in obtaining the specific organism from the heart blood, spleen, pericardial fluid, lymph glands or affected structures.

RED WATER DISEASE OF NEVADA AND CALIFORNIA

The disease we are citing under this heading is by no means new, having been the subject of more or less intensive study and various publications extending over a period of at least eight years. We are moved to bring this condition to the attention of this Association at this time primarily by the fact that the disease is of considerably more economic importance than originally thought and that it may be very closely related to other as yet ill defined conditions. A detailed account of the clinical picture and post-mortem findings in red water or ictero-hemoglobinuria of cattle would be out of place in a report of this kind, but anyone desirous of refreshing his memory in this connection will find a brief but comprehensive statement in a recent paper by Records and Vawter on "Ictero-Hemoglobinuria in Cattle." In their report we find the typical clinical symptoms are the sudden suspension of appetite, rumination, milk secretion and bowel movements. The animal stands apart from the herd with its back arched and abdomen tucked up. The coat is dry, lusterless and staring. The animal is loath to move and may grunt with each step. The facial expression is distressed; the eyes have a characteristic sunken appearance. Respiration is moderately accelerated and of a shallow costal type; a characteristic grunt usually accompanies each expiratory movement. The muzzle is dry and hot. The visible mucous mem-
branes are icteric, but may assume a pigmented reddish color. Generally there is a marked rise of temperature during the outset of the attack which may reach 106° F. The temperature drops later and may be sub-normal for a considerable period before death. The pulse is very pronounced. As the disease progresses, bowel movements become very active, with frequent passages which are soft, small in amount, and range from slightly catarrhal to almost pure blood. Urination is frequent and copious; there is well-marked hemoglobinuria, the urine usually attaining a deep garnet color. This continues until the animal suddenly collapses and dies after a brief agonal period.

The duration of illness after detection ranges from a few hours to a few days, averaging perhaps thirty-six hours. The mortality is very high, over 90 per cent at least, in cases marked enough for reasonably certain diagnosis.

The affected animals show a bloody mucous discharge from the nasal and anal openings. Cadaveric and conjunctival icterus together with hemorrhages of variable extent in the subcutis, lymph nodes, visceral organs and serous surfaces are present. Hemorrhagic transudates and fibrinous adhesions are observed in both cavities. Occasionally a pronounced hemorrhagic edema is found localized along the side of the neck and shoulders.

The liver is always enlarged, icteric in color and soft in consistency. A large infarct resulting from thrombosis of the portal vein is always found on the parietal surface, usually at the upper or lower extremity. The infarct on incision is irregular in outline and the thrombus of the portal vessels supplying the infarct area is readily observed. The bile is excessive in quantity, dark in color, and contains many coarse flocculi.

Though a relatively large amount of investigational work has been done on this disease no definite light has as yet apparently been shed on its actual etiology. In properly selected cases cultured under good conditions, the bacteriological findings are fairly uniform. Hemorrhagic septicemia infection has been excluded as have other aerobic organisms possessing pathogenic properties. From the liver lesions consistently, and at times from other portions of the cadaver, certain anaerobes can always be recovered, most prominent in this connection being Clostridium welchii, Clostridium oedematiens, Clostridium histolyticum, and other as yet not definitely classified anaerobes are also found. Of these organisms, C. welchii is capable of producing a condition closely resembling the disease under consideration in a certain percentage of experimental bovines inoculated intramuscularly. This cannot be taken as proof, however, that C. Welchii is in itself the cause of red water. It would seem obvious that some peculiar combination of circumstances must be required to allow the anaerobes found to establish themselves in the host and set up the symptom complex and tissue changes found. Of considerable interest in this connection is the observation based on extensive field experiments in Nevada that the use of an aggressin prepared by the use of C. Welchii in the same manner as is blackleg aggressin failed to protect susceptible animals. Experiments now under way in that state indicate that a polyvalent antianaerobe serum of high potency also fails to confer any appreciable passive immunity.

The disease is markedly seasonal in its occurrence and may yet prove to be of dietary or similar origin occurring in late summer or fall.

Well authenticated reports now show this disease of cattle to be present in Oregon, many parts of California and throughout western Nevada. In a recent communication to one of your committee, Enrique Matte, President of the Institute Biologico de la Sociedad Nacional de Agricul-
tura of Chile, describes in detail a condition they have been studying which appears to be identical with the disease found in California and Nevada. Within the past year there have also been observed in Nevada at least two outbreaks in sheep of a disease apparently identical with ictero-hemoglobinuria of cattle.

It would seem, therefore, not out of place at this time to urge upon all those engaged in animal disease control to work more actively along the lines indicated. More detailed studies might well shed a great deal of light upon the possible role of the anaerobes other than C. chauvaei as non-wound infection disease producers.

This disease has been variously termed. Bloody murrain and ictero-hemoglobinuria have been used. The latter term at first thought appears to be appropriate because it describes the lesions found; but it has been objected to on the ground that it might be associated with piroplasmal infection, since a disease known as ictero-hemoglobinuria of sheep is caused by a piroplasma. Red water of cattle is an extremely poor name and one that must be distinguished from the red water or cystic-hematuria of the coastal regions of Washington and Canada. The red water of Washington and Canada has nothing in common with red water or ictero-hemoglobinuria of Nevada and California. In the first place the Washington disease is chronic, it is definitely a hematuria while the disease found in Nevada and California is definitely a hemoglobinuria. In the former, the constant findings are hemorrhages and hemangiomata-like changes of the bladder, while in the latter the bladder lesions are not present.

LOIN DISEASE

Cattle owners of the Gulf counties of Texas have recently been considerably alarmed in consequence of the presence of an obscure and generally fatal disease of cattle which has prevailed in this region. Loin disease, "down-in-the-back disease" and lumbar paralysis are some of the terms that have been applied to the malady. There are reasons for believing that the affection has been present in southeastern Texas for a number of years although the losses thereby occasioned may formerly have been ascribed in part to such diseases as anthrax and hemorrhagic septicemia.

Definite information is lacking regarding its etiology. Bacterial infection, protozoon infection, plant poisoning, lack of certain elements in the forage and the injection of bacterial toxins have received consideration as possible causative factors.

The condition appears to be most prevalent during the spring and summer months, to attack mature cattle only, to show little or no tendency to spread to other parts of the state than the coastal area, regardless of the fact that there is considerable movement of cattle into and out of the affected territory, and to affect only such animals as are compelled to subsist entirely on forage. No immunity appears to be acquired by animals that make a recovery, but on the other hand, they seem to be rendered more susceptible to a second attack which usually terminates fatally.

The symptoms manifested are unsteadiness of gait which may readily escape detection and be present for only a brief period. Loss of control usually takes place soon after the animal is attacked, whereupon it falls and is unable to rise. It may be able to rest upon its sternum for time, but in the later stages lies on its side in a comatose condition.

Autopsies of animals that have been destroyed in the last stages of the affection have failed to show other than slight lesions. Distension of
the gall bladder to three or four times its usual size with bile generally normal in color and consistency is practically the only constant lesion that has been noted. Other changes that may or may not be present are erosions or ulcers of the mucous membrane of the abomasum, congestion of the mucosa of the small intestines, petechial hemorrhages of the serous membranes enveloping the heart and spleen, and hemorraghes in numerous lymph glands. The rumen is usually well filled with ingesta but bile alone is commonly found in the small intestine.

The course of the disease varies from a few hours to three or four weeks. Animals that merely exhibit incoordination frequently make prompt recoveries, but in the event that the attack is of such severity as to cause the animal to fall, death usually takes place in from two to four days. When recovery occurs in those cases showing the more marked symptoms, it is generally only after a period of from three weeks to a month.

Experimental inoculations of guinea pigs, rabbits and calves with blood, spinal fluid, and suspensions of the organs from animals that have been destroyed in the last stages of the diseases have resulted negatively as have also serological tests for trypanosomiasis. The results derived from bacteriological work have, moreover, appeared to yield no definite information in connection with its etiology. The affection in many respects bears a close resemblance to the South African disease of cattle known as "lamziekte," the cause of which baffled investigators for a number of years. The decomposing bones of carcasses that were permitted to disintegrate on the velds of Africa, in combination with a depraved appetite that was manifested by many animals in the affected areas, was finally shown to be responsible for the losses by reason of the fact that the decomposing animal matter which many animals showed a tendency to chew or ingest, contained bacteria which produced a highly fatal toxin. Definite proof that the South African malady and loin disease of this country are identical with respect to causation is, however, at the present time lacking.

AN UNIDENTIFIED CATTLE DISEASE IN NEW YORK

Two years ago your Committee directed your attention to an unidentified cattle disease reported by Boshart and Hagan which occurred in New York state. They report that this disease appears in the summer and fall. It attacks from 20 to 50 per cent of the cattle in the herd and usually those from one to three years of age, although older animals are sometimes its victims. The symptoms are a high temperature and loss of appetite. The duration is from a few hours to three days in the acute form and from four to ten days in the chronic cases.

The primary seat of the disease seems to be in the digestive tract, especially in the fourth stomach and intestine, although in some cases the lesions were less noticeable here than in other parts. Usually there were edema of the walls of the pyloric end of the stomach and reddening of the mucosa with petechiae and ecchymoses. Small ulcers were frequently found. This condition extended, to a greater or less degree, throughout the intestines and appeared to be the most characteristic manifestation. However, in practically all of the earlier cases there were distinct changes in the liver. They consisted of minute or larger areas (from 1 mm. to several cm. in diameter) of necrotic-appearing tissue. Occasionally similar areas were found in the lungs. There were numerous superficial ulcers in the trachea. The most conspicuous lesions were petechiae and ecchymoses not only in the mucosa of the digestive tract but also in the
serous membranes, subcutaneous and intermuscular tissues, bladder, lymph glands, kidneys and even fetuses in utero.

Bacteriological examinations have revealed several micro-organisms, especially in the lesions of the liver, but thus far no evidence of an etiological factor has been found.

The clinical picture and the hemorrhages in the tissues suggested either anthrax or septicemic hemorrhaga. The changes in the liver did not. The failure to find the organisms of either of these diseases in repeated examination leads us to the conclusion that we are dealing with a malady different from either of those. Although its pathology suggests an infectious disease, there is no positive evidence that it is such. Its seasonal appearance and the constancy of its lesions are features that indicate a definite cause.

In a more recent report, Hagan summarizes some further studies as follows: A fatal undiagnosed disease of cattle which was previously described as occurring during the late summer and autumn months of 1919 in certain parts of the State of New York recurred at practically the same time of the year in 1920, in most of the localities previously affected, as well as in a number of new places. The characters of the disease were about the same as in 1919 although one outbreak did not show hemorrhagic lesions at autopsy and another failed to show the characteristic liver lesions previously described. The only lesions which have been constant in all cases seen up to the present time are the ulcers in the fourth stomach and ileum.

Inoculation experiments on cattle and small animals have been uniformly negative. The disease has not been transmitted, and as a consequence has not been proven to be infectious. Poisonous plants have been sought as the causative agent without success. Bacteriological examinations have shown the blood and organs, excepting the characteristic lesions seen usually in the liver and sometimes in the lungs, to be sterile. These have yielded a number of organisms, including a paratyphoid bacillus in several cases, none of which, however, proved to be pathogenic in the manner tested. Prophylactic and curative treatment has not proven successful.

AN UNDIAGNOSED CATTLE DISEASE OF A HEMORRHAGIC NATURE
OF THE NORTH CENTRAL STATES

The occurrence of a somewhat obscure and puzzling cattle disease of a hemorrhagic nature in the North Central states highly justifies its consideration in connection with the remaining diseases of this group which are under discussion in this report.

For some time it was thought that this disease was peculiar to North Dakota, but it is in all probability encountered more or less in the entire Great Plains territory as well as in wide spread areas in Canada.

The observations recorded herein are the result of data compiled from reports of practicing veterinarians, from the examination of tissues submitted to the clinical laboratory for diagnosis, supplemented by rather limited field studies by the Veterinary Station staff of the North Dakota Agricultural College.

Although the disease referred to is designated as one affecting cattle, it is quite possible that other classes of livestock are also involved, as apparently identical conditions in horses have been brought to our attention since announcing the title of this part of the report.

The popular slogan of late years of applying the term hemorrhagic septicemia to practically all disease conditions of a hemorrhagic nature has greatly overshadowed and befogged the actual conditions and mate-
rially retarded real investigational work upon such diseases. The finding of coccidia in connection with bloody diarrhoea or bloody dysentery in cattle in North Dakota well illustrates the point in question. Until coccidiosis was demonstrated in those cases, they were diagnosed as the bowel form of hemorrhagic septicemia. Other diseases characterized by hemorrhages and erroneously termed some form of hemorrhagic septicemia are now calling for verification and solution.

The disease under discussion shows a decided preference for young stock, the majority attacked being less than three years of age. They usually develop with a rapid onset, apparently well animals in the evening may be found well marked cases in the morning. They present a pronounced depressed condition and usually show more or less stiffness in locomotion. In the course of time hemorrhages may be observed issuing from the nostrils in varying degree, and in some instances there develop subcutaneous swellings which very much resemble black-leg tumors, but which are absolutely devoid of the characteristic crackling sound upon palpation.

In some respects the disease causes one to suspect infection and contagion as often several animals in the herd are attacked within a comparatively short time. However, bacteriological findings are absolutely negative, as both cultural methods and small animal inoculations fail to bring out the presence of specific germs. Likewise, the feeding and inoculation of young cattle with material from infected animals reveals no positive results. We wish to state that but very little has been done to determine the possible involvement of anaerobic infection.

Pathologically the disease is primarily one of distinct hemorrhagic lesions with the usual accompanying conditions of anemia, evidently the result of marked peripheral capillary disturbances. It manifests itself clinically and particularly at autopsy with hemorrhages of varying degree and intensity with an exceedingly wide range in distribution throughout the animal body.

On post-mortem examination the internal organs show a gross pathologic picture in panorama from the minutest petechial lesion through ecchymotic suggilations to that of wide spread suffusions of considerable dimensions. For the greater part the hemorrhages are most outstanding in the sub-serous tissues of the peritoneal and pleural organs. Quite frequently there is observed copious quantities of blood extravasation in the pleural and peritoneal cavities. This exudate ranges from an almost perfectly clear yellowish fluid to a distinct red liquid which apparently contains all the formed elements of the blood.

In a lesser number of cases the hemorrhages make their way inward through the mucosa into the luminae of the external passage ways where the blood is ejected with the excretions arriving at the nostrils as an epistaxis or mingling with the alimentary excreta as feces.

The individual organs thus affected vary greatly, however, those of the alimentary tract such as the rumen, abomasum and the beginning portion of the small intestines show the most constant involvement. Under the profuse infiltration the bowel walls become edematous and greatly thickened. Not infrequently are large quantities of blood found beneath the parietal peritoneum in various places which gives one the impression that the animal has been bled there, which as a matter of fact is true. The unusually heavy loss of blood causes the surrounding tissues to become blanched and they assume the appearance of an advanced case of anemia. The blood shows no inclination whatever to form clot.

In the sub-acute and slower developing cases, there sometimes arise rather pronounced edematous conditions in the various tissues. The most
conspicuous are the large edematous swellings which are located just beneath the skin. These subcutaneous tumors are composed of a yellowish gelatinous substance and range from two to eight or ten inches in diameter. The tumors are usually free from blood stains, but blood is often seen between the bundles of the underlying muscles, though never saturating the muscle fibers as in the condition in black-leg.

Of the remaining visceral organs the liver appears to have suffered the greatest parenchymatous changes. Hemorrhagic and heavy congested streaks are commonly seen beneath the capsule and the entire organ shows the picture of cloudy swelling and fatty degeneration. The kidneys show an insignificant congestion at times but the spleen seems entirely normal.

In the pleural cavity the same hemorrhagic picture prevails as in the peritoneal cavity but the lesions do not appear so marked and numerous. The pericardial fluid is increased in volume one or more fold with well marked hemorrhages beneath the epicardium and through the myocardia. In the interior of the heart we find the left chamber constantly showing pronounced petechia and ecchymosis much the same as those encountered in swamp-fever in horses as well as some other diseases. The lungs are invariably free from hemorrhages except the congestions met with in connection with hypostasis and continued lying on one side. The visceral lymph nodes show various degrees of edema and hyperemia in accordance with the disturbance manifested in their respective organs.

Variable numbers of animals in the herd become affected ranging from one or two to a large percentage of the herd. The mortality of those attacked is also found within wide limitations as our reports show from 10 to 80 per cent of them succumb.

As previously stated a large percentage of these cases have in the past been diagnosed as some form of hemorrhagic septicemia. Some of them have been placed in the category of forage poisoning while a lesser number have been ascribed to botulism. More recently, however, the majority of these mysterious cases have been identified, in one way or another, with questionable sweet clover hay. In practically all instances where a survey of the nutritional problems was made, other foods were also used but the evidence in a large percentage of cases implicated spoiled sweet clover hay as the most probable disturbing factor.

In the Province of Ontario in Canada where they are confronted with an apparently identical disease condition, they believe, at this time, that their troubles are wholly due to sweet clover hay. While in the end this may be true, we are calling attention to the possibility of other forage foods being responsible for the same disease, as we are quite confident that identical cases have come under our observation where corn stover in a poor state of preservation was at least a contributing cause.

From the progress made by observations and meager investigations up to date upon this obscure condition it appears as though it is developing itself around the problems of forage foods. It is needless to say that the veterinary profession has been very lax in making definite, and comprehensive studies upon foods used for our domesticated animals. It is highly probable that many of our present day problems of veterinary hygiene and sanitation will readily yield to solution, when we have once gained a fuller knowledge of the proper harvesting, storage and preservation of our animal food stuffs.

DISCUSSION AND SUMMARY

It is very evident to all of us that in any disease where the causative agent is bacterial and is definitely known, the diagnosis and differentia-
tion is not nearly so difficult as in the group under discussion, where, with the exception of hemorrhagic septicemia, the causative agents are not known. Nevertheless, from the above presentation and study of the literature cited we submit the following discussion and summary.

In a general way the hemorrhages found in every disease in this group account for the frequent diagnosing of all these diseases as hemorrhagic septicemia. A striking example of such tendency is found in the presentation and discussion of the paper on red water or ictero-hemoglobinuria, given at the 1917 annual meeting of the A. V. M. A.

This disease which is now definitely known not to be caused by Pasteurella boviseptica, the cause of hemorrhagic septicemia, was nevertheless so termed tentatively by the authors of the paper. The paper related the vain attempts to isolate causative organism of hemorrhagic septicemia. The speakers who took part in the discussion could not understand this and most of them expressed the opinion that the disease then under discussion was no doubt hemorrhagic septicemia and that a change of technic would reward the investigators with the finding of Pasteurella boviseptica.

We related above that the Minnesota workers had little difficulty in finding the specific organism of hemorrhagic septicemia in their cases and the Committee would suggest that no disease be diagnosed as hemorrhagic septicemia unless one or more animals have been available for bacteriological examination and cultures have been made from the affected organs, heart blood, spleen or lymph nodes and Pasteurella boviseptica isolated. Needless to say that animals killed in the last stages or those dead only for a very short time are to be selected for the bacteriologic search.

Red water or ictero-hemoglobinuria should not be confused with any of the other diseases in this group. The hemoglobinuria present in this disease is alone sufficient to differentiate it from the other diseases.

The large infarctive necrotic areas in the liver and the icterus are additional differentiating points.

The loin disease of Texas appears to be limited to the Gulf counties of Texas. The unsteadiness of gait and loss of control and the inability to rise in the late stages of the disease are the only external manifestations. Aside from the hemorrhages sometimes found in the serous coverings of the heart and lymph glands, there is practically no internal lesion excepting distention of the gall bladder and occasionally erosions and ulceration of the abomasum. The almost total absence of lesions differentiates this disease from the others.

In the unidentified disease in New York, the ulceration of the abomasum and intestines were constant findings and here, the liver, one outbreak excepted, showed many small and large necrotic foci.

The undiagnosed disease of the North Central states shows the extensive hemorrhages and edematous infiltration and extravasation observed in the ictero-hemoglobinuria or red water disease, but the other pathologic tissue changes, especially the liver infarcts and hemoglobinuria found in the latter, are not present in this disease.

In the diseases discussed, with the exception of hemorrhagic septicemia, the infectious nature of the diseases has not been established. Experimental transmissions by feeding and inoculation of diseased materials have been negative. The investigators of the various diseases have directed considerable attention to poisonous plants, spoiled foods and deficiency of dietary essentials as possible causes. We urge that
further consideration be given to both infection and nature of the feed in the search for etiologic factors and prime causes in these diseases.

Respectfully submitted,

J. Traum, Chairman.
J. R. Mohler,
C. E. Case,
Robert Graham,
V. A. Moore,
A. F. Schalk,
Edward Record.

PRESIDENT MUNCE: The subject is now open for discussion.

DR. MOORE: Mr. Chairman, the diagnosis of the various diseases that exist has given rise in the past to a great deal of confusion, and it was the purpose, I think, of all the members of this Committee to bring to this Association at this time the general characteristics of a disease or diseases—I am not sure that we know whether it is one or many—that in the past have been confused with other well-known and well recognized diseases such as anthrax and hemorrhagic septicemia. In our own state, New York, we have had this disease for a good many years. It has cropped up, specimens have been sent to the laboratory by veterinarians and state officials under the name anthrax or septicemic hemorrhagia for confirmation. Finally it differentiated itself and it was found that there was another symptom of disease occurring in the late summer and fall that resembled septicemic hemorrhagia in certain respects, and resembled anthrax in other respects, and yet in its characteristics was quite different.

I feel that in the control of diseases in this country it is up to us to be careful about these insidious things that are creeping in, and that it must be recognized—these things must be recognized, differentiated, and put in their proper place, so far as control is concerned.

We have many of these diseases. We forget sometimes the tendency of new diseases to spring up because of the continued occupancy of the soil, of many infections, such as tetanus and other diseases, the organisms of which are gradually finding their way into the soil, and from the soil into our animals. Unless we are on the watch, some day we may find that we have upon us a disease of very great importance about which we know nothing. That thing has happened. Fifty years ago tuberculosis was as insignificant as the diseases that have just been mentioned. All that I wish to say is to emphasize the importance of accuracy in diagnosis, and a close scrutiny for these insidious infections that are more or less common.

DR. CONNAWAY: Mr. Chairman, I think we have been neglecting one very important phase of animal diseases, and that is the parasitic. We have been giving more and more attention to other diseases, but it has occurred to me some of these troubles that have been described here today might be due to parasitic worms.

This has brought to my mind this thought. I recall a case where there was an outbreak among horses and mules in our state that was thought to be anthrax. Specimens were sent into our laboratory for confirmation of the diagnosis. Looking at the specimens and their elements in my laboratory would certainly have indicated anthrax, and the description of the animals that were affected, and the clinical features, looked very much like anthrax; but when we inoculated a rabbit and guinea pigs with smears of the cultures, it was all negative. In the meantime, two or three farms had been quarantined, and the vet-
eranarian had charge, and had sent to Chicago for some vaccine to vaccinate these animals.

Fortunately, our laboratory diagnosis failing to confirm the trouble, we made a further investigation, and we found an infestation of a worm which clogged up the capillaries and caused those hemorrhages, and effusions, which led to this error in diagnosis. So I think that through securing knowledge of the action of parasites, for instance, the new knowledge that we have in regard to the invasion of the blood stream by embryos of the round worm in swine, that led us to think that this same thing might occur in cattle, horses, sheep and other animals, and that we might have some of these symptoms there that might cause quite a large number of diseases. Hemorrhages do not mean anything unless we trace it back to its source. We have had hemorrhages in various diseases, but the practitioners on the ground, with the propaganda that we now have in regard to hemorrhagic septicemia, it is natural that the first diagnosis is that we have here a case of hemorrhagic septicemia, and the first thing to do is to vaccinate against that disease.

My opinion is that no small part of these troubles may come from ordinary parasites, and that the sanitary handling of these cases will in large measure overcome these troubles, and that we may have been mistaken in quarantining the neighborhood and getting the neighborhood excited about having some new disease. We are not paying enough attention to some of the very common things that we have had with us for years and years.

PRESIDENT MUNCE: Any further discussion of this very excellent report? Dr. Watson, I wonder if we may not hear from you on this question of diseases?

DR. WATSON: Mr. President, the part of the paper that interested me to a great extent was the diagnosis of cattle diseases and that the Canadians were of the opinion that the bulk if not all of the trouble was due to sweet clover hay. I do not think he is quite right there. Dr. ————, of Ontario, has done some experimenting in that connection, and certainly they do indicate there is some relation with the hemorrhagic conditions described in these cattle, and the feeding of sweet clover hay; but we have the same condition, or a very similar condition on farms where they did not feed sweet clover hay, and again, of course, it is doubtful if the eating of sweet clover hay is the cause of that hemorrhagic condition. Some foals have been isolated, but they have not succeeded in reproducing a similar condition by the inoculation or feeding of those foals. I think there are, as has been said, more than one thing to deal with in that group of hemorrhagic conditions in cattle, which needs a great deal of working out.

I do not know whether it was brought out possibly in all cases, but in Ontario one of the conditions which we have attributed to the same cause and the same group of animals affected, is bleeding to death after cattle have been dehorned.

I would not like to leave the impression that we consider this trouble in Canada as being due to sweet clover hay. I think we are on the track possibly of other conditions, and we should be very careful in our conclusions at the present time.

DR. CARY: There is just one laboratory phase of this question of diagnosis that I want to bring out, as applied in some areas. The laboratory diagnosis that is sometimes made of anthrax specimens is not worth much, and I want to say why, because I have run up against this in field work. For instance, an outbreak of supposed anthrax occurs
in one of the larger cities, and specimens are sent in to the laboratory, and there it comes into the hands of someone who has not had very much experience. He puts that on the slide, and because it stains like anthrax he says it is either hemorrhagic septicemia or anthrax, and that is the end of it.

Another incident occurred like this in my state, specimens were sent in and they found bi-polar organisms, therefore it was hemorrhagic septicemia; all that kind of stuff is not worth anything. It is just a little better than the physical diagnosis that is made by the man in the field, and that is a fact that you want to remember, that some of these tests are made by just simply a smear, and a look through a microscope by a man who does not know very much about it, and then it is handed out as a definite diagnosis by a bacteriological man.

I am confident, and I want to state here, my feeling that there has been lots of anthrax spread over the United States through the use of different kinds of strong vaccine, and we want to call a halt on these things, and I am going to do it in my state. You say I am radical. Radical nothing. I am very strong for the livestock interests, and am stopping this thing of spreading disease with live cultures in the State of Alabama.

PRESIDENT MUNCE: Dr. Cary has started something. Where are the laboratory men?

DR. GOSS: Mr. Chairman, I think we have to take into consideration in these diseases intoxication. There are some bacterial chemicals—of course, there are chemicals from various sources that may be responsible for intoxication. We have encountered in the West extensive losses in cattle and in many instances we are unable to find organisms there which would seem to be responsible for those deaths. At the same time, we find usually deaths occur in horses that eat this same kind of food, and they show hemorrhages in various parts of the body. It is all hemorrhagic septicemia. We found a condition similar to that occurring in western Kansas when cattle were pastured exclusively upon wheat, in some years. We do not find the organisms that produce hemorrhagic septicemia, but we find hemorrhagic septicemia present. We also encountered lesions in our calves, 33 of which were brought to the laboratories for post-mortem examination. We found there as typical hemorrhages as we have seen in those cases which were diagnosed as hemorrhagic septicemia, with a history of this kind. In other instances, we have made chemical analyses, with the idea of eliminating some of the infection in some of these cases through a more careful investigation into the possibility of intoxication.

Furthermore, I did some laboratory work along the same line as Dr. Cary, and I recall one of my diagnoses where suspected material was sent to our laboratory and the history indicated anthrax. Anthrax had occurred on this particular ranch, and I was somewhat suspicious of anthrax. After making a careful bacteriological examination of the material, I reported negative for anthrax. We found later on that some of this material had also been sent to another laboratory, and they had made a diagnosis of anthrax.

DR. WATSON: You said Dr. Cary has started something. I would like to push it one step further. In connection with the anthrax vaccine, which Dr. Cary referred to as to the possible danger of anthrax vaccine as a means of spreading anthrax, I call to mind in Canada two districts where we have anthrax, one is a chronic district in the eastern provinces where we have had anthrax for years and have been vaccinating for years, and the other one is at the other end of the country on the Pacific.
We periodically get specimens sent in for diagnosis from both of these localities; we look at our specimens, and we find that positively they are indistinguishable from anthrax. When we inoculate them into guinea pigs or rats, again and again we have failed to kill rats with that strain. We have done some work on that with a view of establishing, is this a very unusual strain of anthrax? It does not seem to be the ordinary straight anthrax where you can kill experimental animals, laboratory animals. We have come to the conclusion in several cases that we were dealing with a weak strain of anthrax, and we have by special culture and through guinea pigs brought this strain up to normal. But we have had two cases recently, one from the East and one from the West, where it proved to be anthrax eventually; but as far as the laboratory diagnosis was concerned, it did not kill guinea pigs or rats, it did not kill at all as we worked, but we got down to a month, three weeks, two weeks, and killed them in two days, and that strain was propagated from anthrax vaccine.

PRESIDENT MUNCE: Dr. Records, do you want to sum up your report?

DR. RECORDS: I do not think so, Mr. President. There is hardly anything we could add to what we turned in by the way of a summary. There were some good suggestions brought out in the discussion, though. I think Dr. Connaway, possibly, raised a point there that while it is a little off this subject, might be considered at this time.

As the Chairman has pointed out, the so-called Committee on Diseases is more or less of a catch-all institution, which has to take any work which is done at all in connection with all other diseases, except those handled by specific committees. As I see it, there probably always has got to be such a committee to take up those loose ends, but as a given disease, or a closely correlated group becomes of importance enough to receive much detailed consideration, it should undoubtedly be split up into specific committees.

It might be well at this time, when we have this Committee on Policy, for that Committee to give some consideration as to whether or not the time has now arrived when we could afford a committee on parasites and allied subjects.

PRESIDENT MUNCE: Any further discussion of this subject? What is the pleasure of the Convention in reference to the report?

DR. CONNAWAY: I move it be adopted, Mr. President. (Motion duly seconded and carried.)

PRESIDENT MUNCE: The report of the Legislative Committee. Mr. H. R. Smith, Chicago.

REPORT OF THE LEGISLATIVE COMMITTEE OF THE U. S. LIVESTOCK SANITARY ASSOCIATION, DECEMBER EIGHTH, NINETEEN TWENTY-TWO

Gentlemen of the Association: I wish to report that our activities during the past year have been chiefly confined to the securing of adequate appropriations for tuberculosis eradication. As you are doubtless aware the federal appropriation for last year was $1,000,000 for operating expense and $1,000,000 for indemnity. As the various states have been making larger appropriations in total than has Congress for this cooperative work, it was apparent that a much larger federal indemnity fund was needed. Arrangements were made for a hearing before the Appropriations Committee of the House of Representatives January 28th, 1922. In view of the fact that there has been a strong feeling in Congress to the effect that there is too much of a trend toward paternalism in working on
projects of this kind and that the states should assume a much larger share of the burden in the eradication of tuberculosis, it was apparent that a committee of State Commissioners of Agriculture could do much to offset this feeling. Your Chairman presented this matter to the convention of the National Association of Agricultural Commissioners and a committee of that organization was appointed to attend the hearing before the House Appropriations Committee in Washington. These men in urging larger appropriations also emphasized the need of a strong central organization for the coordination of the tuberculosis work in all states inasmuch as this is a national problem. This committee acting jointly with your Legislative Committee requested an additional $1,000,000. As a result of this hearing the House voted an increase of $700,000, making the indemnity fund $1,700,000 for this fiscal year.

We later arranged for another hearing before the Senate Appropriations Committee at which hearing we requested $400,000 more than the House provided same to be available on passage of the bill. The Senate Committee recommended an increase of $300,000 which later received the approval of the House Conferrees, and passed Congress on that basis making approximately $2,000,000 for indemnity. The operating fund was cut $150,000 and the total appropriation for tuberculosis eradication for this fiscal year is $2,878,800.

H. R. Smith, Chairman Legislative Committee.

PROF. H. R. SMITH: I might add that the request for an appropriation for the next fiscal year has gone to the Director of the Budget, and my understanding of it is that it has been cut $100,000. The request from the Secretary of Agriculture was approximately for $3,000,000 for this next fiscal year. I believe it will be worth while, as it was last year, for our Committee, acting jointly with the representatives of the various breeding interests and other interests identified with livestock in this country, to arrange for another hearing before the House Committee in the very near future. Congressman Anderson, Chairman of the Committee, is very much in sympathy with this work, and arrangements will be made in the very near future for another hearing before the House Committee in the hope that we can get this $100,000 put back. I may say that the general attitude of Congress is favorable to this work. There is a strong demand throughout the country for reducing taxes and cutting appropriations. Nearly all appropriations in the Bureau have been cut, and I believe we are to be congratulated that the appropriation for this work has been permitted to go on. It is only through the work of breeders and others on the outside that we have been able to keep this going, as it has been going.

I think I have nothing further, Mr. Chairman.

PRESIDENT MUNCE: At the last meeting I recall that some criticism was made of this Association from the fact that the Committee on Legislation had not given attention to some conditions or diseases other than tuberculosis. I recall very vividly the criticism that was made about the Committee on Tick Eradication, and in the appointing of this Committee the President invited the attention of the Chairman to take up with these various committees the subject of legislation, individual legislation, not only appropriation committees, but otherwise, that would be helpful, and I make this statement now to bring out what attention the Committee on Legislation has given the subject of tick eradication as raised by Dr. Cary last year.

PROF. SMITH: I made mention in my report that if that Committee could be divided, so you could have a sub-committee on tick eradication,
something like that—divide the work, it would be well worth while, I should think, to delegate certain men to look after certain work.

PRESIDENT MUNCE: Is it your idea, Chairman Smith, to make that recommendation to this Committee on Policy, to give consideration to that point?

PROF. SMITH: Yes, that is simply a suggestion on my part. If it could be arranged so that certain members of the committee, particularly members from the South, could be put on it to give particular attention to tick eradication, since that is a matter of the greatest concern to those states, that is what I had in mind.

PRESIDENT MUNCE: The point that the President had in mind last year was that while, of course, the question of appropriation and legislation in connection with tuberculosis was absolutely essential, yet there are other diseases which require attention along legislative lines, and of course it comes within the scope of the Legislative Committee to give attention to that, since criticism was directed to the Association, and that might be time to bring it on now.

DR. CARY: Mr. Chairman, I brought this out last year, simply because I wanted the Legislative Committee of this Association to help somewhat in this direction. Let me repeat some things that some of you may not know, because you have not been members of this Association as long as I have.

This Association was originated away down in Texas, with a few men for one purpose solely—tick eradication. Out of this has grown this organization. We have no objection whatever to the prominence that is given to other matters, but we do not want this very important matter to be lost sight of. We started this organization and we have accomplished a great deal, and we do not expect to be ignored.

PRESIDENT MUNCE: What is the pleasure of the Association with reference to this report?

DR. ________: I move the adoption of the report. (Motion duly seconded.)

DR. REED: Mr. Chairman, some of the things that Prof. Smith pointed out there are of very vital interest at this time. We all know that there is an attitude in and out of Congress to stop this so-called move towards paternalism and throw more responsibility back on the States, and to a certain extent there is some feeling in the state that some things might possibly well be thrown back on the special industries or interests that they benefit.

The application of this principle to some parts of the United States was brought to my attention yesterday in conversation with Dr. Murray, who had been in discussion, I think, with some official from Iowa. The financing of this tuberculosis campaign might possibly come from several sources in proportion, depending upon the supposed interest they had in it. There is no doubt that a whole lot of it should come out of the general funds of the United States and of the states, on the basis of its being a public health factor, plus the amount of special consideration that the livestock industry should receive as such. But if we are going to be supported in the theory which we have maintained for several years, that this is a real, live, economic problem to the livestock industry, there might be other sources of support available. In several of the far western states, not only this work, but practically all field work, including payment of miscellaneous indemnity, the field inspection and various other things, is paid for by a special tax on the livestock of the state, which is used for no other purpose; and many men who are not familiar with that system fail to realize how fast funds can be rolled up that way. But if some of
you will start to figure how much revenue you can get from a special
tax on all livestock, even on cattle alone, of say two mills or three mills
or four mills on the dollar, you will be surprised at what the figures will
aggregate.

I just want to make this suggestion to some of the eastern and cen-
tral states, where men are not familiar with this system, and let them
take that home as a possible outlet for some of their troubles.

PRESIDENT MUNCE: I might say in connection with Dr. Records' remarks, that the President this year undertook to draw a line, or rather propose a line between the duties of the Legislation Committee and the Finance Committee, and as far as I could find, the Finance Committee thinks that it ought to confine its duties to financing the Association. It occurred to me that the duties of the Finance Committee of this Association were infinitely greater and broader than that particular thing, and I thought they ought to produce, so I suggested to the Finance Committee that they produce a financial program for taking care of transmissible diseases prevalent in this country, and that the duties of the Legislative Committee, perhaps, were more along the line of securing those appropriations. Of course, I do not know exactly what the Finance Committee has in mind along that line, but the report will be made this morning and they may have taken care of that.

DR. ELIASAN: In the discussion of this subject that we have at hand, I believe that the states should make a little more effort in enlarging their own appropriations. We cannot expect to get sufficient funds for this work. In our state we are willing to accept whatever we can get from the Federal Government, but if your laws are going to be made so that they can only go as far as fifty-fifty on the federal appropriation, you are not going to get very far, and I do not think you ought to get very far if you proceed along those lines.

PRESIDENT MUNCE: The question is on the adoption of the re-
port. (Question put to a vote and carried.)

PRESIDENT MUNCE: The next is the Report of Committee on Res-
olutions—Dr. L. H. Howard, of Boston, Mass.

MR. McLEOD: Mr. Chairman and Gentleman: In the absence of the other members of the Committee, I will read this very short report, which was handed in by the Chairman of the Committee on Hog Cholera Control:

Whereas, practically all sanitary officials in the United States believe that the control of the distribution and use of hog cholera virus is essential in the control of the disease;

Therefore, Be it Resolved, That this Association memorialize all state legislatures to pass such laws, in case they do not have such, to restrict the use of virus to such persons as are competent in the opinion of the livestock sanitary officials.

I move the adoption of the report. (Motion duly seconded.)

PRESIDENT MUNCE: You have heard the motion. Might the Chair suggest that this question, if adopted, be referred to the Committee on Policy also? Any remarks on the motion? (The motion was put to a vote and carried.)

PRESIDENT MUNCE: Is the Committee on Tuberculosis ready to report?

DR. JACOB: Mr. Chairman, and Members of the Association: It is now my privilege to submit the report and recommendations of the Committee on Tuberculosis. Fortunately the recommendations of last year's committee, and which were unanimously adopted by this Association, laid a foundation which was broad in scope and constructive in pur-
UNITED STATES LIVE STOCK SANITARY ASSOCIATION

pose. This was so apparent that it has been possible this year to disregard the usual preliminary lines, and delve at once into those things which have a practical bearing on the conduct of tuberculosis eradication work.

I wish at the outset to emphasize the fact that most of the recommendations offered are not of recent consideration. They have occupied the minds of the members of this committee for several years, but time and experience has made it possible to arrive, for the present, at least, at definite conclusions tending toward a more efficient service. Even though the Committee has spent many hours in its deliberations, I am pleased to advise that with the exception of one point, the recommendations to be offered have the unanimous approval of not only this Committee, but the members of the Joint Conference between the Tuberculosis Committee and the representatives of the various cattle breeders associations.

Recommended to change Paragraph 1, Section (c) to read as follows:

A herd which in any previous test shows evidence of infection before being accredited, the final test shall be by a combination of recognized tuberculin tests applied at the discretion of the federal and state authorities.

Mr. Chairman, I move the adoption of that recommendation. (Motion duly seconded and carried.)

DR. JACOB: Amendment to Paragraph 1, Section (d): a herd which has been removed from the accredited list on account of a reactor, shall, when ordered by the proper livestock sanitary official of the state, be reinstated on tests applied by accredited veterinarians, provided such tests are made in accordance with this plan.

The only difference of opinion is that with such ruling it makes it possible for certain herds to be reinstated on tests made by accredited veterinarians.

Mr. Chairman, I move the adoption of the recommendation. (Motion duly seconded and carried.)

DR. JACOB: It is urged that this Association recommend to the U. S. Secretary of Agriculture that federal indemnity be paid for tuberculous cattle, tuberculin tested by accredited veterinarians, when such tests are made in accordance with the provisions of the uniform accredited herd plan in such states where agreements are made for same; provided, however, that the total federal indemnity paid for such tuberculous cattle in any state, shall not exceed 15 per cent of the total allotment of federal indemnity to that state, and

If this recommendation is accepted by the U. S. Department of Agriculture, Paragraph 6, Section (f) shall then be made to read as follows:

Accredited veterinarians may conduct tuberculin tests under official direction at the owner's expense on herds in the process of accreditation in states which approve of this method of testing, until all animals in the herd have passed one negative test; provided, however, that in such herds federal indemnity shall be payable only in accordance with the regulations of the U. S. Department of Agriculture, which provides that not more than 15 per cent of the total federal indemnity allotted to each state shall be available for cattle which may react to tests conducted under this plan by accredited veterinarians.

The difference here is that under the present plan no federal indemnity is available on tests made by accredited veterinarians. By the adoption of this recommendation, the federal indemnity is available to the extent of 15 per cent. In talking with some of the officials of the various states, where infection is most prevalent, the conclusion has
been that if 15 per cent was permitted to be used for this purpose, that it would cover condemnations made on herds tested under those conditions.

Mr. Chairman, I move the adoption of the Recommendation. (Motion duly seconded and carried.)

MR. JACOB: Amendments to Paragraph 12:

Section (c). Areas may be classed as modified accredited areas, provided the following requirements are complied with:

1. The extent of the proposed modified accredited area shall be determined by the cooperating federal and state authorities in conjunction with other cooperating agencies within the proposed area.

2. Definite quarantine rules and regulations shall be determined upon and inaugurated within said area, and must be in force from the beginning of the work.

3. The area designated shall be classed as modified accredited area by the cooperating federal and state departments, if as the result of any one complete test including all cattle in said area, the total number of reactors does not exceed one-half (.5) of one per cent; and it is further provided that individual quarantine shall be established on the remaining infected herds, and such infected herds shall not be retested in less than 60 days from date of original test, and all subsequent tests shall be made in accordance with the uniform accredited herd plan.

4. No cattle shall be imported into said area unless from an accredited herd or after having passed a satisfactory tuberculin test applied by an approved veterinarian; an exception to be made, however, in the case of cattle for immediate slaughter (to be slaughtered within 10 days), and during this interval they shall be kept separate and apart from other cattle.

5. Upon the compliance of the aforesaid provisions this area shall be jointly and officially declared by the cooperating federal and state authorities as a modified accredited area for a period of three years.

Section (d). If Section (c), Paragraphs 1 and 2, are complied with, and as the result of any one complete test including all cattle in said area, the total number of reactors equals one per cent or more of all cattle in said area, then all cattle in said area shall be retested; however, if the percentage of reactors is between one-half (1/2) of one per cent and one (1) per cent of all cattle in said area, subsequent tests shall be applied to all infected herds in said area, and when their percentage of reactors is not over 1/2 of 1 per cent, the area may then be officially classified as a modified accredited area.

Mr. Chairman, I move the adoption of the recommendation.

DR. WHITE: Mr. Chairman, there is only one word in the recommendation that is not clear to me, that is the word "approved" in one paragraph. I want to ask the Committee, through Dr. Jacob, if there would be any objection to substituting the word "accredited" for the word "approved"?

DR. JACOB: For the benefit of the gentleman, I will say that approved veterinarians are now permitted to make tuberculin tests for interstate shipments. It was felt, therefore, by the members of the Committee, that approved veterinarians should have the privilege, instead of going into the accredited areas.

PROF. SMITH: Mr. Chairman, there is a very serious objection to one paragraph, and I feel that when this is understood, you will agree that there should be an amendment to it. It says in Section 4: "No cattle shall be imported into said area." I understand that that means an area which has been declared as one that will be tuberculin-tested
on the area plan. When the selection has been made, "no cattle shall be imported into said area, unless from an accredited herd, or after having passed a satisfactory tuberculin test, applied by an approved veterinarian, an exception to be made, however, in the case of cattle for immediate slaughter (to be slaughtered within 10 days), and during this interval they shall be kept separate and apart from other cattle."

I would like to amend this by putting in the word "steers" before "cattle." "In the case of steers and cattle for immediate slaughter."

My thought is that it is wholly in the interest of this work. You propose in these recommendations that when the state and federal officials declare certain herds can be tested on the area plan, and eventually be made free accredited herds, you propose to shut out all steers for feeding purposes, they must go in quarantine. I can see the reason for breeding cattle, heifers, cows that are likely to be sold for breeding purposes. You cannot control them, they may be scattered over the county, but steers are not going to be used for breeding purposes; they are going to be kept isolated in feed lots, and you can keep them in just as strict quarantine as you want to; but I just want to say if these regulations are complied with according to the way they are read, we are going to do this work an injury, because we are going to discourage the farmer. I do think that after a man has cleaned down to five-tenths of one per cent—I just want to call your attention to these feeding states—it is not necessary to have such drastic regulations as we have got here in Illinois, and I would like to ask you where the danger comes in? I mention this because it is a matter of very serious consideration. I can realize it is not a matter of great concern to people outside of the feeding states, but in those states it is important. So far as danger is concerned, we have kept record on a slaughter test in canners and steers and everything else, and while the per cent of reactors in retained cattle may run as high as 10 per cent, we find in retained steers that it is only about one-quarter of one per cent, and you will make a great mistake if you do anything that will injure feeding, particularly in these Corn-Belt states. I want to make that amendment, to put in there "except steers for feeding purposes."

MR. MERCER: Mr. President, I want to second the amendment of Mr. Smith; and in support of that I wish to say that as read it absolutely prohibits a great many men in our state doing any work tending towards cleaning up whatever. Every spring there are about a million cattle brought up from Texas, New Mexico, and Arizona ranges to the pastures in our state. They are turned into the pastures and grazed during the summer and shipped to market for slaughter in the fall. Now the movement of that class of cattle would not interfere in any manner whatever in my judgment with the clean area of counties in which they were grazed. Therefore, by passing the resolution as it now stands, you would retard the eradication of tuberculosis in the western part of the Corn Belt district, and I think perhaps the words "feeding and grazing" should be used, rather than "feeding."

DR. SCOTT: Mr. President, I want to support Mr. Mercer. In our western counties I do not think we have one-tenth of one per cent infection. We are furnishing to Illinois some 200,000 calves. They do not know what tuberculosis is down in that country, and why not go and get pure products from our state? We will give you all the calves you want if you can keep them out of this market.

PRESIDENT MUNCE: The question is on the adoption of the amendment regularly made and seconded to the original motion.
PROF. SMITH: I will read this Section 4 as passed by the Committee: (Reading Section 4.) That is the way it stands. I think we want to include the word "steers" in it with "cattle for immediate slaughter."

There are also hundreds of range cows shipped into these northern states for grazing. They do not come in contact with our breeding and dairy cattle, and they should be included in the same way.

Some of you gentlemen here may not understand what we mean by this. It might seem to you we were asking for something that was unreasonable, but I want to say to you that it would be impossible for the Southwest people to test the cows that come up here. They are simply range cows with probably no tuberculosis among them. There never has been much of it. They come up in the spring and go on for slaughter in the fall. They are very seldom shipped for any other purpose, except feeding and grazing.

I would like to see that amendment amended to meet that situation, because in states like I have mentioned, you will deprive people there of enthusiasm that might be created for clean work if you pass this resolution.

DR. WILSON: Mr. President, I am a Missourian, and I am interested in some of the arguments that have been made, but there is only one way to accomplish anything in this work, and that is to compel a compulsory test of every animal that is capable of bearing offspring. We know that does not apply to steers. I know what they do with these cows. They bring them home and they turn a bull in the feed-lot with them, because they will weigh a few more pounds when they are sold. Some of those have already been exposed to a bull, and when they are grazing during the summer they drop calves. In many instances those farmers take those cows and put them right in their dairy lots, where they are using milk for their own home consumption and selling the cream upon the market.

I am heartily in accord with this proposition of making an exception of steers, but I believe if you will make some provision to keep these steers apart and separate from any cattle which has been subjected to tuberculosis, you will have accomplished the purpose, but when it comes to the female stuff, I say no. (The question was called for.)

DR. ————: Mr. President, I agree with Dr. Wilson. I believe that in making amendments we should limit ourselves to steers. Any regulatory authority that has had to do with trying to control female stuff that is shipped in for feeding purposes, knows you have to take into consideration the human factor, and when you do that you have to take into consideration the scrupulous and unscrupulous individuals, and if we are going to have true tuberculosis eradication, we will have to draw the line.

Our regulations in Michigan at the present time do not keep out female animals, but we will be perfectly willing to draw the line and allow only steers to come in. I believe that we are ripe for that now, and can put it across.

PRESIDENT MUNCE: The question is, how is this amendment to be worded?

PROF. SMITH: I suggest that the word "steers" be inserted in Paragraph 4, so that it will read:

"However, in the case of cattle and steers for immediate slaughter (to be slaughtered within 10 days), and during this interval they shall be kept separate and apart from other cattle."
PRESIDENT MUNCE: The question is on the adoption of the amendment.

PROF. SMITH: I suppose you are bearing in mind that there will have to be a change. If you want to have that apply to steers that will have to be changed.

PRESIDENT MUNCE: I think it is understood, Professor Smith, that we have the authority to make such changes there as will be consistent with the motion. (The amendment was put to a vote and carried.)

PRESIDENT MUNCE: Now for the original motion.

DR. ELIASON: Mr. President, I am enthusiastic on tuberculosis eradication, but I believe that we are hitching the cart in front of the horse, we are a little previous, and I am afraid that in the adoption of this plan that we are doing the very thing that is going to help retard the work. I do not believe that we are ready at this time to put this across. I think we ought to have more territory clean, or in the process of cleaning. After all, you are all in the process of cleaning yet. There may be a few isolated lonesome counties that have not very much tuberculosis. We have a few of them up in our state, but that does not signify anything. Your real work is in front of you, and if you begin putting on too much regulation or too many things to be done which cannot be done, you are only retarding your own progress. The time will come when the feeding steers can be taken care of, and taken care of without any embargo to the industry. Those things will work out, and I feel it is working out, but I think we ought to go slow.

Therefore I move the rejection of this particular plan.

PRESIDENT MUNCE: The question is on the adoption of the original motion. (Thereupon the original motion was put to a vote and carried.)

PRESIDENT MUNCE: It is so ordered.

DR. JACOB: (Reading):

"It is proposed that a recommendation be made to the Secretary of the U. S. Department of Agriculture, that B. A. I. Regulation 7, be so modified as to permit the interstate movement of cattle from modified accredited areas without an additional test, if such cattle are properly identified by ear tag or registration name and number, and accompanied by a certificate issued by federal or state livestock sanitary authorities, or approved veterinarians. The number and distribution of such certificates to be in accordance with the requirements provided for in B. A. I. Regulation 7."

Mr. Chairman, I move the adoption of this recommendation. (Motion duly seconded and carried.)

DR. JACOB: "Observations covering the tuberculin testing of many thousands of cattle by the intradermic method have definitely established the fact that the observation made at the 72nd hour is the most essential from a diagnostic standpoint. It is therefore recommended that the 72nd-hour observation be made mandatory in all official testing conducted by the intradermic method, and it is further recommended that an additional observation be made in infected herds between the 120th and the 150th hour.

Mr. Chairman, I move the adoption of that recommendation. (Motion duly-seconded.)

DR. HARING: Mr. President, it seems to me the wording of that particular recommendation requiring observation on the 72nd hour might be too inelastic for the man with a very strict conscience. If it could be made somewhat more elastic, giving a leeway of five or six hours, it would seem to me more reasonable.
DR. JACOB: I might state for the benefit of Dr. Haring, that that is understood, just as it is understood in the method as is now in force. I might state in this connection also, that the Committee has not lost sight of the fact that you have to depend upon the gray matter in the heads of the men in the field to a great extent if you expect to get anywhere in tuberculosis eradication.

Recommended to change Paragraph 1, Section (c), to read as follows:

A herd which in any previous test shows evidence of infection before being accredited the final test shall be by a combination of recognized tuberculin tests applied at the discretion of the federal and state authorities.

Amendment to Paragraph 1, Section (d), a herd which has been removed from the accredited list on account of a reactor, shall when ordered by the proper livestock sanitary official of the state be reinstated on tests applied by accredited veterinarians, provided such tests are made in accordance with this plan.

It is urged that this Association recommend to the U.S. Secretary of Agriculture that federal indemnity be paid for tuberculous cattle, tuberculin tested by accredited veterinarians, when such tests are made in accordance with the provisions of the uniform accredited herd plan in such states where agreements are made for same; provided, however, that the total federal indemnity paid for such tuberculous cattle in any state shall not exceed 15 per cent of the total allotment of federal indemnity to that state, and

If this recommendation is accepted by the U.S. Department of Agriculture, Paragraph 6, Section (f), shall then be made to read as follows:

Accredited veterinarians may conduct tuberculin tests under official direction at the owner's expense on herds in the process of accreditation in states which approve of this method of testing, until all animals in the herd have passed one negative test; provided, however, that in such herds federal indemnity shall be payable only in accordance with the regulations of the U.S. Department of Agriculture, which provides that not more than 15 per cent of the total federal indemnity allotted to each state shall be available for cattle which may react to tests conducted under this plan by accredited veterinarians.

Amendments to Paragraph 12.

Section (c). Areas may be classed as modified accredited areas, provided the following requirements are complied with:

1. The extent of the proposed modified accredited area shall be determined by the cooperating federal and state authorities in conjunction with other cooperating agencies within the proposed area.

2. Definite quarantine rules and regulations shall be determined upon and inaugurated within said area, and must be in force from the beginning of the work.

3. The area designated shall be classed as modified accredited area by the cooperating federal and state departments, if as the result of any one complete test including all cattle in said area, the total number of reactors does not exceed one-half (.5) of one per cent; and it is further provided that individual quarantine shall be established on the remaining infected herds and such infected herds shall not be retested in less than 60 days from date of original test and all subsequent tests shall be made in accordance with the uniform accredited herd plan.

4. No cattle shall be imported into said area unless from an accredited herd or after having passed a satisfactory tuberculin test ap-
plied by an approved veterinarian; an exception to be made, however, in the case of cattle for immediate slaughter and steers for feeding and grazing purposes; the cattle for immediate slaughter must be so disposed of within ten (10) days and during this interval must be held separate and apart from any other cattle; steers for feeding and grazing purposes brought into said area without an approved tuberculin test, shall be placed in official quarantine and held separate and apart from any other cattle.

5. Upon the compliance of the aforesaid provisions this area shall be officially and jointly declared by the cooperating federal and state authorities as a modified accredited area for a period of three years.

Section (d). If Section (c), Paragraphs 1 and 2 are complied with and as the result of any one complete test including all cattle in said area, the total number of reactors equals one per cent or more of all cattle in said area, then all cattle in said area shall be retested; however, if the percentage of reactors is between one-half (¼) of one per cent and one (1) per cent of all cattle in said area, subsequent tests shall be applied to all infected herds in said area and when their percentage of reactors is not over ¼ of 1 per cent the area may then be officially classed as a modified accredited area.

It is proposed that a recommendation be made to the Secretary of the U. S. Department of Agriculture, that B. A. I. Regulation 7, be so modified as to permit the interstate movement of cattle from modified accredited areas without an additional test, if such cattle are properly identified by ear tag or registration name and number and accompanied by a certificate issued by federal or state livestock sanitary authorities or approved veterinarians. The number and distribution of such certificates to be in accordance with the requirements provided for in B. A. I. Regulation 7.

Observations covering the tuberculin testing of many thousands of cattle by the intradermic method, have definitely established the fact that the observation made at the 72nd hour is the most essential from a diagnostic standpoint. It is therefore recommended that the 72nd hour observation be made mandatory in all official testing conducted by the intradermic method; and it is further recommended that an additional observation be made in infected herds between the 120th and 150th hour.

(Motion put to a vote and carried.)

PRESIDENT MUNCE: The report of the Finance Committee, Dr. Cassius Way of New York, Chairman.

REPORT OF THE FINANCE COMMITTEE UNITED STATES LIVE-STOCK SANITARY ASSOCIATION

Presented by Cassius Way, N. Y. City.

Your Committee has been requested by the President to draft a suitable financial plan for taking care of present day needs, also to outline a future program for the control and possible eradication of transmissible animal diseases in forty-eight states of the Union and the territories of Hawaii and Alaska.

The magnitude of the proposition, our inability to make intelligent suggestions due to lack of knowledge of conditions in many states, the wide difference of opinion among livestock owners, practicing veterinarians and regulatory officials concerning many of the vital points in the problem together with a general lack of knowledge on the part of the public, causes us to refrain from attempting the suggestion of a
universal financial program. However, we beg to submit a few points for your consideration that we deem to be essential factors in any practical financial plan.

Expenditures in the control of infectious diseases of livestock that are considered almost entirely from an economic standpoint are largely overshadowed by the great problem of tuberculosis control or eradication involving, in a majority of states, the accredited herd plan, its administration and the appropriations for indemnities attendant thereto. We believe that this condition is due to the fact that tuberculosis has been considered quite as much from a public health standpoint as from its economic importance to the livestock industry. Furthermore, we believe that inasmuch as only a small percentage of food producing bovines come under supervision in the control of tuberculosis, that more strenuous efforts should be inaugurated and more stringent laws should be enacted and enforced to render safe for human consumption the products coming from the great majority of cattle that are not supervised.

This Committee wishes to go on record as being heartily in sympathy with the principle of the accredited herd plan for the control of tuberculosis. Every member is the owner, as herds go, of a relatively large herd of cattle.

The payment for diseased cattle in the form of indemnities is not, in the opinion of this Committee, a sound permanent policy. It may be temporarily expedient and necessary. However, constantly increasing requests and demands are made for supervision which requires greatly increased appropriations if the work is to be properly executed. It is the opinion of the Committee that as soon as practicable, indemnities should be reduced in order to make possible a more extensive operation of the plan together with uniform, thorough and constant application of the best modern thought in the control of this disease.

The present plan of indemnity paid for tubercular animals is being criticized by breeders as well as veterinarians. Conditions that exist in different states and in different sections of the country seem to warrant a special and individual consideration of this problem.

In some states possibly one-tenth of the cattle come under supervision, the other ninety per cent continue to exist under the usual conditions and environments. It has been intimated that in some localities tuberculosis is increasing in the ninety per cent faster than it is decreasing in the ten per cent that are under supervision. Under such conditions it requires no extended mathematical calculations to arrive at the conclusion that in some localities tuberculosis eradication is a questionable task and even tuberculosis control is a most difficult problem.

The question of education in reference to control and possible eradication of this disease is important. It is thought by many that if the state would appropriate for a campaign of education that would employ the most efficient men obtainable, not to exceed one-half the amount at present appropriated for indemnities, that in a short time greater results would be accomplished.

From an educational standpoint it is necessary to impress upon livestock owners that the tuberculin test is not infallible. A certain percentage of tubercular animals may not react to any test. It is only after a series of clean tests and an endeavor on the part of the owner to employ every means at his disposal to control the disease that satisfactory results may ultimately prevail. Sanitation, individual mangers and drinking cups, and pasteurized milk for calves are factors that in
UNITED STATES LIVE STOCK SANITARY ASSOCIATION

the majority of instances are absolutely essential in the control of this disease.

It seems to your Committee that in the final analysis of the question the desire must come from the owner for a clean herd rather than the desire to sell his reacting and diseased animals at the price of sound ones. The disposition of reactors, many of which are serviceable and may live and die of other causes before the disease may be evidenced, is a problem that should receive careful consideration.

As stated in the beginning, lack of knowledge regarding conditions and needs in the various states precludes the possibility of presenting an intelligent financial program at this time. We beg to submit the following for your consideration:

We recommend that the Finance Committee for the coming year arrange, if possible, for a conference consisting of one representative breeder or owner of livestock, either of cattle, horses, sheep or swine, from each state together with the state regulatory official in charge, to consider the entire question of a financial program as may best meet all conditions that exist throughout the country. This conference to meet, if possible, just prior to the next meeting of this Association, and formulate plans for a uniform financial policy concerning the control of infectious diseases of livestock for the approval of this Association.

Cassius Way, Chairman, New York City,
Medill McCormick, Washington D. C.,
(U. S. Senator from Illinois)
Mitchell Harrison, Nokesville, Va.,
Robert L. Montgomery, Ithan, Pa.,
A. B. Cook, Townsend, Montana.

DR. ELIASON: Mr. Chairman, before a motion for the adoption of the report is made, I want to move the striking out of this report of that part which deals with or recommends the elimination of indemnities. I can see very readily how men who have already gotten their herds made accredited and are able to stand it, can get along without any indemnity, but I am for the little man who lives up on a little farm, and when you are getting into the question of retarding indemnity, I think you had better go slow. You are not prepared for anything of this kind yet. Every procedure of tuberculin testing has been brought out, and we know that sometimes animals may be in a condition which is of material value to the owner. There are also animals which may be left in the herd. There are constitutional rights which you will have to respect with regard to property, and so far as increasing money spent for education, I am thoroughly with you; but I also want you to keep in mind that you want to provide for sufficient indemnity. I am unwilling to "pass the buck" in this work. Let us be honest with the farmer. Keep him with you and you are going to get along all right. You have got to look out for the little fellow. I want to remind you that the little fellow is quite a factor all the time, and there will be considerable dissatisfaction if there is anything done which will make it hard or impossible for him to get along.

PRESIDENT MUNCE: The question is on the adoption of the report. (On motion duly seconded and carried, the Report of the Committee was adopted.)

PRESIDENT MUNCE: It was suggested to your President almost a year ago that a special committee on foot-and-mouth disease be appointed, representing this Association, to confer with the Chief of the Federal Bureau of Animal Industry on foot-and-mouth disease. This was brought up by reason of the prevalence of foot-and-mouth disease in Great Britain.
Conditions arose which made it necessary in the minds of a number of men who were familiar with the situation, also the Chief of the Bureau, that it would be desirable to have such a Committee, and the President, realizing that an emergency existed, took the liberty of appointing this Committee, which consisted of E. S. Bayard, of Pittsburgh, Chairman; Dr. J. H. McNeil, New Jersey; Dr. L. H. Howard, Boston, Mass.; Dr. C. J. Marshall, Philadelphia, Pa.; Mr. A. J. Glover, Fort Atkinson, Wis.; Dr. S. E. Bennett, Chicago, Ill.; Dr. H. R. Church, Harrisburg, Pa., and Dr. V. A. Moore, Ithaca, N. Y.

The Committee is prepared at this time to render a report which will be presented by Dr. J. H. McNeil, in the absence of the Chairman.

REPORT OF THE SPECIAL COMMITTEE ON FOOT-AND-MOUTH DISEASE.

Soon after his election, your President appointed a special committee of eight to advise with the U. S. Bureau of Animal Industry in relation to the prevention and handling of foot-and-mouth disease should it be introduced. The Chairman promptly got in communication with the members of the Committee and submitted the following recommendations which were fully approved by each member of the Committee:

1. The attention of the Treasury Department should be called to the danger existing through the possibility of the introduction of foot-and-mouth disease in straw and hay used in packing imported goods. Such straw and hay should be forbidden to enter this country, or should be permitted to enter only on condition that it be destroyed by fire immediately after the goods are unpacked. The danger is greatest in packages going to interior points. The clothing worn by and in possession of immigrants should be fumigated, particularly the effects of immigrants from rural districts of other countries or those going to rural districts of this country.

2. A letter should be sent to the governor of each state calling his attention to the need for legislative authority to cooperate with the Bureau of Animal Industry of the Federal Government in eradicating the disease should an outbreak occur. He should be urged to be ready for such an emergency by securing full information as to his own powers in such a case, use of contingent or emergency funds, warning state veterinary staff, and calling public attention to the necessity of watching for and reporting immediately anything that looks like foot-and-mouth disease.

3. The Committee should endorse and enclose a copy of the Bureau of Animal Industry’s cooperative plan for the information and future use of each governor.

4. The Committee should request all veterinary journals and societies to issue warnings to readers and members.

5. The Committee should ask the States Relations Bureau of the Department of Agriculture to inform county agricultural agents, through extension service of each state, of the danger existing and ask those agents for cooperation in detecting disease and reporting same.

The Chief of the Federal Bureau of Animal Industry has informed the Chairman of the Committee that the Relations Service had been requested to ask extension directors in all states to instruct county agents to be on the lookout for foot-and-mouth disease and to report promptly all suspicious cases to proper authorities; also, the Bureau has issued instructions to its employees in the field and requested state regulatory
authorities to ask veterinary practitioners to report promptly cases which they observe.

The matter of disinfecting clothes and other belongings of immigrants arriving in this country has also been discussed with the immigrant and public health authorities.

Foot-and-mouth disease has caused extensive losses in many other countries the past year. From January 1st to March 5th, 1922, the disease appeared in 966 herds in Great Britain requiring the slaughter of 43,735 animals.

An article appeared in the March 19th issue of the San Antonio Express, stating that many cattle are imported into Mexico from South America. In South America foot-and-mouth disease exists extensively. Infection is apt to be carried from there into Mexico. Federal Bureau of Animal Industry representatives located in the Southwest were promptly cautioned to keep in close touch with the conditions and movement of cattle along the Mexican border in order to guard as much as possible against an invasion of the disease from that source.

The disease appeared in Jamaica during the past summer. Conditions were best stated in an editorial of the National Stockman and Farmer as follows:

"The vigilance of our Bureau of Animal Industry and of the United States consul at Kingston, Jamaica, has probably prevented an outbreak of foot-and-mouth disease in this country. When the disease first appeared in Jamaica the official who observed it reported it was stomatitis and ordered it quarantined as such. He later explained that he hoped by such a report to prevent a panic while he was getting the disease under control. His description led our Bureau of Animal Industry to warn the American consul at Kingston to notify exporters to ship no hides to this country, and hides that were in transit were returned. If they had been admitted we might now be wrestling with an outbreak of foot-and-mouth disease, and at a time when our animal industry has troubles enough. Doubtless by this time the Jamaican veterinary realizes that it is never safe to monkey with foot-and-mouth disease. All of us should realize it in advance and thank our vigilant public servants who kept it out."

The following report of the Government Consultant Veterinarian of Jamaica dated Sept. 11th, 1922, addressed to the Acting Director of Agriculture of Jamaica is published for general information:

"Sir:—I have the honor to submit my fifth interim report on the cattle disease in the western parishes. I left Kingston the 7th instant and proceeded to Sav-la-Mar. In the majority of cases where there have been heavy losses there has been evidence of excessive handling and harassing of cattle such as driving far distances, catching and throwing animals down in order to rub their mouths with salt, seville oranges, etc.

Having regard to the severe form of the disease on properties which I had anticipated would have only the mild form; the difficulty of securing efficient quarantine with range cattle; the question of the exportation of hides, a contingency of which I did not foresee—I desire to make a statement concerning the true nature of the outbreak in the western parishes and at the same time to give an explanation of my attitude in regard to it.

"On my first visit to the Montpelier area on July 18th, I observed symptoms among the affected cattle which filled me with grave fears as to the nature of the disease. Wishing to prevent, if possible, the spread of the disease should my suspicions be correct, and at the same time minimize a threatened panic among the pen keepers, I telegraphed to you the disease, which I termed necrotic stomatitis and coronitis, should be im-
mediately scheduled under the contagious diseases of animals (inland) Law 1 of 1901. The remainder of my time was occupied to discover the limit of spread of the disease and to devising methods of treating range cattle under the prevailing conditions.

"On my first visit July 24th, my suspicions were fully confirmed that the disease was foot-and mouth-disease. By this time, however, its spread was found to extend over a much wider area than was at first supposed, involving three parishes.

"'Necrotic stomatitis and coronitis' had already been declared a contagious disease and quarantine measures were being enforced.

"As it seemed that the method of stamping out disease by slaughter was impracticable, and because all outbreaks outside the original infected region gave every indication of running a very mild course, I hoped to be able to arrest the disease by means of quarantine and decided to withhold my opinion.

"About this time heavy rains began to fall over the original infected region and surrounding hills which adversely affected many animals.

"Since this time rains have been experienced almost daily. Many properties which I anticipated would have a mild form of the disease have recently been experiencing the severest form.

"For this reason as well as to prevent exportation of hides with the risk of infection to other countries I have decided to disclose the true nature of the disease which, as stated above, I had hoped to arrest at as low a cost as possible and without causing panic.

"It is my particular desire that this portion of my report should be given full publicity as I am unwilling that any blame should be attached to your or any other department.

"I have the honour, etc,

"(Sgd.) G. O. Rushie Grey,
"Govt. Vety. Consultant."

"1 Note.—In the case of the Dominion of Canada, hides may be exported subject to disinfection by processes approved by the published regulations and to a certificate by an official of the Jamaica Department of Agriculture that such disinfection has been carried out. (See Gazette Notice No. 568 dated 12th September).

Your Committee has hoped that it might recommend less drastic measures for handling outbreaks when they occur. This does not seem possible at the present time. Considerable work has been done by foreign investigators since the war. They have tried to perfect a plan for vaccination, a safe and satisfactory treatment for those affected, and to determine if possible the shortest possible period of danger of spreading the disease. Nothing has been reported that would appear to justify us in changing our former plans for handling outbreaks. We believe that the plans used so successfully in handling the three extensive outbreaks that have occurred in this country should be again adopted in case of another outbreak. We recommend the application of rigid quarantine measures, prompt slaughter of affected and exposed animals, the cleaning and disinfection of infected premises, and the remuneration of owners for animals and other property destroyed. This Association is already on record as favoring all these measures. The matter of slaughter of diseased and exposed animals is important and the one point upon which the most opposition would be liable to occur. We also recommend that immediately on the announcement of an outbreak of foot-and-mouth disease a conference of the representatives of the livestock interests should be called at a central point for the purpose of adopting a plan of action in relation to the eradication of the disease, the education of the public, and the considera-
tion of other matters pertaining to the problem. It would seem advisable that stockmen and livestock sanitary authorities should bear in mind that nothing better can be recommended at the present time.

E. S. Bayard,
J. H. McNeil,
H. R. Church,
V. A. Moore,
A. J. Glover,
Lester H. Howard,
C. J. Marshall,
S. E. Bennett.

DR. McNEIL: Mr. Chairman, Gentlemen of the Association: At the request of the Secretary, I am going to read you a suggestion that was handed to me by Mr. Glover just before leaving for his home. We did not receive this in time to receive the consideration of the Committee. As he personally expressed himself, he was not in favor of it, and did not believe it advisable to include it in the report. However, he asked me to read it. It is as follows: (Reading)

"I would suggest a conference of the livestock interests for the purpose of adopting and agreeing to a plan of action, should we have another outbreak of foot-and-mouth disease. It is unreasonable to hold that we need never expect another outbreak of foot-and-mouth disease. It is likely to break out at any time. Now is the time to lay plans for handling another outbreak and get the livestock owners to agree to it. We should profit by our experience in 1914, and take steps to prevent its recurrence."

PRESIDENT MUNCE: The understanding of the Chair is that that latter reference of Mr. Glover's is not a part of the report.

DR. McNEIL: No, simply for the information of the Association. (On motion duly seconded and carried, the report of the Committee was adopted.)

DR. CONNAWAY: Mr. President, I recommend that the latter recommendation be referred to the Committee on Policy, for such action as they deem wise.

PRESIDENT MUNCE: I think it is generally understood that all of these reports and recommendations will go to that Committee. However, a motion is made that this particular report be submitted.

Gentlemen, Dr. Dyson of the Association has a matter which he would like to place before you.

SECRETARY DYSON: I think one of the most important subjects that has come before this Association was the question of finance. If this Association is going to continue to exist, and properly function, some steps must be taken in order to finance it. This is a very brief financial statement.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Printing</td>
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<tr>
<td>Other printing</td>
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</tr>
<tr>
<td>Total expenses, other than expenses for printing</td>
<td>51.11</td>
</tr>
</tbody>
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(including postage and stationery)

Making a total of $855.86

Now, added to that will be $200.00 (approximately) coming to Mr. Brady for reporting this meeting. I say approximately, because that is what it cost last year, and I think probably it will be just about the same, making the total expense of this meeting $1,058.86.

Last year's meeting, and the publication of the Report cost $1,846.46. I have cut every corner that it is possible to cut—cut out the badges and all of the incidental expenses wherever it was possible.
Our deficit right now amounts to $518.30 on account of the 1922 meeting. I have collected up to this morning, $315.10—that is for dues for next year, 1923, which would leave us $203 in the hole after applying that to our present deficit. There are a little over 500 paid-up members of the Association. The total receipts from $2.00 dues amounts to just a trifle over $1,000. Instead of receiving all of the dues for the 1922, I have only received $376.55 from the preceding Secretary. The total of what I received from him and what I collected amounts to $540.55.

It was left optional with the Secretary as to whether or not he would accept advertisements or try to derive any money from that source. I made no effort to secure advertisements. It would be an easy matter if you wanted to finance this Association that way, you could go out and get a lot of money, but the trouble of it is after you have succeeded in getting money from those sources, the Association would probably be in the hands of the men that paid the bills.

If you want to retain control of this Association, I would suggest that you make some arrangements to finance it, but do not go and pass the hat among men who are not interested in livestock sanitation, if you want to control your Association. (Applause.)

FINANCIAL STATEMENT
February 10, 1923

Receipts
Cash forwarded from Dr. Burnett .................. $376.55
Money collected for dues, memberships and assessments to date ..................... 628.00
Money collected for annual reports ................. 86.00

Total cash receipts ................................ $1,090.55

Expenses
Envelopes and postage ............................ $ 47.60
Express charges on shipment of records ............ 3.45
Ledger sheets ..................................... 3.00
Telegrams ....................................... 2.63
Webb Publishing Company—annual reports ........ 755.25
So. St. Paul Reporter—programs and letterheads ... 71.00
M. J. Brady—reporting annual meeting 1922 .......... 165.00
Clerical and stenographic work ................... 25.00
Suitcase for records ........................... 2.50

Total expenditures .............................. 1,075.43

Cash balance ..................................... $ 15.12

DR. WAY: Mr. President and Gentlemen: I do not want to take up too much of your time, but the Secretary has asked me as Chairman of the Finance Committee to confer with him in reference to the situation as it exists today. His report would certainly indicate to you that we are not in a very healthy financial condition.

Now, something should be done, if the Association is to live, to put it on a basis that will be sound, and personally, I hope, permanent. I think the Secretary is to be congratulated, together with the President, in putting over a meeting at this time without any material financial aid. A conference was held this morning, and I am requested to present this resolution for your consideration:

Whereas, the funds of the Treasurer's office are not sufficient to meet
the urgent needs of the Association, due to a deficiency that has existed, and has been gradually increasing for some time; and

Whereas, the Secretary-Treasurer and President have this year been obliged to personally guarantee the payment of bills due for printing the Association proceedings, and due to the lack of funds, having to ask credit, it was impossible to obtain the lowest prices for printing the proceedings, etc., and

Whereas, this condition is most unsatisfactory and unbusinesslike; and

Whereas, additional funds are necessary to meet the immediate needs, including the proper publication of the proceedings of this meeting, as well as to insure a moderate working balance for emergencies that may arise, as well as to take care of the needs of the Secretary-Treasurer's office,

Be it Resolved, That the Association in annual meeting assembled, authorizes an assessment of $2 for each member to take care of the immediate deficit, and that the Secretary be instructed to immediately bill each member accordingly. And, furthermore,

Be it Resolved, That the initiation fee and annual dues for membership in this Association be increased to $5.00, and that this Resolution serve as notice for an amendment to the Constitution and By-laws to this effect.

And furthermore, be it Resolved, That a copy of this Resolution be sent to every member when statement of assessment is made. (Applause.)

MR. MERCER: Mr. Chairman, if that is in the form of a motion, I take pleasure in seconding it. This Association has certainly been of great benefit to me, and it gives me great pleasure to second that motion.

I not only think that the President and Secretary should be congratulated, but I think this Association owes the President and Secretary a debt of gratitude for the businesslike way in which they have conducted this Association's affairs during the past year. It is wrong, gentlemen, for a Secretary to have to use his credit to transact the business of an organization so big and great as this is.

A year ago this same condition stared this organization in the face, and at that time I made a suggestion that we make a contribution, which did not seem feasible; yet the same condition prevails now, and it does seem that the Secretary's suggestion that we finance our own concern is sound and good, and that the people who compose this organization should take care of its finances. I think that if it is necessary that the President and Secretary, or the incoming President and Secretary, if supported in some manner with authority, could borrow enough money to pay these debts of the organization until the same is collected, and in doing this we will put the organization on a sound financial basis. I am sure the Resolution will meet with the approval of every member of this organization, to raise the annual dues to $5 a year. It will only require just a few less attendances at picture shows, or something of that kind. So let us finance our organization and conduct its affairs among ourselves.

I have been coming here for something like 14 years—I have only missed once I believe in that time. I like to come here. It does not discourage me because I get run over once in a while, because I come here and learn a great deal from these meetings. I probably will not come here very much longer, but someone from our section will; but as long as I
have body activity, at least, I am going to come here and attend this Association, whether I am a member from our state or otherwise. I have been benefited in my work more from the work of this particular organization than any other source. I want to say this in behalf of our President, that I think his address this year is one of the best that I have ever heard in all the years that I have been coming here. (Applause.)

DR. BUTLER: Mr. President, I desire to second this motion, and I want to say that we receive more benefit through this organization than any other one of like character or any other character. The work of this organization is of the greatest value. I authorized the purchase of a number of copies of the report last year, and distributed them throughout our state, and the reading of the papers, and the disseminating of that knowledge to veterinarians, I believe, was well worth the money spent.

As Mr. Mercer says, it is wrong for us to expect the Secretary or the President to use their own financial credit to finance this body, therefore I desire to second the motion. (The question was called for, and the motion was put to a vote and carried.)

PRESIDENT MUNCE: Is is so ordered. This completes the program for this morning, and the session will reconvene promptly at 1:30 this afternoon.

(Whereupon, recess was taken to 1:30 o'clock, P.M.)

SIXTH SESSION
December 8, 1922, 1:30 P.M.

PRESIDENT MUNCE: We will open the session on the question of tick eradication with a paper: "Tick Eradication Work In Texas," by Dr. Grafke, Bureau of Animal Industry Inspector in Charge, Fort Worth, Texas.

"TICK ERADICATION WORK IN TEXAS."

The question of tick eradication in Texas, or when would Texas eradicate the cattle tick, has been a rather common question at nearly every meeting of this kind for a number of years, and it is believed that no better answer can be given at this time which indicates in every way that Texas cattle owners and others concerned are making a determined effort to eradicate the cattle fever tick, than by merely pointing to the record of more than seven million cattle dipped or inspected for tick eradication in Texas during the month of August 1922. The dipping and inspection of over seven million cattle in one month represents the actual dipping and inspection of three and one-half million cattle twice during the month, and was only accomplished through the gradual building of an organization with the combined efforts of Bureau, state and county officials and cattle owners, over a period of several years. In order that the members of this Association and visitors may comprehend the large undertaking and results obtained in Texas during the season of 1922, it may be interesting to review briefly the history of tick eradication in Texas. I wish first, however, to point out the fact that eradicating cattle ticks in Texas is not only a vital interest to Texas, but is of considerable interest to every branch of the cattle business and associated interests in all Northern states where Texas cattle are pastured and finished, also including cattle loan institutions of Chicago and other financial centers. This condition is emphasized by the fact that Texas is recognized as the greatest cattle breeding section of the United States and the bite of the cattle fever tick carries a mark of lowered valuation on every animal from the Texas quarantined pastures to the consumers, all of which
provides an interesting subject itself, but time will not permit detail explanation here. Relating briefly the history and progress of cattle tick eradication in Texas, it may be stated that during the years of 1906 to 1910, the work was very largely in an experimental stage in so far as the practical application of tick eradication on large ranches was concerned. The Bureau of Animal Industry had conducted extensive experiments and demonstrations in the application of tick eradication measures under varied conditions in the field, until it was fully demonstrated that cattle fever ticks could be eradicated through the process of vacating pastures over a period of 6 to 8 months or by systematic dipping of all the cattle on the premises in a definite area every 14 to 18 days through one season in a vat filled with arsenical solution of a definite strength. That when the cattle were treated and handled carefully, the process would not injure the cattle, and at the same time destroy the cattle fever ticks. The arsenical dipping solution was used for the reason that cattle ticks are very susceptible to arsenical poisoning. The Bureau of Animal Industry had also perfected a simple and handy pocket arsenical testing outfit for use as a guide in diluting the concentrated arsenical solution to the proper strength required, and every inspector engaged in the work was provided with a testing outfit.

During the early years of tick eradication in Texas, the work was conducted in a rather crude way, without proper laws and regulations which were so greatly needed, and was met with many discouragements rather typical of pioneer stages of development of many other progressive measures. Tick eradication is conducted by county units, and during the early years of tick eradication several counties in the western part of the state were freed from ticks under the supervision and direction of Bureau of Animal Industry inspectors without the aid of state or county inspectors in the field, and county officials at that time were little concerned in local law enforcement. Improvements were made in our Bureau and state cooperative organization adjusted to meet local conditions, and the state law and regulations governing the work was improved from year to year; and with increased appropriations from both federal and state governments, the work progressed, resulting in complete eradication in a number of counties in the western part of the quarantined area in the state. About the year 1912 tick eradication had progressed to the extent that Bureau and state appropriations were not sufficient for employing the necessary number of inspectors required, and a state law was enacted providing local option elections voting for the tick eradication law affecting each county. The law further provided for County Commissioners' Courts appropriating county funds for constructing community dipping vats, purchasing dipping material and for paying the salaries of county inspectors for supervising the inspection and dipping of the cattle in each county affected, until ticks were completely eradicated. The law further provided for the county inspectors working under authority of the Livestock Sanitary Commission. The Bureau of Animal Industry and the Livestock Sanitary Commission of Texas provided one trained and experienced Bureau or state inspector for supervising the work in each county, devoting his entire time to organizing cooperative work between county officials and cattle owners, directing the work of county Inspector and keeping herd records of all cattle in the county. The work was completed in a number of counties in the northwestern part of the original quarantined area under the local option plan, but in the year 1917 public sentiment for tick eradication had reached the stage where our local option law was not satisfactory for several reasons, and the state legislature
TWENTY-SIXTH ANNUAL MEETING

amended the law providing for tick eradication in the remaining quarantined counties by Tick Eradication Zones; Zone One comprising fifty of the remaining quarantined counties in the north and western part of the state effective March 1, 1919; Zone Two comprising thirty-six counties in the central and eastern part of the quarantined area effective 1920, and Zone Three comprising the remaining quarantined area, or fifty-two counties in the southern part of the state, effective 1922. Very good progress was made in Zones One and Two with the exception of several counties in the eastern part of the state where open range, poor financial and other conditions resulted in retarding the work to the extent that even yet a number of the counties have not started systematic tick eradication.

It has been our policy during the past to recommend the release of counties from federal quarantine when tick eradication had been completed to the extent that there were only a few infested and exposed premises and herds in the county, and upon releasing the county from federal quarantine, the infested and exposed premises were placed under special state quarantine, and the work continued on such herds until tick eradication was completed. During the year 1921 an effort was made to complete final tick eradication on the remaining special quarantined herds in released area and take up the work in quarantined counties remaining in Zones One and Two, but at the close of the year 1921, we had approximately seven thousand quarantined herds in the released area and thirty-one counties in Zones One and Two remaining under federal and state quarantine, where the work was either unfinished or no effort made to conduct the work. The thirty-one counties remaining in Zones One and Two and fifty-two counties in Zone Three provided a total of eighty-three counties quarantined for tick eradication in the beginning of the year 1922.

In January this year the Bureau and state forces were reorganized to handle the work in as many of the quarantined counties as county funds and other local conditions would permit, and where satisfactory arrangements were made for conducting the work. The requirements for providing the necessary supervision, and organizing the work over so large an area required the limit of combined efforts of the local Bureau and state forces of trained supervising inspectors. The territory was divided into districts, and provisions made for a district supervising inspector for each district. The district supervising inspectors arranged with the county officials and cattle owners to take up the work, and as such arrangements were made, one Bureau or state supervising inspector was assigned to each county. The district supervising inspectors were selected from the most experienced and successful employees of both forces and the Bureau and state county supervisors were required to have had at least one year's experience and training in systematic tick eradication under the supervision of another experienced employee. Exacting such requirements was quite necessary and afforded the opportunity for avoiding recommendations and applications from local politicians. The duties of the county supervising inspector were numerous, including supervision of locating and constructing the necessary number of dipping vats, arranging with county officials for the purchase of necessary dip, and selecting the necessary number of county inspectors, usually six to twelve in number, depending on the size of the county and number of vats provided; assigning each county inspector a number of dipping vats for his territory, and final arrangements for regular dipping dates at each vat. The county inspector prepared the dip, and the cattle owners in each community cooperated in bringing the cattle to the vat
on regular dipping dates. County inspectors, directed by Bureau or state supervising inspectors, made inspections and supervised the dipping of the cattle and rendered reports to the county supervising inspector, who made card records of the herds and cattle dipped and inspected, and forwarded copies of the reports to the Fort Worth office. The district supervising inspectors made frequent visits to each county in his district, conferring with cattle owners, county officials and inspectors, and assisted in adjusting various problems arising from time to time and rendered reports of his findings and progress in the work to the Fort Worth office. This plan of organization relieved the Fort Worth office of many detail problems, and has proved successful in handling the large volume of work.

The Chairman of the Livestock Sanitary Commission was in active charge of applying state laws, rules and regulations, and was assisted by his chief inspector and a regularly employed attorney, who handled all legal matters connected with tick eradication. The work of directing tick eradication in general was handled by the officials in charge of both state and Bureau forces, cooperating in combining both forces into one as far as possible and avoiding duplication in either office. Our field employees inspection force was composed of fifty Bureau inspectors; fifty-eight state inspectors and nine hundred and twenty county inspectors. During this season seventy-two counties conducted systematic tick eradication, comprising an area of seventy-one thousand, six hundred and one square miles. In addition to this area, final tick eradication was conducted on more than seven thousand special quarantined herds in seventy-three counties in the released area. The following figures of cattle dippings and inspections are results of the campaign during the season from March 1st to October 31st. November figures are not available at this time.

March, 890,856 cattle inspected.
April, 3,864,108 cattle inspected.
May, 6,208,964 cattle inspected.
June, 6,523,344 cattle inspected.
July, 6,783,503 cattle inspected.
August, 7,013,372 cattle inspected.
September, 6,132,743 cattle inspected.
October, 6,125,862 cattle inspected.

Making a total of 43,542,752 cattle dippings or inspections from March 1st to October 31st. The average monthly totals for the six months of May to October inclusive were 6,464,631 dippings or inspections, or 3,232,315 cattle dipped or inspected twice each month for the last six months mentioned.

We find from our records of systematic tick eradication and from practically all of the released counties, that 544,923 gallons of concentrated dip was used in preparing approximately eighty million gallons of dip solution for charging 11,172 vats for the treatment of cattle for tick eradication in Texas this year. We also find from our records that counties spent $1,492,196 for construction of dipping vats, purchase of dipping material and payment of salaries for county inspectors from March 1st to October 31st. Additional expenditures were made in January, February and November, and the work will be continued through the winter as conditions will permit.

In addition to supervising tick eradication, Bureau and State supervising inspectors were required to apply control measures and certify to movements of cattle from seven thousand quarantined premises in released area, and from the premises of all herds in the seventy-two
counties conducting systematic tick eradication and for trailing cattle across the quarantine line between federal quarantined counties and released area, measuring from Texarkana to a point on the Rio Grande west of San Antonio, a distance of approximately eleven hundred miles.

It would be natural to suppose that the regular dipping of such large numbers of cattle would result in a large area in condition for release from quarantine at the close of this season, but unfortunately, there has been more or less failures in tick eradication work on a number of premises in the counties, resulting in a degree of uncertainty at this time for releasing counties, and in order to protect the work accomplished, it will be the policy of officials in charge of the work, in the future to require more complete eradication of ticks before recommending release from quarantine. Following this policy we have no recommendations to offer for releasing counties at the close of this season, although excellent progress has been obtained in a number of counties, and instead of releasing counties this year, we have recommended the requarantine of several counties in the released area, as a necessary control measure for completing final tick eradication. Our work this year was not without varied interferences and difficulties, many of which will likely be eliminated in the future work through corrections in the state law. Our greatest difficulties are experienced on large pastures where it is found impossible to gather all the cattle at regular dippings and in the open range sections in the east and southeastern parts of the state, particularly in those sections where moonshine business is most active, it seems that some of the citizens resort to the diversion of dynamiting dipping vats during night time. Fortunately the state officials obtained the cooperation of the governor of the state, providing the assistance of the famous Texas Ranger Police force in such counties, and in every instance the dynamiting of dipping vats was stopped in short order. The experience of Texas Rangers cooperating in tick eradication work is an interesting and amusing story in itself. Other difficulties were experienced such as severe drouth and floods in different sections at the same time, also lack of law enforcement by county officials.

The Bureau of Economics Office, Houston, Texas issued a report October 16th which gave some very interesting figures on prices of cattle in Texas. The average price of Panhandle Texas cows, $28.00; southeast Texas cows, $20.00; two-year-old Panhandle steers, $39.00; southeast Texas steers, $19.00; a difference of $8.00 per head for cows and $20.00 per head difference for two-year-old steers. The Panhandle section is the extreme northwestern part of the state, never infested with ticks, and southeast Texas infested since the beginning of the cattle industry in the state. The above figures will give some idea of the value of tick eradication in Texas; the increase in value of cows alone in any southeast Texas counties resulting in tick eradication, allowing improvement in breed, would more than compare with the public cost of tick eradication. In southeast Texas cattle have nine to twelve months open pasture season, while in the Panhandle they only have six to eight months open pasture season. (*See note below.)

Reviewing the work of tick eradication in Texas during the past year we are of the opinion that the majority of the leading cattle interests are unanimous in the support of complete eradication of the cattle fever tick, and the progress in the future will be governed largely by necessary improvements made in the state law, to be considered by the near future session of the state legislature, and the allowance of sufficient federal and state appropriations for maintaining our present organization of trained supervising employees in the field.
*The grand champion herd of Hereford show cattle at the Houston, Texas, Fair of November this year, competing with several fine herds from the free area, were raised in Bee County, South Texas, and were dipped 16 times at 14-day intervals during the past season. Many other testimonials are given by cattle owners relative to advantages gained by dipping cattle as compared with undipped tick infested cattle. It is a daily occurrence on the Fort Worth Stockyards to find quarantined or southern cattle to sell for $4 to $10 per head less than the same class of cattle on the other side of the fence in the tick free or native division.

Systematic Counties
Total number in county: 144,252 herds, 3,571,529 cattle.
Number ticky after July 1st: 24,303 herds, 874,977 cattle.
Number free after July 1st: 119,990 herds, 2,693,835 cattle.
Number 2-year-olds: 516,026.
Number gallons dip bought: 498,789.
544,932 gallons of dip purchased in Systematic, Preliminary and Released counties combined.

PRESIDENT MUNCE: I understand that the next subject "Why Florida Stands Alone in Tick Eradication," will be presented by Dr. Knapp, state veterinarian of Florida. (Applause.)

DR. KNAPP: Mr. Chairman and Gentlemen: I think you all agree with me that Dr. Bahnsen was very kind in extending to me the courtesy of addressing you, and I assure you it is a privilege.

The subject given to me to address this meeting was "Why Florida Stands Alone in Tick Eradication." I have been impressed throughout this whole series of meetings here with the unusual interest that has been shown in this subject. That is particularly impressive to me because I view tick eradication as a national issue, that is, it affects the nation, notwithstanding the fact that ticks are prevalent only in those states and in those areas that we show in red on that map representing the United States.

Florida occupies a unique and distinct position with reference to cattle development, the cattle industry, being the first state in the Union in which cattle were brought into the United States. It is today the only entire free range or open range state in the Union—sixty counties and not a county with a staked lot.

I wish to say first with reference to why Florida stands alone in tick eradication; in Florida today we are working in three counties. That does not look like very much work compared with the report you have just heard from Texas, but I started out in Florida in 1915, much like the nigger that was going to get married. He went before the judge with his bride, and the judge said: "Do you want to get married?" He said, "Yes, sah." The Judge said: "All right. Do you love this girl?" "Yes, sah." "Will you cherish her?" "Yes, sah." "Do you take this woman to be your lawful wife?" "Yes, sah, boss." "Will you agree to give this woman all the money that you make every week?" And the old nigger hesitated, and said: "Boss, I believe I have done lost my enthusiasm." (Laughter.)

We started in tick eradication work in Florida in about the year 1915. In various communities they passed resolution after resolution that they would eradicate ticks, and they appropriated some money, and then when it came to work they found that it took some work, it took six days a week, sometimes seven, of physical labor, to eradicate tick, and they said: "We have lost some enthusiasm."

Gentlemen, I have stated before that I believe that tick eradication has a national importance here that should be considered by all of those
persons residing in the North and the West and the East. In Florida we have, as I have said before, an open range state. We have something like 2,000,000 head of range cattle. We do not afford in Florida markets for those 2,000,000 head of cattle. A great many feeders and stockers are necessarily shipped for slaughter and the people in the northern states should be getting those cattle, but on account of the fact that we have cattle ticks in all but four counties in the state, we cannot ship those cattle for purposes other than slaughter. I believe that those of you who are feeding cattle in the North are losing considerable by not being able to get these cattle, even though they are small. We have a surplus of cattle, the ranges are full. There are probably 400,000 head of cattle that should be shipped to northern markets for feeding at the present time.

I believe, gentlemen, that that presents to you a matter of national importance in tick eradication, not only in Florida, but in all of the southern states. To illustrate this point further, we have in Florida, as you notice by the map, four counties in which ticks have been eradicated. This work in those four counties started in 1915. At that time in the entire area, there were about 800 cattle, which were principally dairy cattle. The cattle in that entire area with all of the dairy equipment, farms, barns, and so forth, could have been purchased for less than $100,000.

To illustrate my point further, I will say today that $3,000,000 would not cover the value of all the grade and purebred dairy cattle and property investment in the dairy industry in those three counties today.

Gentlemen, those cattle were not raised in Florida, they came from New York, Wisconsin, Minnesota, Illinois and Iowa. The people there, when they have eradicated the tick, feel the necessity of getting better cattle. They want milk, but they do not want it in a tin can, they want to milk it themselves. In Florida we cannot produce cattle that are profitable in the dairy. We have to come up here to the northern states to get them. If we can clean up that territory, I can assure you that that territory will fill up with dairy cattle, and that is a market for the breeders.

We have one dairy in that section in which a million dollars has been invested. That particular dairy has a record of an average of a little over four gallons per day per cow. That is extremely good in a section of territory that has only been released from tick fever since 1915, and that condition will prevail throughout all of Florida, provided we can get rid of that tick, and I believe, gentlemen, that I may say that tick eradication in that sense is of importance to you, and of importance to all breeders of purebred dairy stock in the states north of us.

Another point: We have, as I said before, in the neighborhood of 2,000,000 range cattle in Florida. Those cattle are descendants of the early imported cattle from Spain and Portugal. They are mixed Jerseys. We call them Pineywoods. When we can clean that area of ticks, the breeders there want to improve their stock. It will offer to the people of the northern states with beef breeds for sale, an opportunity to sell no less than 100,000—that may sound a little large—100,000 head of purebred cattle of various breeds.

There is room for them as soon as we can clean up the tick areas, and I believe, gentlemen, that this will show you that tick eradication has a national importance, it is not confined to a little strip of peninsula down there in Florida, nor to the southeastern states.
Florida being a no-fence country, of course, presents problems in tick eradication that some of the other states do not. We need to be supported there by moral support, financial support, and the support of all associations that are interested in livestock development, and I think that you gentlemen will view this in a big way. You have an opportunity here to serve Florida, and I think Florida has an opportunity here to serve you. As I have said before, we want your cattle, we want the purebred beef sires, and we want your purebred dairy cattle, and as fast as we clean up we will need more of them. We shipped something like 100 carloads of good cattle to Florida this year, and that number went down into our clean area, consisting of only three counties. That will give you an idea of what we will do if we can clean the entire state. I thank you. (Applause.)

PRESIDENT MUNCE: Dr. Cary advises me that Dr. Jackson is not here, so we will pass on to the report of the Committee on Tick Eradication, by Dr. C. A. Cary, Chairman.

REPORT OF THE COMMITTEE ON TICK ERADICATION

The Congressional Budget Committee has recommended a reduction of $160,000.00 in the Tick Eradication Appropriation for the ensuing fiscal year, leaving only $500,000 for federal cooperation of this very important division of the Bureau of Animal Industry. Your Committee deems it desirable to present some essential facts relative to the economic importance of this work. Analysis of the progress of project from July 1, 1906, to December 10th, 1922, follows:

<table>
<thead>
<tr>
<th>Counties quarantined</th>
<th>Counties released</th>
<th>Counties tick-free</th>
<th>Counties one or more infested herds</th>
<th>Counties remaining quarantined</th>
</tr>
</thead>
<tbody>
<tr>
<td>1906</td>
<td>1922</td>
<td>1922</td>
<td>1922</td>
<td>1922</td>
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<tr>
<td>975</td>
<td>715</td>
<td>383</td>
<td>332</td>
<td>260</td>
</tr>
</tbody>
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Tick eradication is a work of national importance. The progress of tick eradication during the past decade in such parts of the southern states as have completed tick eradication has opened a vast and profitable field for northern and western breeders of purebred cattle. As the work progresses, and for many years after it is completed, this market for northern and western breeding cattle will expand. Should the progress of tick eradication be stayed, or even retrograde, then northern and western breeders will be deprived of one of their best markets.

Experience has proven that the South can produce feeder cattle more economically than can the North or West on their high-priced land and handicapped with short grazing seasons. However, experience has also demonstrated that cattle infested with the tick fever organism do not make gains as profitably as cattle free from this infestation. It is therefore, of material interest to northern feeders to assist in hastening the early completion of tick eradication in order that they may purchase a better grade of feeder cattle in the South than formerly.

It will require $500,000 annually to prevent the spread of tick infestation from the area now held in quarantine to the free area and continue the work now in progress, rendering it impossible to embrace new areas. This would be an endless expense, and the quarantine restrictions necessary to hold tick eradication in status-quo, would be a great annoyance and inconvenience and yet highly necessary to the livestock interests of America.

With an appropriation of $660,000 as during 1921-1922, tick eradication can and probably will be completed within five or six years. It is a matter of record that the South, for the past several years, has de-
frayed over three-fourths of the expenses of tick eradication through state and county appropriation, amounting to $2,400,000. The federal government must supply the organization for final inspection of the area freed of tick infestation before such area can be released from federal quarantine. Failure on part of the government to provide for this inspection promptly and efficiently will be an unnecessary expense upon the area engaged in tick eradication and prove a great menace to the cattle industry throughout the released area, including the North and the West.

In view of these facts,

BE IT RESOLVED by the United States Livestock Sanitary Association in annual conference assembled at Chicago, Illinois, this 9th day of December, 1922, that the Secretary of Agriculture be requested to exert his influence to secure from Congress the funds necessary to continue this work at its present ratio until completed; and that the Secretary of the Association be requested to forward a copy of this resolution to each member of the Appropriation Committee of the House and Senate, urging their serious and favorable consideration of this request.

C. A. Cary, Chairman,
Joe H. Bux,
L. J. Allen,
Peter F. Bahnsen,
J. V. Knapp,
W. K. Lewis,
H. M. Grafke,
Committee on Tick Eradication.

DR. CARY: I want to make the statement that the states and counties in the South are spending a little over $4,000,000 in this project, so you see that the United States government is just cooperating in the sense of appropriation.

I move you, Mr. Chairman, that this resolution and report be adopted as read. (Motion duly seconded.)

DR. BAHNSEN: Mr. Chairman, I suggest that instead of adopting it as a report, that it be adopted as a resolution by the Association. It was suggested that the report be adopted.

DR. CARY: This is in resolution form, the final part of it. (Motion put to a vote and carried.)

DR. CARY: This is another resolution that the Committee reports:

Whereas, it was due to the investigation of American scientists that the cattle fever tick (margeropus anulatus) is responsible for splenetic or Texas fever among cattle, and

Whereas, the United States is the only country which has acted on that very important discovery, and has taken steps to eradicate this pest by taking advantage of its life history, and the development, to the effect that the tick must divide its existence between the ground and cattle, and

Whereas, great progress has been made in the eradication of cattle ticks in the United States, and this effort is being closely watched by the government officials and livestock associations of the other countries of Europe, South America and the Orient, and

Whereas, any apparent failure or inability to eradicate the cause of Texas fever among cattle, as is being done in the United States, would have a detrimental effect on the other countries in taking up tick eradication in their respective countries.

Therefore, be it Resolved, That the work of tick eradication in the United States should be adequately supported as provided for by the federal government, in order that it may be referred to as a leader, and as
a distinct asset to the United States livestock industry, it would in this way be brought to the attention of other countries, and would have a beneficial effect in advertising the cattle industry of the United States, and tend to create a market for both purebred and export beef and dairy cattle to other countries; and that the Secretary of this Association be requested to forward a copy of this resolution to the Secretary of Agriculture.

Mr. Chairman, I move the adoption of this resolution reported by the Tick Eradication Committee. (Motion duly seconded and carried.)

PRESIDENT MUNCE: Does that constitute your report, those two resolutions?

DR. CARY: Yes.

DR. RAMSEY: Mr. President and Gentlemen: We have a very great mass of correspondence at Washington, and sometimes we have to resort to these associations to help us out a little bit. I am going to present just a little of our correspondence.

As you know, the federal regulations and the regulations in nearly every state provide that no cattle shall be moved within a state, or moved interstate from a tick-infested area, or from area under quarantine, except in cars placarded, “southern cattle.” Railway transportation agents know that the words “southern cattle” mean, cattle for immediate slaughter. That is the only purpose for which they can go. They must be handled in quarantine areas.

Here is a letter from a gentleman who is editor of a paper, “The Southern Ruralist,” Atlanta, Georgia. Down on the Atlantic Coast we have to lay up pretty close to the press, and we are glad to do it. He takes exception to this plan of placarding cars that are carrying southern cattle as “southern cattle.” We also have a similar letter from an official of the Georgia Central Railroad, Mr. Jackson. These gentlemen take the position in their correspondence, that the words “southern cattle” for slaughter only reflects on all the cattle of the South.

The Bureau has been requested to change this wording of “southern cattle” to “quarantine cattle,” or some other term that will not reflect directly on the South. We are unable to do it, because it is a state regulation of nearly every state, so that action on our part would not relieve the situation any.

Furthermore, the transportation people even down to the newest “brakie” knows what “southern cattle” means.

After considerable correspondence, we decided to bring this question before the United States Livestock Sanitary Association. I would like to have the expression of this Association, so that we may tell these gentlemen just what we can do if the states want to change their regulations.

DR. BUX: Mr. Chairman, I do not believe that any change in the placards should be made. In the first place, the laws in our state, Arkansas, are based on federal regulations. It would disorganize things greatly down there to change it, and I do not believe it does much harm; in fact, gentlemen, I believe it has been a benefit. At this time I would like to present this resolution:

Whereas, the Bureau of Animal Industry, United States Department of Agriculture, has received two requests to change to “quarantined” or “ticky” cattle, the legend “southern cattle” used in placarding cars containing cattle originating in the quarantined area for interstate slaughter. It is claimed that the legend “southern cattle” as now used places a stigma on all cattle produced in the southern states, and

Whereas, such change of legend would involve special legislative
action or changes of livestock sanitary regulations or orders by many states in eliminating the words "southern cattle" as used at present to designate cattle from the area still under quarantine for splenetic, southern or Texas fever.

Therefore, be it Resolved, by the U. S. Livestock Sanitary Association at its twenty-sixth annual meeting, that this change in placarding is inadvisable for the reason that within the past two or three years regulations of nearly every state have been promulgated, which prohibit the movement of tick infested cattle into, within, or through their respective states.

Mr. President, I move the adoption of this resolution. (Motion duly seconded.)

DR. CONNAWAY: Mr. President, as this is presented by one of the livestock sanitary officers of a southern state, I think we should support it. (The motion was put to a vote and carried.)

PRESIDENT MUNCE: Any other problems for discussion on the papers, or practices relative to tick eradication?

DR. BAHNSEN: Mr. President, I was somewhat disappointed when the Committee on Legislation this morning made its report, to find that tick eradication had been entirely overlooked in looking after the legislative interests of the U. S. Livestock Sanitary Association. The work of tick eradication was responsible for the very first start of this Association. This Association grew up as the child, so to speak, of tick eradication, but it has been a question here this last year whether tick eradication has not been completely ignored by the Association. I believe that tick eradication is of just as much importance as tuberculosis control or the control of hog cholera, and I say tuberculosis control advisedly, because, gentlemen, do not fool yourselves; you are not eradicating tuberculosis, and the tendency is to drift back and get away from the very things that are essential, and that we must do if we want to eradicate tuberculosis.

What I am complaining about is that you should spend so much time and so much energy on tuberculosis eradication, and absolutely ignore tick eradication, when as a matter of fact it is absolutely essential for the welfare and the development of the livestock industry in these days, absolutely so.

For that reason I want to make the suggestion that this organization, in order that tick eradication may not be overlooked, appoint a special committee consisting of one representative from each state that is at present cooperating with the federal government in the eradication work. (Applause.) (Motion duly seconded.)

PRESIDENT MUNCE: Are there any remarks on the motion? I might say that taking into consideration the fact that you have a committee now that is functioning to draft an entirely new policy or program for this Association, and that if this question were submitted to them, probably it could be worked out to better advantage than by a special committee.

DR. CARY: Mr. Chairman, the trouble is unless the committee functions within a short time, we will miss the next fiscal year's appropriations, and lose $160,000. This is just a temporary committee, and it can be taken up by your Policy Committee, if you wish, for next year.

PRESIDENT MUNCE: It is for you people to decide the question. I am just simply pointing out that you have this committee. The action of this Association is supreme. (The motion was put to a vote and carried.)

PRESIDENT MUNCE: It is so ordered.
UNITED STATES LIVE STOCK SANITARY ASSOCIATION

Anything further on the tick question? If not, we will take up the next subject. The next subject is the Report of the Committee on Special Skin Diseases, of which Dr. B. F. Davis, of Wyoming, is Chairman. This is a very important subject, and I guess it applies to every section of the country.

DR. B. F. DAVIS: Mr. President and Gentlemen: This report covers in a general way cattle scab, and sheep scab, as it exists in the United States today. In the report submitted by Dr. Miller, of Washington, he gave you a fair idea of cattle scab as it exists today to a greater or less extent in a large number of states.

That part of the report that I have prepared regarding Wyoming is short, and with your permission I will read that.

During the past two years there were inspected in Wyoming 361,533 head of cattle. Of this number 5,633 were classified as infected, 119,292 were classified as exposed. More than 200,000 cattle were dipped under state or federal supervision. 236,608 head of cattle inspected were classified as being free from infection or exposure thereto.

From October 1st to December 31st, 1920, we had 57 head of cattle out of approximately 175,000 to market centers that were classified as infected.

January 1st to December 31st, 1921, we had 58 head of cattle that were found infected out of a total amount in shipments of 185,600 head.

January 1st, 1922, to September 30th, 1922, we had 135,000 cattle on the market, of which 76 were classified as infected. The 76 infected cattle exposed 1,542 cattle. These cattle were handled in 101 stock cars, and it was necessary, therefore, to clean and disinfect 101 stock cars and the stockyards at loading point and the stockyards used in transit. These infected or exposed cattle were either sold for immediate slaughter or dipped under federal supervision before they could leave the stockyards at the market center. These cattle probably averaged 1,000 pounds in weight, and the owner lost from one-half to three-quarters to a cent a pound. In addition to this loss, the owners were required to pay for disinfecting stockyards and stock cars, and I believe it is safe to say that these cattle caused the owners to lose on an average of $10.00 a head, because they were classified as infected and exposed cattle at market centers. The total loss in the shipments above referred to would be more than $17,000.00.

While we have shipped each year a number of cattle to market that have been infected with scab, we have never shipped to points other than market centers any cattle affected with scab, probably for the reason that in those sections of Wyoming where we have some cattle affected with scab 98 per cent of the cattle that move out of the state go direct to market centers. It is only out of the clean sections of Wyoming where cattle are shipped west for immediate slaughter and for feeder cattle.

In the past Wyoming has had only one or two herds affected with sarcoptic mange. This disease has been completely eradicated during the past year. We received one shipment of purebred cattle affected with this disease. When found they were placed under quarantine and owners dipped them every seven days under supervision until the cattle had been dipped seven times. Tobacco and sulphur were used, and the disease was cured.

Each year, Wyoming, in cooperation with the Bureau of Animal Industry, carries on a campaign of inspecting and dipping cattle. In-
fected cattle when found are quarantined and must be dipped under state or federal supervision.

Before the first of August each year all cattle that require dipping are dipped and are eligible to move to market centers without inspection. All other cattle shipped out of the state must be inspected as required by B. A. I. Order 273, Regulation 3.

There are only two recognized dips at this time for the treatment of cattle or sheep affected with scab. I believe it is safe to say that 90 per cent of our infected and exposed herds of cattle are dipped in a nicotine solution, to which sulphur is added. In the handling of sheep affected with, or exposed to, scab the State Board of Sheep Commissioners made a ruling that such sheep can only be dipped in lime and sulphur. There are a few bands of sheep in the western part of Wyoming affected with scab; they are placed in quarantine as fast as found and dipped under supervision.

REPORT OF COMMITTEE ON SKIN DISEASES

Dr. B. F. Davis, Chairman.

A year ago tables submitted with the report of the Committee on Special Skin Diseases summarized the sheep and cattle scabies situation in the United States from November 30th, 1920, to October 31st, 1921. Tables submitted herewith, covering the year ended November 30, 1922, show a considerable increase in sheep scabies and a very great decrease in cattle scabies.

Comparing the present year with the previous one an increase in sheep scab is noted of 484 bands and 288,670 head of sheep. Most of this increase occurred on Indian reservations in New Mexico and Arizona. Except in those states and two or three others where there was little change in the sheep scabies situation, conditions showed a marked improvement.

That progress was made in the campaign against cattle scabies is evidenced by the fact that there was a decrease of 89 infected herds and 103,997 affected animals as compared with the previous year.

A. W. Miller, U. S. B. A. I.

SHEEP SCABIES

<table>
<thead>
<tr>
<th>States</th>
<th>No. Bands</th>
<th>No. Infected</th>
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</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>338</td>
<td>699,152</td>
</tr>
<tr>
<td>Arkansas</td>
<td>2</td>
<td>235</td>
</tr>
<tr>
<td>California</td>
<td>276</td>
<td>391,600</td>
</tr>
<tr>
<td>Colorado</td>
<td>76</td>
<td>55,738</td>
</tr>
<tr>
<td>Idaho</td>
<td>30</td>
<td>53,220</td>
</tr>
<tr>
<td>Illinois</td>
<td>36</td>
<td>5,205</td>
</tr>
<tr>
<td>Indiana</td>
<td>15</td>
<td>1,726</td>
</tr>
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</tr>
<tr>
<td>Kansas</td>
<td>22</td>
<td>10,651</td>
</tr>
<tr>
<td>Kentucky</td>
<td>11</td>
<td>1,213</td>
</tr>
<tr>
<td>Louisiana</td>
<td>1</td>
<td>113</td>
</tr>
<tr>
<td>Michigan</td>
<td>10</td>
<td>1,522</td>
</tr>
<tr>
<td>Minnesota</td>
<td>1</td>
<td>57</td>
</tr>
<tr>
<td>Missouri</td>
<td>52</td>
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</tr>
<tr>
<td>Nebraska</td>
<td>93</td>
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<tr>
<td>Nevada</td>
<td>20</td>
<td>48,356</td>
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<tr>
<td>New Mexico</td>
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<td>467,529</td>
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<tr>
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<td>133,425</td>
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<tr>
<td>Pennsylvania</td>
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<td>120</td>
</tr>
<tr>
<td>South Dakota</td>
<td>8</td>
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<tr>
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<tr>
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<td>892</td>
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</tr>
<tr>
<td>Utah</td>
<td>15</td>
<td>24,160</td>
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<tr>
<td>Wisconsin</td>
<td>5</td>
<td>628</td>
</tr>
<tr>
<td>Wyoming</td>
<td>93</td>
<td>177,227</td>
</tr>
</tbody>
</table>

Total: 2,528 bands affected, 2,702,790 cattle infected.

<table>
<thead>
<tr>
<th>States</th>
<th>No. Herds</th>
<th>No. Infected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona</td>
<td>4</td>
<td>63</td>
</tr>
<tr>
<td>California</td>
<td>5</td>
<td>188</td>
</tr>
<tr>
<td>Colorado</td>
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</tr>
<tr>
<td>Illinois</td>
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<td>Indiana</td>
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<td>384</td>
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<tr>
<td>Iowa</td>
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<td>792</td>
</tr>
<tr>
<td>Kansas</td>
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<td>5,482</td>
</tr>
<tr>
<td>Missouri</td>
<td>4</td>
<td>168</td>
</tr>
<tr>
<td>Montana</td>
<td>75</td>
<td>30,890</td>
</tr>
<tr>
<td>Nebraska</td>
<td>356</td>
<td>39,809</td>
</tr>
<tr>
<td>Nevada</td>
<td>12</td>
<td>438</td>
</tr>
<tr>
<td>New Mexico</td>
<td>135</td>
<td>32,850</td>
</tr>
<tr>
<td>Oklahoma</td>
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<td>4,119</td>
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<tr>
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<td>22,952</td>
</tr>
<tr>
<td>Texas</td>
<td>197</td>
<td>41,325</td>
</tr>
<tr>
<td>Utah</td>
<td>34</td>
<td>1,478</td>
</tr>
<tr>
<td>Wyoming</td>
<td>70</td>
<td>27,481</td>
</tr>
</tbody>
</table>

Total: 1,193 herds affected, 233,012 cattle infected.

DR. DAVIS: I move the adoption of this report. (Motion duly seconded and carried.)

PRESIDENT MUNCE: Are there any other questions in reference to skin diseases? I think the position taken by Dr. Bahnsen was well taken, for many of us try to get away from the importance of the tick problem, and special skin diseases— mange, scab, and so forth, because it does not happen to be our real problem in certain states. We all know that men in the South, heart and soul, are in this work of eradicating ticks. The problem in the West, as has been pointed out here many times, is scab. They may not have so much tuberculosis as some other states, but nevertheless, that is their problem, and their heart and soul is in the work. I think we should all be big enough and broad enough to help them solve their problems. While we do not in Pennsylvania have ticks, although we did have two cases this year by accident, yet I feel that if I needed assistance in some of our problems, that I could go out through the South, they would be only too glad to help me. This question of scab eradication is a big one, and I think it should not be passed over here, simply with the presentation of this Committee's report. Dr. Crewe, have you anything to say?

DR. CREWE: I have nothing to say, Mr. President.

PRESIDENT MUNCE: Dr. Butler.
DR. W. J. BUTLER: Mr. President, this is a most important question. I know that if sheep scab were introduced into Montana, that the least figure you could estimate as to loss would be from two to five hundred thousand dollars. That is what it would cost to eradicate sheep scab, so it is a problem. I hope that this organization will never become sectional, that it will always retain its national work, and that it will give as much attention to the problems of the South and to the problems of the West, as it does to the problems of the Middle West, and of the East.

PRESIDENT MUNCE: Dr. Miller, have you anything to add?

DR. MILLER: Mr. President, I have a report that I would be glad to have go into the proceedings of this Association. The prevalence of sheep and cattle scab throughout the United States is one that I have presented before the Association in other years, but I do not care to repeat anything that I have said before. If it has not got in already, I do not believe that there is any hope. (Applause.)

DR. FITCH: There is one phase of the question that I think the people in states that are not very familiar with this problem should thoroughly understand, and that is the question of diagnosis. There has been sent to our laboratory during the past year specimens from cattle—one of them, I remember, in one of the best dairy herds of the state—where we have determined the presence of sarcoptic mange. This has also been found in other herds in the State of Minnesota. The diagnosis is not easy unless a microscopic examination is made in cases where you really have any suspicion of the disease. Many times it passes unnoticed if a proper examination is not made to determine the real etiology.

DR. ELIASON: Mr. President, we have quite a number of sheep-feeders in the State of Wisconsin, and one of the problems which confronts them is keeping scab out of these feed lots. They are principally canning companies who buy these large herds for feeding up the refuse from the canning factories, and we have had considerable trouble, and extensive losses have been sustained through scabies, and therefore, we would appreciate, of course, everything that could be done to help us out.

MR. MERCER: Mr. President, this discussion is very interesting to me. We have some mange out in Kansas. I want to say to our southern friends that we are not afraid of mange out in that country like we are of Texas fever, and while it is a pest, troublesome and expensive to get rid of, yet it very seldom kills. We are heartily in accord with what has been said here this afternoon with reference to keeping up the work in the southern territory, as we call it. If there is anything that our people can do out that way to help the southern people secure their appropriations from Congress, we will be mighty glad to give them our support.

MR. SCOTT: Mr. President, we are down on the Rio Grande, with a Republic south of us that has no sanitary regulations. We have 500 miles of the river here, where they can cross it almost anywhere they want, and they all kinds of scab down there. They have Malta fever in goats; they have all sorts of conditions that might eventually affect the health of all animals in the United States.

I was down in Mexico City last year and found some cattle there from Holland. You all know that we have not allowed cattle into the United States from Holland, on account of foot-and-mouth disease, for I do not know how long. I had a veterinarian with me, and we looked up the papers of these cattle that had been recently imported from Holland, and found that it was quite common to bring them in without any restrictions.

To protect us, and to protect the rest of the United States from these ticks and scab, and all these diseases they have down there, we have
been suggesting that we hold a small strip of this country under quarantine, so that we could look after the crossings. That is what we are having trouble with in the tick eradication work. If we were to get any outbreak of foot-and-mouth disease, brought in from Mexico, you people would all wake up.

I wish we could get some pressure brought to bear on Congress to help us as they did in California, to put a fence somewhere back in Texas, so that we could hold these fellows back and control the situation.

There are a number of phases of this question. We have down there what we call "wet" Mexicans—Mexicans that want to avoid coming through the regular channels and swim the river. We find hundreds of burros loaded with tequila coming over the border, and those burros carry ticks, and carry everything else that you can think of.

We would like to get some help down there, because you are all interested in it. We want some help from you people to protect that border line that we have there, so as to help to protect the rest of the United States.

MR. SCOTT: I would like to offer a resolution, Mr. President, that we ask Congress to provide sufficient funds to fence at least 500 miles of that territory. The rest of the territory is rough, and only a few pathways, and they cannot cross the river.

DR. BAHNSEN: May I offer this suggestion, that we preface this resolution with a preamble, showing why we want Congress to do this, and I would suggest that we include in this preamble the statement made by Mr. Scott, who is Chairman of the Livestock Sanitary Board of Education, that he had personally observed some foot-and-mouth disease, introduced into Mexico, and that there are no barriers to prevent the introduction of cattle from Mexico into Texas; therefore, it is Resolved by this Association, that Congress provide for the construction of a 500-mile fence as a guarantee against the introduction of foot-and-mouth and other contagious infectious diseases from Mexico.

DR. MILLER: Mr. Chairman, I think we are on a live subject here, but I am afraid there will be something get out into the country that will make people think that there is foot-and-mouth disease in Mexico. I think this would be very unfortunate indeed to have the impression go out that foot-and-mouth disease was observed in Texas. I think it would be a dangerous proposition. I do not want to talk beyond my time.

DR. COTTON: Mr. President, I move Dr. Miller be given 5 or 20 minutes.

DR. MILLER: Mr. Chairman, I presume as you know, the division that I have charge of in Washington is the controlling department; has control of the importation into this country of livestock. For some time we have been receiving rumors that foot-and-mouth disease existed in Old Mexico; that cattle were being imported into that country from Argentina and other South American countries where diseases prevail. Now, we have used every resource at the command of our government—I do not mean at the command of the Agricultural Department, but at the command of the State Department—to run down these reports. We are convinced that there has been no importation of cattle from Argentina, Uruguay or Brazil into Old Mexico in recent years. There have been a number of importations into that country from Columbia. It has been the practice for a number of years to bring most of the slaughter cattle into the Panama Canal Zone from Columbia, and a number of our veterinarians—I say "our," I mean Americans—have been in Columbia, investigating the disease situation in that country, and they have never found any trace of foot-and-mouth disease, and we are reasonably sure that it
does not exist in Columbia. There have been some shipments of cattle from Central America, Costa Rica, principally, into Old Mexico. We are reasonably sure that foot-and-mouth disease does not exist in Costa Rica. There was one importation of cattle from Holland. We have no reason to believe that those cattle had foot-and-mouth-disease, in fact, the contrary.

MR. SCOTT: They did not have at the time we saw them. I had a veterinarian with me.

DR. MILLER: It is our thought, and I was nearly convinced that there is no foot-and-mouth disease in Old Mexico, and I understand at the present time they have no hog cholera. I do not know of any good reason why cattle could not come in from Columbia, but I do not feel that we should let the impression get out that will convey a false idea. I do not think it is fair to the Mexican Government to do that.

PRESIDENT MUNCE: That completes the papers and the discussion.

DR. MAYO: Mr. President, I ask your permission to make a plea for the Veterinary Reserve Corps of the United States Army. You know that Congress has reduced, in accordance with the policy of this country, the army of the United States to a minimum; and in order to provide the necessary means for an emergency, they have provided for a reserve corps of officers. You probably do not know that the percentage of reserve officers in the Veterinary Reserve Corps is less than that of any other branch of the army. You as livestock sanitarians, executives, and having control of transmissible animal diseases, are the men that the army wants in the officers' reserve corps of the United States, because you are best qualified to handle the problems that will be encountered in case of a national emergency.

I want to say to you that you will only be called out—your services will only be called for in case of a national emergency, but they want you commissioned in the reserve corps of the United States army, where they can classify you and arrange to place your abilities where they can be utilized to the greatest advantage in the case of a national emergency, which may be the keeping of transmissible animal diseases out of the United States, certainly keeping transmissible diseases from being spread among the horses of our army; and I ask you, I appeal to you not only as citizens, but as veterinarians, to join the Reserve Corps of the United States Army, and make your services available to your country in time of emergency. If any of you here will send in applications, or would like applications, I shall be very glad to take your name; and those of you who are out among the veterinarians of the country, I hope you will call attention to the importance of their being commissioned into the Reserve Corps. If there comes a great national emergency, they will have to go anyhow, and if they go in now they will get increased rank, they will be classified and know exactly where they are to go, in what unit their duties will be in case of an emergency, and I sincerely hope you will each do your best for the future of this national necessity. (Applause.)

PRESIDENT MUNCE: We will now go into business session, according to the By-laws. I think it would be well first to call on a few committees, who may have something additional to report. The Executive Committee, which is composed of the elective officers. Dr. Butler ranks as First Vice-President, I believe.

DR. BUTLER: I am very sorry there was nothing that was called to our attention on this particular subject. I think there is a mistake in the program. I do not happen to be the First Vice-President.

PRESIDENT MUNCE: Has the Resolutions Committee any further report to make? The Grievance Committee?
DR. FERNEYHOUGH: Mr. President, you have kind of got me where I do not know what to say. I have nothing in the world in the way of a grievance.

PRESIDENT MUNCE: The Advisory Committee—Dr. Crewe, Chairman.

DR. CREWE: Mr. President, as there has been nothing submitted to your Advisory Committee, we have nothing to report.

PRESIDENT MUNCE: The next is new business. Any new business? If not, we will pass to the election of officers.

DR. BUTLER: Our Policy Committee might come under new business, I believe, and I would like to make a report on that.

PRESIDENT MUNCE: Yes.

DR. BUTLER: Your President appointed a Policy Committee, made up of Dr. Welch, Dr. Jacob, Dr. Mohler, Dr. Edgington and myself.

I trust you all realize that it was pretty hard work for this Committee to get together. We have had to attend meetings on other committees. There was a meeting of this Committee called, the members who were able to attend talked over the problem. They realized that it would be unfair to you, it would be unfair to the organization for five men in the short period of time that we could work on this, to submit to you a comprehensive report on policy. We have a great many ideas, and it will be necessary to take up all these ideas, and boil them down, so that the report will be short and snappy—one that you can remember, one that we can carry out. We deem it best to report to you, Mr. President, the advisability of this Committee, or a similar committee, continuing and reporting at the next meeting, and during the interim have each member of the Committee take up one subject and boil it down, call upon different members for their advice, so that at the next meeting you may have a good report.

We would therefore recommend to you that this Committee or a similar committee be appointed and continued, and that they report at the next meeting, and that that report be submitted the first day, so that the members of the Association can carry and have in mind the recommendations of the Committee, and then the report be acted upon at the business session on the third day of the meeting. I make that as a motion, Mr. President. (Motion duly seconded and carried.)

PRESIDENT MUNCE: The officers to be elected are: President; five Vice-Presidents, and a Secretary-Treasurer. I believe according to the By-laws, those entitled to receive nominations for these offices and to vote therefor, are members in good standing. I believe there is some restriction on the nominating speeches. If there is no objection, we will proceed now to receive nominations for President.

DR. CREWE: Mr. President, I always feel that it is not only a pleasure but a privilege to say a good word for a friend. I have in mind a friend who, while a comparatively young man in years, has really been one of the pioneers in his activities in the enforcement of our modern livestock sanitary control work. He represents a state that has been one of the most progressive, and in the tuberculosis campaign has been one of the earliest states to take this work up along systematic lines, and to establish a law requiring the tuberculin test of all dairy cattle within the borders of his state, which was adopted very largely through his efforts. He has been responsible for securing recognition for the intradermal test largely through his own personal efforts, and has secured the erection, establishment and equipment of a modern laboratory devoted exclusively to research work on animal tests. He has been active and progressive in taking part in the deliberations of this body.
Therefore, Mr. President, it gives me pleasure to place before this body the name of W. J. Butler, of Montana for consideration. (Applause.)

DR. FITCH: Mr. Chairman, it gives me great pleasure to rise to second the nomination of Dr. Butler. It is not necessary, in view of what Dr. Crewe has just stated, to state anything in regard to the qualifications of Dr. Butler for the office of President of this organization. There is, however, just one phase of the situation that I would like to amplify just a bit.

This Association at the present time is passing through a rather critical point in its history. It is necessary that the administrative officers of this Association carry on a somewhat definite and continued policy. Dr. Butler, as has been pointed out, has been a member of this Association for years, has been a constant attendant at its meetings, has been in touch with the affairs with which this Association is most actively concerned, and in seconding the nomination, I wish to particularly call the attention of the membership to this phase in Dr. Butler's career.

DR. FERNEYHOUGH: Mr. President, it is hard to add anything to what those two fellows have said, but it gives me great pleasure, not only to second the nomination of Dr. Butler, but I move that the nominations be closed, and that the Secretary be instructed to cast the ballot of the Association for Dr. Butler, of Montana. (Motion duly seconded and carried, and the Secretary cast the ballot of the Association for Dr. Butler for President for the ensuing year.)

PRESIDENT MUNCE: The next is the election of five Vice-presidents. I will receive nominations for those offices.

DR. JACOB: Mr. President, I wish to place in nomination the name of a man who has never been very much honored by this Association except in being permitted to take part in the program. I understand that he still has a deep interest in tick eradication, and would therefore be a good representative for the South. I have reference to Dr. Ferneyhough, whom I now nominate for Vice-President. (The following further nominations were made: Mr. Mercer, of Kansas; Dr. Miller, of Washington; Mr. Davis, Wyoming; and Dr. Lewis, of South Carolina.)

DR. BUX: Mr. President, I move that the nominations be closed, and that the Secretary be instructed to cast the ballot of the Association for all the gentlemen named. (Motion duly seconded and carried.)

SECRETARY DYSON: The Secretary, following the instructions, casts the ballot for the five gentlemen named.

PRESIDENT MUNCE: Nominations for Secretary-Treasurer.

MR. MERCER: Mr. President, it is the usual custom of all organizations of this kind to reward faithful officers in some way. It seems to me that we could not give any better recognition to the very splendid services of our present Secretary-Treasurer than to renominate him, and elect him Secretary for the ensuing year. I do not know just whether or not it will inconvenience Dr. Dyson to keep up this work, but I do feel it is our duty to give him that recognition. He took this organization, as you know, gentlemen, a year ago, and has kept it going and the members of this Association surely owe him a debt of gratitude for his splendid service.

Therefore, I take great pleasure in placing the name of Dr. Dyson before this Convention for renomination as Secretary-Treasurer for the ensuing year. (Applause.) (Nomination duly seconded and carried.)

PRESIDENT MUNCE: Are there any other nominations?

MR. MERCER: Mr. Chairman, if there are no other nominations, I move that the rules be suspended, and that the President declare Dr.
Dyson elected Secretary-Treasurer for the ensuing year. (Motion duly seconded and carried.)

PRESIDENT MUNCE: Dr. Dyson, you are elected Secretary-Treasurer for the ensuing year unanimously. (Applause.) I believe that completes the program.

DR. FERNEYHOUGH: Mr. President, I wish to make a motion that this Association give a rising vote of thanks to its retiring President. I have never seen a man devote more careful attention to a meeting, and I am sure we all feel that way, and I move that we give him a rising vote of thanks. (Motion duly seconded and carried by a rising vote, amid applause.)

PRESIDENT MUNCE: Gentlemen, in turning this meeting over to my distinguished successor, I just want to say that while it has been an honor, it has also been a great pleasure and a great privilege to have had the opportunity to serve as your President during the past year. I have felt throughout the year that at all times, every minute of the time, I had your unqualified support, and it was certainly a great encouragement. I have not done anything, although many nice things have been said and expressions given—I have not done anything that you would not have done had you been in my place. It is a mighty poor sort of a fellow who does not aspire to do his best, to take hold of a proposition, be it small or great, to be able to turn over to his successor a better proposition, and to become a better man. As I turn this position over to my successor, I shall return to the ranks, and resume the place which I occupied before, performing my duty and responsibilities there as best I can, and with you help to support his administration, so that he may, a year from now, be able to say what I have tried to say. So it gives me great pleasure now to turn the meeting of the Association over to my distinguished successor, Dr. Butler. I shall ask Dr. Crewe and Dr. Miller to escort him to the Chair. (Dr. Crewe and Dr. Miller escorted President Butler to the Chair.)

PRESIDENT BUTLER: Gentlemen, you know it is a long, long time since I heard anyone say such nice things about me as Dr. Crewe said, and I appreciate it very much. I only wish that everything which he said was just absolutely true. As Dr. Miller and Dr. Crewe took hold of my arm just now, it gave me a little thrill. I had a thrill something like that, only ten times worse, three or four months ago. I had to go up into Canada, and I was something like these "wet" Mexicans that our friend Bogg-Scott talked about. I was not coming through the general channels of trade, I was coming over the mountains, and as I came over a little decline, two fellows stepped out and they took hold of me, something like that. (Indicating) Very fortunately they were friends of mine afterwards, and so I am with you today. At the time I thought I probably would not be with you.

It does make a fellow feel funny when a friend says something nice about him. If it is somebody that is not your friend, somebody that you differ with a little, and he starts "cussing" you out, telling you what he really thinks about you, you can talk back; but when a friend says something nice about you, it just takes all of the pep out of you, and you just become a little kid again. You know, when you were a kid, probably the simplest little toy that you had appealed to you more than anything in all the world, more than all the money and everything else, that particular toy, that particular present. When you grow a little older, it is the honors your friends confer upon you that are monumental. I can assure you that being President of this Association is as great an honor as can be conferred upon me. I am a veterinarian, and to be honored by my co-
workers with this appreciation is the greatest honor that I have ever had conferred upon me, and I appreciate it deeply.

I would appreciate it very much if Dr. Ferneyhough would cheer us up a little bit again with a good story.

(Dr. Ferneyhough here told a story.)

PRESIDENT BUTLER: Gentlemen, just before we adjourn, I want to call your attention to the gentleman to our left. You know this morning we passed a resolution, providing for a two-dollar assessment to repay Dr. Dyson for the personal funds that he had expended. The Association is ready now to collect the assessment, from any of the members who wish to pay it at this particular time.

Are there any questions, or is there any business to come before the Association before we adjourn?

On motion, duly seconded and carried, the Twenty-Sixth Annual Meeting of the United States Livestock Sanitary Association adjourned sine die.