

STATE OF NEW JERSEY

Forty-First Annual Report

OF THE

State Board of Agriculture

1914

Printed by Order of the Legislature

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State Board of Agriculture.

OFFICERS AND EXECUTIVE COMMITTEE FOR 1914.

PRESIDENT.

JOS. S. FRELINGHUYSEN,.....Somerville, N. J.

VICE-PRESIDENT.

JOHN T. COX,.....Three Bridges, N. J.

SECRETARY.

FRANKLIN DYE,.....Trenton, N. J.

TREASURER.

J. HARVEY DARNELL,.....Masonville, N. J.

A. J. RIDER,.....Hammonton, N. J.

GEORGE E. DeCAMP,Roseland, N. J.

THEODORE BROWN,.....Swedesboro, N. J.

STATE CHEMIST.

CHAS. S. CATHCART,.....New Brunswick, N. J.

BOARD OF DIRECTORS.

New Jersey State Board of Agriculture

CLASS A.

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HON. D. D. DENISE	Freehold, N. J.	} Board of Visitors, Agricultural } College.
HON. E. T. GILL	Haddonfield, N. J.	
DR. J. G. LIPMAN	New Brunswick, N. J.	Prof. of Agriculture.

CLASS B.

GEO. W. F. GAUNT	Mullica Hill, N. J.	Master of State Grange, P. of H.
JOHN T. COX	Three Bridges, N. J.	Sec'ty of State Grange. P. of H.

CLASS C.

BENJ. BARRETT	Blue Anchor	State Horticultural Society.
FRANK A. THORNLEY	Paterson, R. D. 3	Bergen County Pomona Grange.
EDWARD MARGERUM	Pemberton	Burlington County Pomona Grange.
MARTIN SCHUBERT	Laurel Springs	Camden & Atlantic Pomona Grange.
JOSEPH CAMP	Pierces	Cape May County Pomona Grange.
N. E. DIAMENT	Cedarville	Cumberland County Pomona Grange.
E. OSCAR DeCAMP	Roseland	Central District Pomona Grange.
CLARENCE HERITAGE	Mickleton	Gloucester County Pomona Grange.
W. W. FOSTER	Three Bridges	Hunterdon County Pomona Grange.
J. T. ALLINSON	Yardville	Mercer County Pomona Grange.
A. G. VAN NEST	Neshanic Sta., R. D. 2	Middlesex & Somerset Pomona Gr'ge.
J. L. PITTINGER	Freehold R. D. 2	Monmouth County Pomona Grange.
WM. R. HACKETT	Quinton	Salem County Pomona Grange.
FRANK STOLL	Layton	Sussex County Pomona Grange.
JOHN H. ALBERTSON	Delaware	Warren County Pomona Grange.

BOARD OF DIRECTORS.

<i>Name.</i>	<i>Address.</i>	<i>Term.</i>	<i>County.</i>
J. L. PURSNER	Egg Harbor City, R. D. 1	2 years	Atlantic.
CARL SCHIRMER	Egg Harbor City, R. F. D.	1 year	Atlantic.
A. I. ACKERMAN	Fair Lawn	2 years	Bergen.
ARTHUR LOZIER	Ridgewood	1 year	Bergen
JOHN B. EVANS	Birmingham	2 years	Burlington.
FRED. LIPPINCOTT	Moorestown	1 year	Burlington.

BOARD OF DIRECTORS.

N. F. OTTIGER.	Berlin	2 years	Camden.
EDWARD GARWOOD	Ashland	1 year	Camden.
RALPH SCHELLINGER	Green Creek	2 years	Cape May.
R. D. MALTBY	Woodbine	1 year	Cape May.
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ALLEN D. ACKLEY	Deerfield	1 year	Cumberland.
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JOS. H. M. COOK	Essex Fells	1 year	Essex.
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CLAYTON D. KIRBY	Mullica Hill	1 year	Gloucester.
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GEO. D. BUSHFIELD	Stanton	1 year	Hunterdon.
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CHAS. E. RUE	Windsor	1 year	Mercer.
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WM. B. KURTZ	Bound Brook	1 year	Middlesex.
D. H. JONES	Freehold	2 years	Monmouth.
CHAS. C. BASLEY	Farmingdale	1 year	Monmouth.
WM. E. SPARGO	Dover	2 years	Morris.
S. E. YOUNG	Rockaway	1 year	Morris.
R. C. GRAHAM	Holmeson	2 years	Ocean.
JOHN W. JAMISON	Cassville	1 year	Ocean.
C. FRED DAY	Paterson, R. F. D. 1	2 years	Passaic.
GEORGE W. WINTERS	Paterson, R. F. D. 1	1 year	Passaic.
LOUIS EDWARDS	Woodstown	2 years	Salem.
CLIFFORD CRISPIN	Salem	1 year	Salem.
JACOB D. QUICK	South Branch	2 years	Somerset.
LUTHER MARTIN	Somerville, R. F. D.	1 year	Somerset.
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HART S. VAN FLEET	Roselle Park	1 year	Union.
A. RUSSELL PAUL	Belvidere	2 years	Warren.
JAMES I. COOKE	Delaware, R. F. D. 2	1 year	Warren.

OTHER ASSOCIATIONS.

EZRA EVANS	Marlton	American Cranberry Growers' Association.
J. D. HOLMAN	Whitesville	American Cranberry Growers' Association.
E. G. CARR	New Egypt	N. J. Bee Keepers' Association.
DR. WM. H. LOWE	Paterson	Veterinary Medical Association of N. J.
	117 Trenton Ave.	
DR. G. F. HARKER	Trenton	Veterinary Medical Association of N. J.
RUFUS DELAFIELD	Plainfield	N. J. League of Poultry Raisers.
WM. B. MCL. PARKER	Princeton	Princeton Agricultural Club.
A. L. McLEAN	Princeton	Princeton Agricultural Club.
J. C. ERRICKSON		Mercer County Farm Bureau.
A. A. CORTEYOU	Somerville	N. J. Holstein-Friesi Association.
LOUIS H. SCHENCK	Somerville	N. J. Holstein-Friesi Association.
ROBT. T. EVANS		Mt. Laurel Farmers' Club.

PROCEEDINGS
OF THE
FORTY-FIRST ANNUAL MEETING
OF THE
NEW JERSEY STATE BOARD OF AGRICULTURE
HELD AT THE
STATE HOUSE, TRENTON, NEW JERSEY
Thursday and Friday, January 29th
and 30th, 1914.

THE NEW JERSEY BOARD OF AGRICULTURE

Forty-First Annual Meeting

The forty-first annual meeting of the State Board of Agriculture was called to order by Vice-President Cox.

The session was opened with prayer by the Rev. Dr. Parry of the First Methodist Church of Trenton.

Vice-President Cox—The next matter will be the calling of the list of delegates. All delegates will please respond as their names are called.

The roll was then called and the following delegates shown to be present:

SEE LIST OF DELEGATES—

ORDER OF BUSINESS

JANUARY 29TH, 1914, THURSDAY.

First Session.

10:00 A. M.—12:30 P. M.

Prayer.

Calling List of Delegates. All delegates are requested to be present at the opening session on time.

Presenting Order of Business.

Minutes of Last Meeting.

Announcing Committees Appointed:

On Credentials.

On Resolutions.

On Treasurer's Accounts and any other Committees.

STATE BOARD OF AGRICULTURE.

Reading of Executive Committee's Report.
Report of Treasurer, Prof. A. J. Rider.
Report of Committee on Transportation and Freight Rates.

11:00 A. M.

Report on State Grange Work, Hon. G. W. F. Gaunt, W. M.
Report of Secretary of State Board, Franklin Dye.

11:30 A. M.

Swine Production and Swine Feeding. Prof. F. C. Minkler,
Second Sessions.

2:00-5:00 P. M.

Second Call of List of Delegates.

Call of the counties for representative of committee on nomination of officers
for ensuing year. Each county is entitled by custom to one member of
this committee.

New Jersey Chamber of Commerce. Howard R. Heydon.

2:15 P. M.

Annual Address of President of State Board of Agriculture. Hon. Jos. S.
Frelinghuysen.

2:45 P. M.

"Effect of Present Automobile Legislation. Future Requirements" Hon.
Job Lippincott, Commissioner.

3:45 P. M.

Five-minute reports by the Delegates to the State Board as to the progress
and needs of Agriculture in the several counties. Counties will be called
in alphabetical order.

4:45 P. M.

Report of Committee on the Potato Quarantine, appointed to visit Washington
at the December meeting of this Board. Prof. Mel. T. Cook.
Discussion and further action.

Third Session

8:00 P. M.

"From the Great Lakes to Puget Sound." ROBERT C. WEYH, New York
City. This address was delivered in the Auditorium of the State Nor-
mal School.

JANUARY 30TH, 1914, FRIDAY.

Fourth Session.

9:30 A. M.-12:30 P. M.

Prayer.

Report of Credentials Committee.

Unfinished Business.

New Business.

Resolutions.

10:30 A. M.

"Some Needs of the Public School System of New Jersey." DR. CALVIN N.
KENDALL, Commissioner.

11:30 A. M.

"Economical Dairy Feeding," PROF. HARRY HAYWARD, Dean and Director
Delaware College and Agricultural Experiment Station.

REPORT OF EXECUTIVE COMMITTEE.

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Fifth Session.

2:00-5:00 P. M.

"Breeding and Rearing Dairy Animals for Health and Profit," DR. JOHN C. SHARPE, Prop. Meadowbrook Farm, Blairstown, N. J.

3:00 P. M.

"Present Status of Road Improvement by State Aid in New Jersey. Requirements," COL. E. A. STEVENS, State Road Commissioner.

4:00 P. M.

Report of Commission on Tuberculosis in Animals.

4:30 P. M.

Illustrated Stereopticon Lecture on "Farm Drainage," PROF. E. O. FIPPIN, Dept. of Soil Technology, Cornell University, Ithaca, N. Y.

NOTE.—The room will be darkened in order to bring out the views.

5:00 P. M.

Closing the 41st Annual Meeting.

On motion, the reading of the minutes of the last meeting was dispensed with.

Vice-President Cox—On behalf of the Executive Committee I will announce at this time the following committees:

Committee on Treasurer's Accounts—George E. DeCamp, Essex; Theodore Brown, Gloucester; George B. Randolph, Somerset.

Committee on Credentials—Benjamin Barrett, Camden; Charles E. Rue, Mercer; J. H. M. Cook, Essex.

Committee on Resolutions—J. T. Allinson, Mercer; H. E. Deats, Hunterdon; C. C. Basley, Monmouth.

If there is no objection they will be the standing committees of this State Board.

Vice-President Cox—The next matter in order is the reading of the Report of the Executive Committee by the Secretary.

Report of Executive Committee.

Vice-President Cox thereupon read the report for Secretary Dye, as follows:

CONDENSED REPORT OF EXECUTIVE COMMITTEE.

Your Committee has held fifteen meetings during the year now closed, at which they have endeavored to co-operate with

the State and the farmers in all reasonable ways to advance the interests of agriculture. By co-operation with the State Entomologist in the control and extermination of insect pests and to prevent the introduction from other states and foreign countries of other pests of this character: With the Plant Pathologist in overcoming the many diseases that assail so many farm crops including fruit and fruit trees: In aiding the general lecture work at Farmers' Institutes and other assemblies of farmers: In co-operating with the State Horticultural Society to increase interest in the agricultural and horticultural industries, and in co-operation with the Governor and the Legislature in such measures as may tend to the improvement of the business of agriculture and the efficiency of its management.

The proceedings of the Executive Committee in full are on file in office of the Secretary.

On motion, the report was accepted and ordered made a part of our record.

Vice-President Cox—The next matter in order is the report of the Treasurer, Prof. Rider.

Prof. Rider then read the Treasurer's report, as follows:

Treasurers Report.

To the President and Members of the New Jersey State Board of Agriculture:

Gentlemen—Your Treasurer begs to submit the following report for the year ending October, 1913:

Cash received from State Treasurer,	\$11,004 58
Cash disbursed as follows:	
For acct. Farmers Institutes and Farm Week,	4,917 70
For acct delegates' expenses to Atlanta,	357 64
For acct. office expenses,	149 33
For acct. State Entomologist and assistants,	1,817 42
For acct. State Plant Pathologist and assistants,	542 28
For acct. delegates' expenses at annual meeting,	541 19
For acct. lecturers at annual meeting,	2,577 52
For acct. expenses of Executive Committee,	101 50
Total disbursements,	\$11,004 58

Respectfully submitted,

A. J. RIDER, Treasurer.

REPORT OF TRANSPORTATION COMMITTEE. 13

Vice-President Cox—The report will be referred to the Committee on Treasurer's Accounts.

Vice-President Cox—Next in order is the report of the Committee on Transportation and Freight Rates appointed at the last meeting of the State Board. Is Mr. Collins ready with that report?

Mr. Collins then read the report of the Committee, as follows:

Report of Transportation Committee.

MR. PRESIDENT AND GENTLEMEN OF THE STATE BOARD OF AGRICULTURE—There has been a steady improvement in matters appertaining to transportation during the year just passed. The methods of the transportation companies have been the subject of investigations by both national and State authorities, and the result has been an improvement in both rates and transportation. Under the rulings of the Interstate Commerce Commission, long hauls between the States have been simplified very much and the shipper relieved of considerable responsibility. The most direct route order has been of considerable benefit and saving to shippers. In our State the work of the Public Utilities Commissioners has done considerable toward equalizing tariffs and making them more uniform.

In a few days, on February 1, an order of the Interstate Commerce Commission will go into effect that practically reorganizes the express business of the country. When issued, the order was to go into effect on October 15, 1913, but on petition of the express companies, extensions of time have been granted until February 1. This order makes sweeping reductions in the tariff on many **classes of express matter for short hauls, and equalizes the rate for long hauls.** The rates in general are but a trifle greater than those of the parcels post. Under this system the entire country is laid off into blocks and sub-blocks numbered and lettered, and by consulting the order which is on file at every express office in the country, it is possible to ascertain the rate on any express classification between any two express offices. In shipping express matter it is of the utmost importance to know that the destination is a regularly listed express office of one of the transportation companies. When a package is shipped directed to a point at which a regular express agent is not maintained, the shipment is carried to the point nearest the destination where an agent is maintained, and from that office the consignee is notified of the arrival of the shipment by mail and must accept the shipment at that point.

A new form of express receipt goes into effect with the new rates, in accordance with which the company is not responsible for more than fifty dollars in case of loss, or fifty cents per pound on shipments in excess of 100 pounds unless a greater value is declared and a greater transportation rate paid. Claims for loss, damage or delay, must be made in writing to the carrier at the point of delivery, or origin, within four months after the delivery of the shipment, or in case of failure to deliver, then within four months after the lapse of a reasonable time for delivery. Suit for recovery must be brought against the carrier within one year after the rejection of the claim. In other words, if a shipment is damaged or lost a claim must be made in writing to the company within four months, and if the company refuse the claim, suit must be brought within one year after the date of the refusal of the claim. If a C. O. D. ship-

ment is not paid within thirty days after a notice of non-delivery has been mailed to the shipper, the company may at its option return the consignment to the shipper and collect charges both ways. All packages containing fragile or perishable articles must be plainly marked to indicate the nature of the contents. When a change as radical as this one goes into effect there is bound to be more or less confusion, but it will be minimized if the shipper will take the trouble to get information as to requirements regarding packing, the classification and rates, at the time of offering the shipment. Understand that ignorance is no excuse if trouble arises, and that the new rates and requirements are on file at every express office.

Last May it was brought to the attention of your committee that the Trenton Terminal Railway, operated by the Public Service Corporation, had petitioned the Board of Public Utility Commissioners for permission to increase the rates for carrying milk. The traffic of carrying milk had been instituted before the railroad went in the control of the Public Service Corporation. The tariff in force at the time of the petition was 5 cents for a twenty quart can, $7\frac{1}{2}$ cents for a thirty quart can and 10 cents for a forty quart can. These rates included the free return of the empty cans. The proposed tariff was $7\frac{1}{2}$ cents for a twenty quart can, $11\frac{1}{2}$ cents for a thirty quart can and 15 cents for a forty quart can, with a minimum charge of 15 cents regardless of size, if only one can was shipped by an individual. This rate was irrespective of the distance carried, the maximum distance being about twenty miles, and like the rate in force, included the return of the empties.

Taking into consideration the service that the shippers received; having to await the milk car at road crossings in all weathers and help load the milk, and having it delivered in Trenton in the street, at the curb, your committee considered that the lower rate was all that the service warranted and made formal objection to the increase in the rate and also to the minimum charge of 15 cents irrespective of size, if an individual shipped but one can. This latter provision was clearly placing a penalty on the small shipper—the man who only produced one can of milk.

A meeting of the shippers was held at the residence of Mr. Everett at Conover's Crossing and it was agreed with their help to contest the proposed advance. Hearings were held at the State House, on the petition on June 3, 17 and 24. The railroad company supported their petition by showing that the road had been operated at a loss the previous year, the receipts being about \$4,000 short of covering the operating expenses. The railroad was prepared to support its contention with figures and statements and also showed that the rates asked for were practically the same as the rates on steam operated roads. The objectors showed the difference between the service given by the railroad in question and the other roads, that the produce shipper paid the tariff in advance and that he received 4 cents per quart for his milk in Trenton, paying the transportation himself. Of the shippers who appeared to support the objectors, not one could testify as to what it cost him to produce a quart of milk at any time of the year. To secure testimony on the cost of producing milk, Alfred S. Cook of the State Experiment Station was called. His testimony supported by data kept at the State Farm at New Brunswick under his supervision, showed that it cost the State 3.85 cents per quart to produce milk, this cost being the average for the year. He further testified that it cost the farmers along this railroad more per quart to produce milk than it did the State.

On July 15 a report of the Board of Public Utility Commissioners was filed in which it was stated that the commission felt that the railroad company was

REPORT OF TRANSPORTATION COMMITTEE. 15

fairly entitled to the additional revenue the increased rate would give, but that it did not approve of a minimum charge of 15 cents upon a single can, and that if a new schedule was submitted, omitting the minimum charge of 15 cents per can, it would be approved. The majority of shippers over this line only shipped one can.

While this would not seem to be a serious increase in the tariff for carrying milk, it was important enough for the company to ask it, and though it might not fall very heavy on any one individual, it has a tendency to discourage the producers along the line. The minimum charge of 15 cents per can, when only one can was shipped by an individual, regardless of its size, asked for by the company, was very justly denied by the commission, for it was a manifest discrimination against the small producer, as it might put him out of business or lead to illegal subterfuge in order to have his one can transported at the same rate as the more fortunate shipper. Even at the old rate, with the transportation a charge on the producer, it is very apparent that they were not producing milk at a profit.

In compliance with an order issued by the Board of Public Utility Commissioners under date of September 23, 1913, on October 13 the running of trains over the New Jersey and Pennsylvania Railroad was prohibited. This is a line running from White House Station, on the Central, to Morristown. It traverses a fine agricultural district, and the closing of the road was a severe blow to the people it served. An appeal was made to this committee by some of the people interested, asking if it could find a way to relieve the situation and again give the people transportation facilities of some kind.

The history of the road from its inception is but a catalogue of vicissitudes. It seems that its operation expenses and fixed charges have always been out of proportion to the returns and the property had been neglected until its condition was such that the Commissioners felt impelled to order it closed for the safety of the public.

The chairman of your committee devoted some time to a personal inspection of the roadbed and bridges of the property, and in ascertaining the traffic probabilities. Conditions on the right of way are very bad. The sum of \$18,500 which the Board of Public Utilities Commissioners require to be expended in repairs and betterments before the road can again be operated is extremely moderate. Twice that sum could be expended without any waste. The traffic probabilities are good and there is no doubt but that if the proposition was operated economically it would pay for operation and a fair interest on its present worth with the added cost of the betterments required.

The property, however, is burdened with liabilities out of all proportion to its present worth, and no one familiar with railroading would for a moment consider taking it over with its liabilities as they are at present, making the required betterments, improving the rolling stock and attempting to operate the road with a hope of clearing it. Your committee has been in touch with interests that would be willing to take over the road if it could be secured at a fair value considering its present condition, but that does not seem possible at this time. Mr. Frederick V. Pitney, receiver of the property, informs your committee that proceedings are under way on behalf of the bondholders to foreclose on the property. This will take considerable time, and there seems to be no hope for an early resumption of traffic over the road. When the property has gone through the courts and is cleared of its burden of debt, there will be hope for its resumption of business.

at 10:30 at the Trenton House, where we discussed the various questions at issue, and Dr. Kendall came in and the matter was presented to him. In the afternoon we had the pleasure of meeting the State Board of Education in the Branch Court Room, and there were eighteen counties represented. From that meeting much good will come. Every question was discussed with the State Board. After the discussion was over we found that there had been many supposed orders which had never been issued from Trenton. Somebody had told somebody else something and somebody else had told the other fellow and those orders were supposed to be sent down the line as authority from the State Board. I mention this to make the point that the Farmers' organizations, working together, can always accomplish very much good. In this one particular instance it has been the means of solving a question that at one time looked as though there was going to be a break.

Now, I feel that that committee and the way in which they discussed these questions with the State Board of Education has accomplished very much good. The State Board at the meeting told the committee they would expect reports of this committee. The meeting appointed an executive committee of seven to meet the State Board from time to time as it was necessary, and they expect them to be present at every one of their meetings, which are all public. They are held on Saturday afternoons. It is up to that committee to be present and discuss with the State Board the various questions that arise from time to time, and I am sure there will be an important improvement in the management of the rural schools. That is what we are asking for, to meet the demand for improved conditions and to get a more satisfactory and a more practical training for the boys and girls of the State.

That is only one illustration of the way the State Grange has been able to do something for the agricultural interests of the State.

We stated last year here, I think, that we would like to see many improvements in our departments at New Brunswick. Our good friend who is the head of the Poultry Department tells me that they did not get anything like the money they formerly had, that

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they did not get anything to improve with, and that they received very much less money than they were able to get along with.

Now, this is a matter that the State Grange will co-operate with all of the rest of the agricultural organizations to bring about a better understanding so that we may be able to impress on our appropriations committee that agriculture is worthy of consideration; and it is up to this meeting here of representatives from every county in the State, and I want to impress on your minds the importance of letting your members of the legislature understand that you are in favor of appropriations that will advance the cause of agriculture.

That should come first. It is the most important industry of our State. It produces property that did not exist before, and it seems to me that it is up to us as a farm organization to express ourselves in no uncertain terms as to what we need, and, unless we do that, with the many demands that there will be on the treasury, we will not get what is coming to us. The other fellows are going to look after their interests and I do not blame them, and it is for us, if we expect to get what is coming to us, to look after our own business.

I want to assure the members of the State Board that the Members of the State Grange and their executive officials are on the job and they are going to be here every minute of the time and do everything that is possible to advance the cause of agriculture in co-operation with the State Board and the State Horticultural Society.

There is one other matter that I have overlooked, that is the resolution that was passed at the joint meeting of the Horticultural Society and the State Board in December, in reference to the appointing of a committee of three from each of the leading agricultural organizations to wait on the commission that is in charge of the Panama Exposition, from this State. That resolution was passed, as I recollect, authorizing the members of this joint committee to bring to the notice of the committee in charge of the exposition that it was the feeling of the agricultural organization that if there was not supplied a suitable amount of money to make a creditable display of agriculture from New Jersey that no exhibit or display should be made.

I hope that matter will be discussed somewhat during this session of the State Board. The committee, I presume, has been appointed or will be, and we would like to know as members of that committee whether or not it is the desire of the farmers of this State that we should make an exhibit or whether they would prefer that we would not make one. There is a difference of opinion, I find in various sections of the State, and here is an organization representing the entire State and it seems to me that we ought to have some expression as to what you desire this committee to do.

I thank you. (Applause.)

On motion the report was ordered accepted and printed in the proceedings of this meeting.

Prof. Rider—As to the meeting with the State Board of Education and the report of the Board, there is something in it that I think reflects great discredit on the State of New Jersey. I have it straight from Com. Kendall that New Jersey every year requires over eighteen hundred teachers to keep up her supply of teachers. That the State is producing in her two Normal Schools five hundred teachers. That means that the balance of the school **teachers** for the schools of New Jersey have got to be imported from other states. Now, I don't think that it is very creditable to the State of New Jersey that we do not grow our own teachers and educate them.

Down in Hammonton, where we have fifty teachers employed in our public schools, six of those teachers are trained in the State Normal Schools and the balance of them are imported, and the greatest problem of all seems to be, what should interest mostly the farmers of this State, is that the country schools are the ones that are suffering for the want of teachers. The boy or girl bred and brought up in the city and educated as a teacher, is not satisfied to go and remain in the country and teach in the country school.

Now, I think what the farmers ought to demand is that the normal schools be placed in the country or in small country towns, where they can get the boys and girls from the farm and educate them as teachers. When they do that they will have teachers who will not only supply the country schools and be satis-

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fied to remain as teachers of the country schools, but they will have better teachers for such schools, because, the farmer's boy and the farmer's girl, when they go to that work they go at it in earnest. they are on the job, they are brought up to habits of industry and when they go to work in a school they go there, not to be in their work at the last stroke of the bell in the morning and to quit at the first stroke of the clock of the afternoon, but they are on the job and thinking of their work outside of school hours, and preparing it and doing their work in a manner as becomes a proper, enthusiastic and efficient school teacher.

I think the farmers of New Jersey are the ones who are deeply interested in this matter, and that they should insist that the State make appropriation for the erection of a normal school in the country districts.

Mr. Kendall says that you fellows are not agreed upon what you want, you all want a normal school, Hammonton wants one, Collingswood wants one, Woodbury wants one, and they want it down here somewhere else. Don't be caught behind any such excuse as that. We state that we want a normal school in the country. The farmers want their teachers there and educated there, and they want a place to send their boys and girls to in the country where they can be taught to be teachers and trained and not be obliged to send them out to be trained by somebody else. Don't get behind any such excuse as that. Give us the normal school and then select the proper place.

Chairman Cox—Is there any further discussion of this question?

Senator Gaunt—Mr. Chairman, I am very glad that Mr. Rider has brought this question up as he has. He was present and took part in the discussion with this committee and he has made it very plain that where we are making our desires known and the Commissioner understands that we are not trying to lay any obstacles in the way of promoting agricultural education. We want to co-operate and we want to have the teachers trained in the country.

The point that Dr. Kendall made was that he hoped the matter of site would be left entirely out of the controversy. There have a half dozen laws been passed in the past two or three years creating normal schools in different sections of the State; but you can pass laws by the dozen, if you do not furnish the money it does not avail.

We have all the legislation that is necessary, all that we want now is to impress upon the minds of the members of the appropriation committee that we want the money for a normal school in southern New Jersey.

The members here present know, perhaps, that we have two normal schools in the State, one situated here at Trenton and another at Montclair. But we do need a normal school or two of them in the rural sections.

I think Dr. Kendall said that about six hundred teachers were educated in New Jersey, that is all the capacity they had? Is that right?

Prof. Rider—Five hundred.

A Member—I would like to ask Prof. Rider a question, as we have come to look upon him as an authority on educational work, for we have heard of Rider's educational work here in commercial education; the graduates in our schools, they do not have to pass an examination, do they? Pass an examination as other teachers do pass examinations? Are they not exempted from those examinations?

Mr. Rider—My understanding is that if they have a normal school certificate they do not have to pass an examination.

A Member—I have been eighteen or twenty years on our Board of Education and I find that the tendency is to have machine made teachers, and I think the machine up here, the normal school, gives them a certificate and they do not pass or do not have to pass an examination as the parties do who are not graduates of a normal school and who have no certificates; those parties are expected to pass examinations, that is, our teachers that have not certificates, that have not these special privileges, and yet in my judgment they make the best.

In my district I know we have just as good and efficient teachers who never saw the normal school as others that have been graduated out of the normal school. And therefore we prefer them to the machine made teachers. We have plenty of people who have special privileges in our country, and some of these teachers have special privileges, and I do not want to see the machine made teachers have these special privileges over plenty of our bright people in the rural districts that have never gone to the

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normal schools. There are plenty of bright people in our districts and they make fine teachers.

Prof. Rider—I would like to ask the member whether he does not think a normal school training would help those bright people?

A Member—I don't know whether it would or not, but they cannot get it.

Senator Gaunt—But they are entitled to have it. I think they would be improved.

A Member—I agree that they may in some instances where they are given the opportunity like the city-bred people. But not always. There was a family down there five years ago, where a woman raised a family of four or five children and they were bright children. The father was killed by falling off a load of ice, and the oldest son lost two years' school on account of having to remain home to help to keep the family, they all had to help the mother keep the children without the assistance of the husband, and that little boy lost two years' schooling, and he never went in any school building except the little school house down there in Burlington County, and then he went to Philadelphia. There he developed. He had not been developed. He knew he had to study at home, and he did study at home, he made the graduates of our colleges look, and when the final examination came there was not a young man graduated from college or the high schools that passed fifty, they were in the forties, and this young man went up to eighty-eight.

Prof. Rider—That proves just what I told you, that the boys brought up in the country are brought up to work and know how to work and are the ones that we want on this job. We want more like them for teachers.

A Member—Is there anybody here who knows the condition of the normal schools of the State? Are those schools overcrowded?

Prof. Rider—They are filled and with only city boys and girls. Perhaps the country boys and girls could get in if they wanted to, but there is no room.

A Member—I suppose the country children could get in, but is there any chance open for the country boys and girls in those schools?

Vice-President Cox—It is not convenient for them. I guess that is the answer.

A Member—If the country boy and girl do not want to go to school, what is the use of paying the heavy expenses of building those schools? They have schools, and I think they can get in if they make application.

Vice-President Cox—I would suggest that since tomorrow at 10:30 we will have the Commissioner of Education to address the State Board on some needs of the public school system of New Jersey, that this discussion of the public school question be postponed until after the Commissioner's address. Any questions can be submitted to him.

Senator Gaunt—In answer to the gentleman's question, I can say that I know of a great many girls who wanted to get into the normal school this year and they were not able because it was overcrowded. It was not possible for them to get in. I have in mind a few girls who wanted to get in at the opening of the normal school, and they had to wait until—they get in on the third day of next month, the third day of February, they can begin there, after there is a certain number will go out and practice teaching at the close of this term, and that will make a vacancy for a few more, who can start in the mid-winter course. They have lost practically six months of their time waiting for this opportunity. Those instances are my own personal knowledge, and there are a great many more all over the State.

It is a matter that is being considered very carefully by those who are trying to furnish more of this country blood that our friend spoke of, so that they can get the proper training. Let us keep that blood in the country, do not let it all get in the cities.

Mr. Kurtz—It gets down to the question then that we have not machines enough to turn out our own people. I think that is the trouble myself, being on the school board and knowing what difficulty we have to get good teachers. I find no difference between the teachers that come from the country or that come from the city. They have both got the same training. Of course, a young man who comes from the country and is used to country life, probably becomes more enthusiastic than the city boy or the city girl, but I think it is time in the State

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of New Jersey, if we have to import twelve hundred teachers into the State, that we should take steps to supply them ourselves, and if we must have another normal school, I think if the present schools do not turn out enough teachers, why not have them in the rural sections as well as in the cities. It certainly won't do any harm. I think this Board ought to put itself on record as being in favor of establishing another normal school, and that that normal school shall be in the southern part of this State.

A Member—The fact that you are going to establish more normal schools is not going to bring more teachers into the State of New Jersey, that is, from our own State. There are better opportunities than teaching for the average boy and girl in this State. The cities of New York and Philadelphia and Newark are too close, with good positions, to pay those boys and girls better than school teaching. That is the reason why we cannot get and keep teachers. In my own township and inside of the last month we have had two teachers send in their resignation to take effect as soon as we can find another teacher to take their places, because they have positions of some kind in the City of New York offered to them.

That is why we are short of teachers here. As soon as we get a good teacher they go to Philadelphia or to New York, and we are not going to get teachers merely by building schools and school houses. If you get a good teacher, one that is capable of the best work, they will go to the city just as soon as they graduate from the normal school and get a job that is easier and better paying than teaching in a country school. Just as soon as they find the place where they get more money they go away.

Prof. Rider—I believe, Mr. Chairman, that we all recognize the fact that New Jersey pays its teachers more than Pennsylvania; and we have to. That is the only reason why we can get teachers from Pennsylvania, by paying higher wages in New Jersey than they do in Pennsylvania.

Vice-President Cox—We will now take up our regular order of business, the Report of the Secretary of the State Board, Mr. Dye. This whole matter of normal schools can be threshed out tomorrow.

Secretary Dye—Mr. Chairman, I want to say in connection with what Senator Gaunt has said that the meeting arranged by the State Grange was an admirable and important one, and the result cannot help but be very beneficial. I know that two members of the Board of Education said to me afterwards that misunderstandings had been cleared up and the way would be much better for better work in the future.

I want to say in that connection, too, as Brother Gaunt has suggested, that this is a representative body of gentlemen. Don't forget that. You are constituted by law delegates here from every county, and you have a work to do, and a great business organization to serve; and this is a sort of roundup of all the meetings that we have had. We have again put on the program the State Road Commissioner and the Commissioner of Motor Vehicles, and Dr. Kendall of the Board of Education.

I want to say in reference to the Secretary's report, please remember, this is a sort of resumé of the work of the State Board and its auxiliaries for the year. In this way only do we keep an annual record and it is published in the annual report so that we can go back from year to year and see what the State Board of Agriculture has been doing. My time has been pretty much consumed by the discussion, and I will not read all of this report.

Secretary Dye then read his report, as follows:

Report of Secretary.

Notwithstanding the various adverse causes that have contributed to a reduction in some crops for the year 1913, it is very gratifying to report a total increase in crop value for this year over that of 1912 of over one million dollars.

Some of the adverse influences were late spring frost, injuring peaches and some early market garden crops, dry weather during the growing season in some sections, hordes of injurious insects everywhere, and for potatoes, the Southern Bacterial Wilt, which completely destroyed the crop in some leading potato producing sections and reduced it to half a crop in others. Wheat is reported two bushels per acre in yield lower than last year, and three cents lower in price, which makes a difference of \$201,188 against 1913. Rye is $3\frac{1}{2}$ bushels lower in yield, oats

2½ lower, Buckwheat 2 bushels, White Potatoes 4 bushels lower.

The farmer, however, is of necessity a man of faith and he goes right forward improving in his work year after year, with better understanding of the principles involved, and the requirements of the various crops to be grown. He is employing the reasonable though costly means to increase the yields per acre of his land, as the application of fertilizers, improved cultivation, better seed and seeding, the application of the most approved remedies as poisons for the control of injurious insects and blights.

In this progressive, high-pressure age, with competition so close in all lines of business, agriculture, to succeed, must be progressive. The broad fields of this industry invite their enterprising owners to attempt greater things with each new year. Ever-increasing knowledge and intelligence must lead to progress and prosperity. The means and methods of years ago will not do in every case now. The agriculturist of the present must make a wise use of brain-power. Every branch of this varied industry must be carefully investigated, and the intimate relation between cause and effect noted. All sources of reliable information, whether the agricultural press, the farmers' meeting or the lecture, must be utilized.

This noble calling, the first occupation of the race, will not reach the high place it deserves in the estimation of mankind until those engaged in it make it attractive and worthy of respect.

Knowledge and application by the individual farmer, and organization and co-operation by farmers as a class, will revolutionize the business both as to financial prosperity and social elevation.

Insects, Birds and Law.

For insect pests it would be well could we have strong legislation absolutely enforced for the preservation of our insectivorous birds. These birds are wantonly destroyed and the injurious insects increase from year to year. The loss occasioned by them amounts to millions of dollars annually. How unwise. Nature would provide the means to hold in check these enemies to agriculture and horticulture, but gunners must be allowed to

shoot, no matter what follows. And then consumers complain of high price of farm produce.

Change in Crops.

There is a gradual change going on in numerous sections of the state in the area devoted to certain crops. Some of the old time standards are being reduced, while others are assuming larger proportions. Alfalfa is one of the newer crops of much value that is being produced and the acreage is being increased. It is believed we now have approximately 4,500 acres devoted to this production, which with an annual yield of three tons per acre affords 13,500 tons of most valuable feed for all farm stock. Placing a farm value of only \$15.00 per ton, it is worth \$202,500. This item is not included in Table I.

There has been a large increase in the acreage devoted to truck farming and market garden crops, unfortunately we have no reliable data on this important branch of our agricultural work.

The dairy industry, too, is not maintained as a commercial proposition on farms, as formerly. Farmers conclude there is no profit in it.

It will be noticed from the table herewith that while the number of milk cows was much greater in 1899 than it is now, the number of young cattle was much less. While now, although the adult milking animals are greatly reduced at this period, the number of young animals coming on is almost double that of the earlier date. This would seem to indicate, in part at least, the cause for the decline in the present number of our milk cows, and raising of more young stock on our farms.

VARIATION IN CROP ACREAGE.

	1899	1912		
Potatoes	47,955 acres	95,000 Increase	.....	47,045 acres
Hay	392,191 acres	437,000 Increase	.....	44,809 acres
Corn	254,816 acres	290,000 Increase	.....	35,184 acres
Wheat	123,370 acres	111,000 Decrease	.....	12,370 acres
Milk cows	223,261 head	146,000 Decrease	.....	77,261 head
Other cattle	39,896 head	66,000 Increase	.....	16,104 head

Expenses of Crop Production.

Some of the expenditures required to carry forward the work of crop production throughout the state are for labor on 23,448 farms, \$8,663,475. For fertilizers on 23,685 farms, \$4,277,604. It is over \$5,000,000 annually for all our farms, 156,661.15 tons

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for last year for the State. The feed bill for 23,014 farms is \$5,947,181, those three items alone total \$19,580,656.

To these should be added the tax on land, stock, household goods, etc. Machinery on farms amounts to over \$10,000,000 first cost. Allowing an annual 10% decline on this investment from wear and exposure, involves an annual outlay of \$1,000,000 to keep up the supply and many other items not indicated here go into the annual budget of farm expenses.

The acreage, yields and prices of crops for 1913, as made up from the reports of our county secretaries, directors and the U. S. Crops Reports, are as follows:

TABLE I.

	Acreage	Yield per acre	Price	Total field Bushels	Total Value
Corn	290,000	43	\$.75	12,470,000	\$9,352,500
Wheat	111,000	18	.97	2,081,250	2,018,812
Rye	85,000	14½	.72	1,232,500	887,400
Oats	60,000	27½	.50	1,650,000	825,000
Buckwheat	13,000	20	.70	260,000	182,000
Hay	437,000	1½ tons	18.00	655,000 tons	11,790,000
White Potatoes	95,000	104	.785	9,870,000	7,510,880
Sweet Potatoes	21,000	167	.67	3,507,000	2,349,690
					\$34,925,282

*Miscellaneous vegetables and fruits	12,000,000
*Milk	18,296,000
*Poultry and eggs	5,172,000

Total	70,493,282
Total yield, same acreage for 1912	60,351,745
Excess in value of all crops named for 1913	\$1,141,537
*Same as for 1912.	

Acreage as given in U. S. Crop Reporter, 1912, with the same yield and price as given in Table I. would make the total returns for 1913 as follows:

TABLE II.

Corn	\$ 8,879,250
Wheat	1,349,512
Rye	777,600
Oats	921,250
Buckwheat	168,000
Hay	9,774,000
Potatoes	7,406,880
Sweet Potatoes	2,349,690
Fruits and vegetables	12,000,000
Milk	18,296,000
Poultry and eggs	5,172,000
Total value	\$67,192,082

FARM LIVE STOCK IN NEW JERSEY.

(From the Agricultural Outlook, U. S. Department of Agriculture, February, 1914.)

TABLE III.

	Number	Per Head	Total Value
Horses	91,000	\$157.00	\$14,287,000
Mules	4,000	177.00	708,000
Milch cows	146,000	67.00	9,782,000
Other cattle	68,000	30.50	2,074,000
Sheep	31,000	5.60	174,000
Swine	99,000	13.60	2,140,000
Total			\$43,174,000

TABLE IV.

Showing the increase in value of farm crops for 14 years.

Year	Field Crops and Milk
1900	\$24,249,179.00
1901	38,545,005.00
1902	44,619,344.00
1903 *	39,453,050.00
1904	48,222,505.00
1905	49,964,286.00
1906	52,460,262.00
1907	56,408,734.00
1908	57,743,153.00
1909	59,357,955.00
1910	63,811,520.00
1911	67,715,872.00
1912	69,351,745.00
1913	70,493,282.00

* Hay, wheat and corn reduced by severe early drought and fall flood.

Cost of Living.

The high cost of living still occupies the front row. Various reasons are advanced as to why food products are higher than they were years ago, and naturally some of the wise ones who do not know, lay the blame on the farmer for not producing more and selling for less. One great cause of cost to the consumer and why the farmer does not increase his crop acreage is found in experience like the following taken from the Philadelphia Ledger, Sept. 10, 1913:

"Tomatoes sold at 5 cents a basket to the green grocer yesterday. The consumer paid 10 cents a quarter of peck, or 70 cents a basket. These prices represented two extremes yesterday.

Last week tomatoes were offered to Dock street dealers at 10 cents a basket. The offer was declined. At the store of John Detwiler & Co., on Dock street, a farmer with 400 baskets could find no buyer.

Tomatoes were delivered in Camden yesterday at 5 cents a basket of seven quarter pecks. The wholesale price was 25 cents.

With the grower getting a nickel for a basket of tomatoes, the consumer paying 70 cents for the same basket, and lunch houses charging 10 cents for an order of tomatoes, it was admitted among dealers that the producer did not appear to be getting his share."

This is not an isolated case. If all that now is produced and is fit for human food could be put in the hands of consumers at a reasonable price, there would, it is believed, be no lack. But the cost of transportation and distribution must be met.

"At a committee meeting of railroad men and financiers held in Chicago the other day, the statement was made that 100,000 carloads of provisions went to waste in the field last summer. The statement sustains the argument of those who hold that the cost of living problem in the United States is primarily one of transportation."

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For the future, population is increasing chiefly through immigration at an enormous annual rate, largely a non-producing population, so far as agriculture is concerned, all of whom demand food. The number of farmers is not increasing in a like proportion, while the number of men willing and capable to work on medium-sized farms is almost negligible. Furthermore, men who apply for farm work demand wages as a rule, much in excess of their ability to make good. There must be a readjustment, a balancing up between the wages paid in other than farming businesses, and farm wages. Either the wages in other business must be reduced, or the price of farm produce increased, if the farmer is expected to pay higher wages. There is no immediate prospect in sight for a reduction in the price paid the farmer for his produce. What the consumer should or must pay, depends upon the number of those who handle the produce between the producer and the consumer, and the charges they make for their service. Is there a reason for a Farmers' Market in our cities? If so, would city people patronize such a market to the advantage of both producer and consumer?

Increasing Production.

For every additional bushel, the farmer would produce an increased expenditure, for plant food must be made, and this without any guarantee that the hoped-for increase will be forthcoming at harvest time; for the enemies to maximum crop yields are so many, it is a constant fight with costly spraying machinery and various insect poisons to secure any crop at all. The so-called back-to-the-lander will know more about the cost of production of farm crops after he has tried it for a few years. This is not said to discourage any who desire to become farmers and rear their families in God's open country. There is room for very many more on our unoccupied lands, and if means and ability are equal to the requirements of successful farm life, we say to all such—Come.

Secretary Houston says very truly in his first report, in part, as follows:

"However desirable increased production on farms may appear to be from the consumer's standpoint, it does not follow that such increased production would result in any increase in the cash income per farm or per capita of farm population, or that prices paid by consumers would be any lower. Had the total production in 1913 equalled or exceeded the 1912 production, it seems probable that the cash income per farm would not have been greater and might have been less than in 1912, but it is extremely doubtful whether the cost to the consumer would have been any less, because retail prices are promptly raised on a prospect of under production, but are very slow to decline if there is over production.

"The long line of distributors and middlemen between the farmer and the consumer are in a position to take advantage of the market, and to a certain extent control the market in both directions, because they are better organized to keep informed of crop and market conditions and to act promptly than either farmers or consumers, who are not organized and as individuals are helpless.

"The high prices paid by consumers ranging from 5 to nearly 500 per cent., in some cases more than the farmer receives, indicate that there is plenty of room for lowering the cost of farm products to consumers and at the same time largely increasing the cash income per farm without increasing farm production.

"This condition is undoubtedly a remarketing problem, which will have to be solved by better organization of farmers and improved methods of marketing. When, as the result of such organization and improved methods, the price of farm products can be maintained at a higher level without increasing the cost to consumers, farmers will be justified in increasing the output of their farms, with a fair prospect of realizing a reasonable profit on their investment of time, labor and money, which in the aggregate is enormous."

A New Era in Farming.

Times are changing, almost imperceptibly sometimes, radical changes take place. So now with our increasing facilities for gaining agricultural education, both practical and scientific, and the increasing number of young men who are taking the agricultural studies with the purpose of becoming real farmers, the outlook for increased production per acre is most encouraging, and this will be a source of increased profit as compared with the labor expended. To the mind of your Secretary, the outlook for the future of agriculture, particularly in New Jersey, is bright. Possibilities of increasing the yield per acre are being revealed by good farming and in the crops produced by the boys and the girls in their crop growing contests. When every acre adapted to agricultural crops is made to produce its full quota as is being done in some European countries, there will be abundance for all our increasing population, and much to spare, and that time is coming gradually, but certainly.

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Food Values.

Few purchasers of foods know the nutritive value of the materials they bring to their tables three times each day. If they knew this and would buy accordingly and cook understandingly, the daily cost of living to thousands of families would be reduced very much.

Most of our human foods are purchased and used without regard to their actual value in building up bone, body and brain. The growing child, the working man and woman and the old people are fed substantially the same foods. We have scientific rations provided for our horses, hogs, cows and poultry, with a view to their greater health and usefulness. Why not similar tables of different human foods, their nutritive value and their mission in the human system as food.

Lecture bureaus in our cities covering the nutritive value, purchase and cooking of foods would be of inestimable value to all concerned. If foods were sold according to their nutritive value, beef would be lower and milk higher in price.

Milk Cheaper Than Other Food.

People generally are prone to complain of the high cost of milk, but according to State Dairy and Food Commissioner W. B. Barney, there is as much nutrition in a quart of milk costing 8 cents as there is in 15 cents' worth of beef costing 22 cents a pound, or 29 cents' worth of eggs costing 35 cents a dozen.

The way to beat the high cost of living question is to study nutritive values of different foods and obtain the most nutrition for the money.

For instance, if you like bread and milk you can set a bounteous meal for two persons for 13 cents and get as much nutriment as you would secure out of 92 cents' worth of eggs. A loaf of bread weighing sixteen ounces can be purchased for 5 cents. A loaf of bread has as much nourishment as thirty-two eggs, according to Mr. Barney's table. A quart of milk at 8 cents equals ten eggs in nutritive value. The combined cost will be 13 cents and the combined nutritive value will be thirty-two eggs, worth about 92 cents at 35 cents a dozen.

County Boards of Agriculture.

Twenty County Boards of Agriculture still maintain their organization with varying degrees of usefulness. Some are active and useful according to the efficiency of the officers and the interest taken in them by the farmers, others, a few only, seem not to impress their constituents in such a degree as to enlist their co-operation. What is the reason?

Farmers' Institutes.

Between fifty and sixty Farmers' Institutes were arranged for, early in last October, by the Director, Prof. Alva Agee, covering in a general way the entire state, and speakers of known ability were engaged to speak at the meetings and counsel with the farmers. Most of these institutes have been well attended and the interest taken by the farmers proved the value of this method of instruction. In some localities the attendance was not encouraging, and did not justify the expense incurred. Where indifference as to the value of such meetings is generally manifested in a given neighborhood, it should be dropped from future lists.

I may be justified in stating in this connection my relation to this work in past years. In 1890 I secured an amendment to the State Board law whereby we could legally conduct lecture work in the counties of the state. The Executive Committee then and thereafter until 1913 put this work entirely in charge of the Secretary, and for twenty-one years, every fall and winter, I have traveled the state over, endeavoring as best I could, with the help of others, to encourage the farmers and improve the agriculture of this state. That there has been wholesome growth and permanent advancement must be apparent to all who have given attention to such matters. In all those years it was my earnest endeavor to uphold the dignity of the agricultural business and the nobility of its purpose, and above all to emphasize in the farmer mind the very great importance of integrity of character and sound morality of life and conduct, and the testimony of those who from other states have worked with us, is they have found the moral character of the farmers of New Jersey superior to that in other states where they have labored.

Turning this work over now to other management I can but express the earnest hope that it may go forward to greater usefulness.

County Farm Bureaus.

Two of these are now established and in working order. Their superintendents, Messrs. Gilbertson of Sussex County and Mr.

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Hankinson of Mercer County, have entered upon the work with evident earnestness and a purpose to serve the farmers in every way possible. Where a Farm Bureau Superintendent has the work well in hand, the farmers co-operating, it would seem that the Farmers' Institute for such counties might be abolished. The Farm Demonstrator or Bureau Superintendent is on the job the entire year, ready to visit the farmers on their farms and assist in solving their problems, while the Institute is usually but for one day, and does not reach many of the farmers, at that.

I hope to see the day when every county in this state will have a Farm Bureau with a well-qualified Superintendent and Demonstrator. It will take quite a long time before this can be realized, for men of exceptional training and ability are absolutely necessary if success is to attend the movement. The scope of this work is more than simply to increase production. Economy of production, with increasing facilities for, and better marketing, buying and selling, with various other problems that enter into farm life, must be considered. To secure the greatest benefits, the Farmers' Exchange and the County Farm Bureau with any other kindred organizations should be in organic co-operation.

Farmers' Week.

On December 28th, 1908, and ending January 2d, 1909, the first Farmers' Week or State Institute, was held at the College Farm, New Brunswick, December 26th-31st, 1913, the sixth meeting of this character was held in the city of New Brunswick, in the gymnasium and lecture rooms of Rutgers College.

The arrangements for this meeting were placed in charge of Prof. Alva Agee of the Extension Department. A very comprehensive program of subjects was prepared, and in addition to our local professors, prominent instructors from other states delivered addresses. This six days of up-to-date instruction of exceptional value was available to all those who were able to attend. It is confidently expected that improvement in the field work of the farmers of the state will result from these lectures, it should be so, or else this expenditure by this State Board of Agriculture will have been in vain. We noticed many of the agricul-

tural students present at the several sessions. For them the lectures delivered were highly instructive.

Summer Meeting.

The Seventh Summer Meeting was held at the College Farm at New Brunswick. The attendance was large. Farmers throughout the state are taking increasing interest in the experimental work carried on each year at this Farm, under scientific direction, and each crop thus produced is an object lesson of value to the studious farmer. Farmers in general throughout the entire state, should make it their business to visit this their agricultural college farm, either at this meeting or at some other time during the growing season, once at least, each year.

Unimproved Lands.

Is it not high time our State should take favorable action looking to the opening up and development of our pine-belt lands? We have permitted the tide of immigration for fifty years to pass on over our state to the regions beyond, until the Great West is being populated, developed and made profitable. Millions of acres no better naturally than ours. Think of over one million acres lying right here in the lap of the best markets of the country, bordering our popular seaside resorts, with unequalled transportation facilities and nothing being done to advertise it, nothing to prove its possibilities agriculturally, by state authority. Nothing to attract desirable people.

The Western tide of emigration is now beginning to look eastward, for land in the West is much higher in price compared with the advantages offered, than it is here. Let us say that only 500,000 acres of our pine lands is at present adapted to profitable improvement, divide this up into farms of 100 acres each and we will have 5,000 farms and 5,000 families, increasing the annual value of our state's taxable property, and adding vast sums to the crop yields of our land. It seems to me that it would be a wise expenditure on the part of the state, to allow the State Experiment Station sufficient funds to develop two or three experiment farms in as many different sections of the pine belt, as object lessons, and to prove to intending settlers

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that those lands are capable of producing paying crops. They are naturally adapted to peaches, pears, raspberries, blackberries, grapes, sweet potatoes, all market garden crops, sweet and field corn, rye alfalfa, etc. What is being done at Hammonton by the Italians and others can be done over a large area of our lands of the lighter soils.

There are few farms of which every acre is equally good, there are poor spots, unprofitable acres. So in our sandy lands, not every acre is worthy of cultivation. See before buying, or get reliable information. This is said lest land schemers quote from the above report garbled statements to serve dishonest purposes.

A Standard of Crop Yields and Crop Reporting.

In the matter of reporting the yields of the several crops, I think it very desirable that each county should decide upon a standard for each crop as a basis for estimating the annual yield from which also an average state standard could be made.

For example, suppose the average yield of wheat under average good treatment, on a wheat soil, is placed at twenty bushels per acre for Mercer county, when the county secretary makes up his report, he finds the actual yield to be fifteen bushels per acre, he will report 75% of a full crop, or if 25 bushels per acre, 125%, and so with each crop above or below, as the case might be. Then where crops are reported on a per cent. basis, having a standard yield fixed, it will be quite easy to determine the yield in bushels, tons or pounds. Will our County Boards take this question up at their meetings the coming summer and report their decision to the Secretary of this Board by November 1st next?

In my judgment, the County Boards should meet the last of November, say, to consider the crop reports made up by their secretary, before it is sent in, so that the united judgment of the members may be secured, and a just and satisfactory report may be made up. Too often this whole matter is left to the Secretary, and correspondence does not always bring the desired information. A county secretary of one of our most productive counties states he called or wrote to fifteen persons for state-

ment as to crops, and received but two replies. Not very encouraging, to say the least.

Publications of This Board.

The annual reports of this Board have an extended circulation, based on the demand. Japan and Australia are the most distant points to which they have been sent. The demand at home, for the report of 1912, is greater than usual, and it is because the subject matter published is of exceptional value to the practical farmer. Unfortunately the firm that printed the report of 1912 was unusually late in its publication, and so much indeed, that we did not get copies until early in November, 1913, and then it was poorly printed and the cloth copies were not well bound.

The bulletins issued by the Board have an extended circulation. They deal with questions of immediate interest to the practical farmer.

A second edition of Farm Lands of New Jersey has been printed, and the demand for the bulletins of White and Sweet Potatoes Production, also Asparagus Production has exhausted them so that a second edition of those should be published in order to meet the demand.

A Summary of Replies to our Questions, by the County Secretaries, is as follows:

Question 1. Farm laborers on decrease.

Question 2. Wages without board average \$36.00 per month, with board \$22.00.

Question 3. Crops receiving most attention are potatoes, market garden crops, alfalfa, corn, hay and apples.

Question 4. The average retail price of milk is $8\frac{1}{2}$ cents per quart, wholesale $5\frac{3}{4}$ cents, creamery $3\frac{1}{2}$ to 4 cents.

Atlantic and Cumberland Counties complain of a beetle bug that destroys their strawberry blossoms and thus the fruit crop. They request that the State come to their aid as they seem to have no remedy. Will Dr. Headlee please take notice? Somerset County thinks the greatest crop increase they have had is the annual tax crop which grows year after year and instances several cases where farms have been offered for sale on account of this increase.

This State Board, an organization of farmers, has been quite in advance on various public questions from its incipency to

REPORT OF THE SECRETARY.

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the present time. At the Annual Meeting February 25, 1874. the following resolutions were passed:

On the Centennial.

1. Resolved, That the State Board of Agriculture hereby expresses its most earnest interest in the proposed Centennial Exposition, and regards it is especially incumbent on the State of New Jersey, on account of its intimate connection with many of the most important events of the Revolutionary period, to do its full share in making it a grand national success.

2. Resolved, That local Agricultural Societies throughout the State be respectfully recommended to take early measures for securing a full representation of the agricultural and mechanical products of their respective localities at that exposition.

On Diseases of Cattle.

Resolved, That the Executive Committee be instructed to prepare a bill for the prevention or stopping of pleuro-pneumonia and other contagious diseases of cattle, and present the same to the legislature for its action.

On the Sale of Fertilizers.

Resolved, That the Executive Committee be instructed to prepare a bill, and, if possible, secure its passage through the present legislature, regulating the manufacture and sale of commercial fertilizers.

On Road Laws.

Resolved, That the Executive Committee be directed to inquire into the subject, obtain information from other States, and report the form of a good and effective road law at the next meeting.

Its interest in the Road laws was manifested by the appointment of a standing committee which had been maintained until the State Aid Road Law was enacted through its instrumentality. In the matter of caring for our forests and the prevention of forest fires, its efforts were continuous until the Department of Forestry was created.

For a reduction in the large Boards of Freeholders, the Board

was an early advocate. The following resolution was adopted by the Board at its January meeting, 1890:

Resolved, That the State Board of Agriculture recommends the passage by the Legislature, at its present session, of the act presented to this board for consideration at its last annual meeting by the Middlesex County Board of Agriculture, substituting in each of the counties of this State three County Commissioners in the place and stead of our present Boards of Chosen Freeholders.

(Signed) JAS. B. GREEN.

Chairman.

It had a Committee at that date, also on Weights and Measures, seeking a reform on the then existing methods. From the above quotations it is apparent that this Board, composed of members of the Grange and farmers in general throughout the entire state, has taken active interest in questions relating to public improvement along many lines. Honor to whom honor is due.

The report of the Secretary was received and ordered printed in the minutes of this session.

Report of Feeding Stuff Inspection, 1913.

By Chas. S. Cathcart, State Chemist.

The detailed results of the inspection of feeding stuffs for 1912 were published in the Experiment Station Bulletin No. 256.

The new feeding stuffs law was approved on March 29, 1912, and became effective on January 1, 1913. Since the new law makes some requirements that were not included in the old law, the inspection and collection of the samples were arranged so that there could be no misunderstanding as to the law under which the inspection was being made.

During the inspection seven hundred and twenty-four (724) samples were received and seventy-five (75) of which were submitted by individuals and granges. The official samples represented the stock of one hundred and fifty-three (153) dealers and consumers. The feeding stuff law of 1900 recognizes two classes of feeding stuffs, one of which must be accompanied by a guarantee of its contents of protein and fat, while the second class is exempted from this requirement. In accordance with this division, three hundred and ninety-nine (399) of the official samples belonged to the class requiring a guarantee.

Five hundred and eighty (580) samples were analyzed, three

REPORT OF FEEDING STUFF INSPECTION. 41

hundred and forty (340) of which belonged to the guaranteed class. The results obtained satisfied the guarantees in three hundred and two (302) samples or 88.8 per cent. This shows a decided improvement when compared with the inspections of previous years if the materials are considered simply in regard to their guaranteed content. The deficiencies in the thirty-eight (38) samples consisted of the following: Protein 17, Fat and both Protein and Fat 4.

All of the feeding stuffs that are now sold are subject to the requirements of the law of 1912, which requires a registration and a guarantee of the content of protein, fat and fiber, as well as the specific name of each ingredient used in preparing the feed. An omission of any of these requirements is a violation of the law. The law places the final responsibility of fulfilling the requirements upon the person who actually sells the material in this State, and, consequently, if the dealer does not desire to make the registration of the feeds which he secures from other manufacturers, he should ascertain whether the party who offers feeding stuffs for sale has registered the same. If any feeds are found in the State which have not been registered, it will be necessary to adopt some measure that will secure the desired results.

The co-operation of the dealers and consumers is desired, and information regarding the feeds will be given whenever a request for the same is received.

A Member—Mr. Chairman, I have a resolution to offer.

Vice-President Cox—If there is no objection the resolution will be received and read by the Secretary.

Secretary Dye read the resolution, as follows:

"We, the members of the New Jersey State Board of Agriculture assembled in annual convention this twenty-ninth day of January, nineteen hundred fourteen, representing and being interested in the poultry industry of New Jersey, in which over ten million dollars are invested, are anxious that this industry should be fostered and supported to the utmost, and we do concur to the following:

"Whereas, the present equipment is not sufficient to meet the rapidly increasing demand for instruction in poultry husbandry at our State College.

"Whereas, additional facilities are needed for scientific investigational work along the lines of breeding, feeding, hatching, rearing and marketing;

"Whereas, owing to the great demand, more funds are required for the furtherance of investigational work, to be used in carrying the results of the investigations to poultrymen of the State and especially co-operative experiments in the various sections;

"Whereas, appreciating the work already accomplished by the Poultry Department along educational, investigational and extension lines with the equipment and funds available, and believing that this work should go on immediately along more extensive lines; therefore, be it

"Resolved, That we are in hearty accord with the request made by the Experiment Station for additional funds for maintenance and equipment to further the work as above outlined; and furthermore, be it

"Resolved, That our Secretary be instructed to forward a copy of this resolution to each County Board of Agriculture with the request that they take immediate action upon the same and instruct their Senators and Assemblymen as to their action and the urgent need for these increases in poultry appropriations if the present high standard of work is to be maintained."

Vice-President Cox—The resolution will be referred to the Committee on Resolutions.

We will now take up the next matter in order., "Swine Production and Swine Feeding." by Prof. F. C. Minkler.

Prof. Minkler—Mr. President, Members of the State Board of Agriculture, Ladies and Gentlemen: I do not know whether it is perfectly proper to bring a pig house into the State House, but it occurred to me that if you could look as well as listen at this time, you might be able to get an idea more firmly fixed in reference to the efficiency, to the scope and the importance of the utilization of some modern and systematic methods in the feeding of swine.

There are a number of reasons why swine production to the New Jersey farmer is of vast importance. When any meat product reaches the price of ten cents per pound live weight, and the general price throughout the State, from a farmer's standpoint, reaches a point ranging from ten to twelve and fourteen

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cents for dressed carcass, it stands to reason that the farmers who live in a neighborhood and where conditions exist where crops can be grown and where pork can be produced at a profit and at relatively low cost, there is every reason to believe that the New Jersey farmer will take advantage of the situation, and we will restore the position that New Jersey held a number of years ago on the question of pork production.

Among the advantages that are suggested in reference to pork production, I want to briefly summarize them as follows:

First: It requires relatively small capital to start,—a very important item in any branch of animal industry or any other line of farming. We say that a man can get in the swine business relatively cheap, and he can get out of it relatively quick. In other words, it is easy to get in the business, and it is easy to get out of the business.

It enables the utilization of farm, garden, orchard, frosted and other waste products, without expensive methods of preparation. Here we have in New Jersey a great many waste products, that are branded to-day as waste products. By increasing the number of swine that we produce on our farms we can convert those seemingly unsalable products into meat products, that will bring at the present time ten cents per pound live weight.

Swine production requires relatively a small amount of labor. We hear the farmer on every hand nowadays, if they are engaged extensively in any kind of farming, complaining about the item of labor. Now, it is my judgment, that one man can properly, if he utilizes his entire time, care for between four and five hundred hogs, if the arrangement of the yards and the use of the colony house system and the alfalfa rack is put into vogue.

The animals mature in a short period. We say that the pig should gain a pound a day. Therefore, a pig that is two hundred days old should weigh more than two hundred pounds, and this is the time to sell him, because it costs just as much to put on the third hundred pounds on the pig as it does the first two hundred pounds. Because economy of gain and rapidity of gain depends upon the age of the animal and he does not have so much of a carcass to maintain, the feeding period and growing period is short. The pig can be marketed at any age or weight and keeps the money changing.

Now I want to illustrate this question of the colony houses, bringing out the suggestion made at the outset, that the buildings and equipment required for satisfactory and profitable pork production are relatively inexpensive.

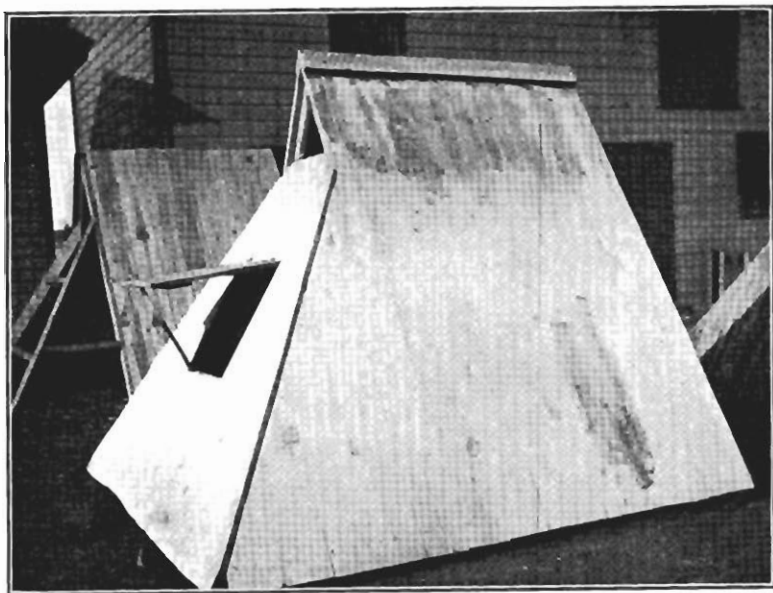
Here is a model of small house, the lumber bill of which amounts to twelve dollars. And any carpenter or any farmer can build one, easily, in a day.

This alfalfa rack is an inexpensive one, and does not require a mechanic to build it; and yet this colony house, or a number of these colony houses, in my judgment, are much better than any sort of a building that you can construct and call it a big pig house.

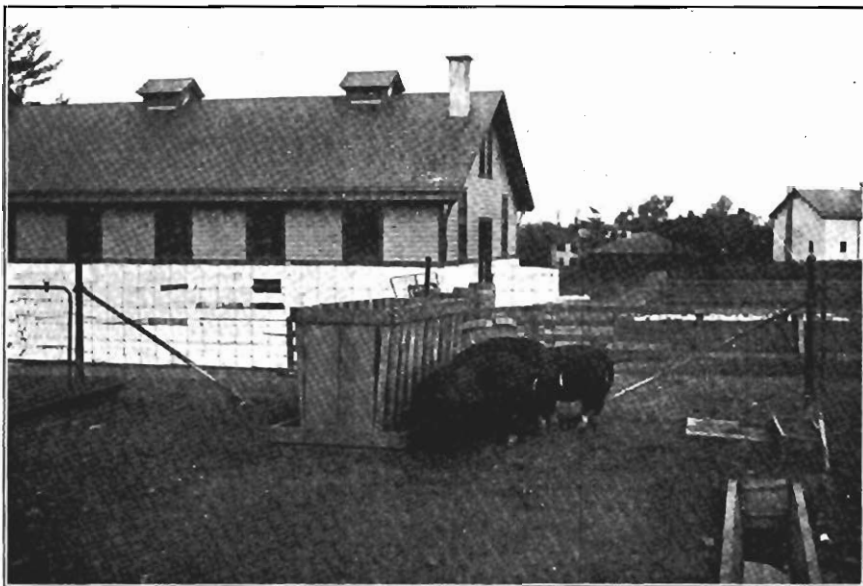
Now, if you will notice the construction of this particular building; it is eight by eight on the ground; this is partly opened so that you can see the inside of it. It is graded off at the rear so that it can be covered over in the Winter. In other words, we take two or three or four or five or ten, as the case may be, of these individual houses, face them to the south, grouped in groups, cover them over with corn stalks or hay or any product of that sort, and there you have got a most elegant place to winter your animals of any sort, whether it is a fattening individual or whether it is a brood sow intended to produce a litter of pigs. You can place these houses at the far end of the field and the alfalfa rack at the other end of the field, and you can put into vogue this very important item in the production of these animals, sufficient exercise. Take the brood sow, and if she does not exercise, you know she puts on flesh, and those of you who raise pigs know that it is not the fleshy brood sow that produces for you, that maintains a large litter of pigs. When that brood sow has to go from one to the other end of the field in this way it will get her sufficient exercise to keep her from getting too fleshy.

Another matter with this colony house system is in case of the outbreak of disease, in case you want to isolate one certain individual animal, you can haul her colony house, transport it from place to place, and then you would not have the infection, particularly if cholera should break out, as you would have if all the animals were housed in one house.

You will notice the system of ventilation we have here, a



New Jersey type of Colony House in use at Experiment Station
in New Brunswick.



Brood sows enjoying alfalfa hay during the winter months.

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little muslin curtain inserted, giving sufficient ventilation. This little peek hole, as I call it, enables you to see the internal conditions of every particular colony house.

Then if you will see around the side here, if you will view it from the side, you will notice that we have a rail on the inside, that is an arrangement there to protect the young pigs. A guard rail. You would have the brood sow as represented here in an isolated house, and she has not much space, but with this rail or this grounder here, she cannot step on her pigs, and you will have here in a little fifteen dollar house the accommodations that you cannot ordinarily get in a more expensively constructed house.

Well, a person may say, "Why, that is not adapted to wintering breeding animals." That is its strongest point and claim, and the scheme we use is to take a lantern, drive in a nail, and hang the lantern up there in that part of the house, and you have got the ventilation, the supply of heat, and they never get much chilled in cold weather, and it is our experience, and I judge the experience of those who use the same scheme, that they can raise a larger proportion of pigs by the use of the colony house than by any other means.

So much for the question of housing.

The discussion this morning must include the question of feeding swine, and I presume that you will ridicule me when I tell you that I believe alfalfa hay is one of the best products possible to feed pigs. We used to think that we would have to buy tankage, that we would have to take all of these feeds and cook them and subject them to different methods of preparation; but all that you need, in my judgment, to feed alfalfa successfully and profitably to breeding animals, is the alfalfa crate, as we have this model before you. Put the alfalfa in the rack and the pigs will do the rest of the trick. It contains protein, it is home grown, it is palatable, brood sows like it, they do not get too fat, which is often the case, and they produce pigs in their litters that are vigorous, active, strong and healthy.

Some people contend that a pig's time is too valuable to feed alfalfa hay. But if you will give me a well bred individual, with corn and alfalfa hay, or give me a group of brood sows with those three products, a colony house, an alfalfa rack and alfalfa

and corn, I am satisfied that you can winter your animals more economically with that system of feeding and have them maintain more vigor and thrift and more satisfactory litters will result in the Spring than in any other possible way.

Now, do not get the impression that you can feed a fat hog and a brood sow on the same rations. It is well to have animals that are fattening to have access to a second or third grade of alfalfa hay, because they can get protein in that way much cheaper than from any other source; but the use of digester tankage that by-product from the slaughter house, gives a much quicker result. In other words, your pigs will gain more rapidly if they are fed a concentrated ration when it is your intention to fatten those animals. Therefore, we do not use alfalfa extensively in strictly fattening animals.

Just one more word in reference to this alfalfa question.

It is not only useful as a hay, but it is one of the very best forage crops that can be utilized for growing young pigs. The New Brunswick station a few years ago reported that they were able to get eight hundred pounds of pork from a ton of alfalfa hay fed in conjunction with corn. The alfalfa area devoted to the pasturing of swine last year at the Experiment Station, from the first of May until the first of October, paid a rental of \$21.70 per acre per month. You just remember, however, that your alfalfa must be at least two years old before you turn the pigs in, and that your alfalfa must never lay low, on the pasture, because if the pigs crop alfalfa off closely they will kill it; therefore, if you take the precaution of turning the animals in the alfalfa field when the alfalfa is about nine or eleven inches high, and then when the alfalfa comes out in blossom and those little shoots appear, go in there with your mower and cut it just the same as if that alfalfa was being utilized or cropped for hay, then you can get enough hay off of that area to feed your brood sows during the winter months and you will have one of the cheapest sources of feed possible.

But remember that you must have some corn and some tankage feed in addition to your alfalfa, even, as a forage crop, in order to get the greatest efficiency out of a bushel of corn or acre of alfalfa.



Colony Houses partially covered with corn fodder as a protector during the winter months.



Colony Houses ready for winter covering to protect brood sows.

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In reference to this very important item of pork production, we say that the voidings of the pig, the actual manure produced, is worth approximately three and a half dollars per animal per year, and, in my basis of calculation, I believe that the voidings will more than pay for the labor involved in caring for the animals that one man can properly care for.

It is much easier to market a ton of pork than it is to market five tons of corn, and if a man feeds nothing but corn alone to his pigs it will take at least five hundred pounds of corn to make a hundred pounds of pork.

If we can market our farm products in a concentrated form, increase the value and maintain the fertility on the farm, it is a useful way of utilizing the crops that we can grow in New Jersey in such abundance. The pig establishes a market for home grown foods, and you take South Jersey particularly where they can grow corn and that so abundantly, and Central Jersey, where they can grow rye and wheat and barley, in the dairy districts where they have milk, whole and skimmed in abundance, if they are making butter, you have by-products as well as your main crops that can be utilized to advantage, and it is my judgment that a pig can take a quart of skimmed milk, and a pound of corn and a quarter pound of tankage, and make a marketable product in the shape of meat that will realize more profit than if those same products were marketed to any other class of animals that we have on the farm.

A Member—Do you think where you have plenty of skimmed milk that tankage is necessary?

Prof. Minkler—The gentleman asks the question whether or not if we have plenty of skimmed milk it is essential to feed tankage? I would say it is. I would never feed more than four pounds of milk with each pound of grain that we were feeding. In other words, if you take ten pounds of milk and one pound of grain, your pig will consume that much of the product, but you not only lose some of the efficiency and fat nutrients in that milk, because you have overtaxed your proportions; therefore you get much better results where you feed four pounds of milk with each pound of grain, and then if the pig is a fattening pig his time is really more valuable than to permit him not to make the most

rapid gains while he is young, and you will gain more rapidly if you will add a concentrated source of protein such as you find in tankage, even when you are feeding a skimmed milk and corn feed.

Another very important item in profitable pork production deals with the question of additional forage crops.

If I could not grow alfalfa on my farm and I wanted a good substitute and was interested in swine, I would resort to the use of dwarf Essex rape. The seed is inexpensive, it requires only eight pounds per acre, it can be seeded any time from the first week in March until the first of August, it can be grown either with oats and Canada field peas and red clover, or it can be seeded by itself in rows, and if you are cautious in not turning your pigs in the rape areas before the rape is about nine inches high, and you are careful in taking the pigs out of the particular rape field and watching so they will not waste it, and you feed corn in conjunction with this forage crop, with five per cent. of digested tankage added, you will find your rape will pay you almost as much per acre as the alfalfa, and it has the added advantage of being friendly with different types of soils. In other words, you can grow dwarf Essex rape where you cannot grow alfalfa, and that is why it is particularly useful, for the very reason, as I stated before, that it can be grown easy sown as a catch crop, as a leading crop or in conjunction with other foods, such as oats and Canada field peas.

And then remember this, if you do not remember any other suggestion that I make, that the farmer who grows corn, if just previous to the last cultivation, he will go into that corn field with eight pounds of rape and thirty-five pounds of wheat, broadcast that with a seeder or seed it by means of riding a horse through the field, plowing your corn once more to cover up the wheat seeds and the rape seeds, then let it grow from early in July until about the first of September, then fence off a little area of that corn field that has the rape and wheat in and turn the pigs in that particular field and let them do the husking and harvesting and rape devouring, you will find a balanced ration in feeding pork and your pigs will grow and gain perhaps more rapidly than in any other conditions that I might suggest.

But remember that the hundred and twenty-five pound pig is approximately the right-weighted animal to use for foraging corn

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and rape. An old sow will waste the product, the small pig does not realize the clover that he is in. The hundred and twenty-five- pound pig, whose one purpose and intention and duty is to make pork out of corn and rape, is going to go in there and eat the rape, nibble away at the weeds if there are any, push over a stalk of corn and eat off a part of the ear, and is going to put on from a pound and a half to two and a half pounds of weight per day.

But, remember, if the rape gets low, it is fundamental that you add some digested tankage or some linseed meal or some other highly concentrated protein food to the extent of about five per cent. of the amount of corn that he would ordinarily eat, if you want the most economical and the most desirable results.

Let us look at this swine proposition from still another viewpoint. Look at it from the individual pig itself. There is no excuse for the New Jersey farmer, or the farmer in any other State, keeping a scrub or a mongrel pig. They are prolific, they increase in numbers rapidly. Selection and mating and weeding out the inferior ones, is a relatively easy proposition, and there is positively no excuse for a man keeping a pig, feeding it because it squeals, and when it squeals, and expecting that animal and keeping him in order to consume the waste by-products of the farm. A pig should be kept for a definite purpose, the converting of farm products into pork in the shortest length of time and the highest point of efficiency. And remember that animals, that breeding animals, that are able to produce large litters, animals that mature at an early age, animals that have the vigor and vitality and disposition to consume large amounts of food, are the animals that will yield the greatest profit to the farmer for the products that they consume. Do not grow bacon hogs to supply a fat hog market. If your butcher or the man that you sell your pork product to, buys them by the pound and will not pay you any more for a nice, prime marbelled Yorkshire carcass than he will for a fat, heavy carcass of one of the fat breeds, Duroc Jersey or Jersey Red, Poland China or Yorkshire or Chester White; remember that the fat hog gains more rapidly than, possibly not more efficiently, but you gain in that animal efficiency of saving time and putting on rapid daily gains.

Now, you ask the question: Is there any one favorite breed? No. It is the selection of the individual in a breed. That is the essential procedure in pork production.

If you like a dark Jersey brood sow, insist that she come from a litter that was large. Insist that the particular dam in this case was a heavy producer. Insist that she has inherited those characteristics of prepotency, of efficiency and rapidity of gain, in order that her pigs can inherit those same characteristics. But do not cross breed and lose all you get. Do not line breed extensively. But keep within the breed that you select and insist upon large litters, because it costs no more to keep a brood sow a year that will give you ten pigs than a brood sow that raises only six pigs and kills two and goes through with four; the same care and the same management will be more profitable in this way.

One other point, in my judgment, is fundamental. Do not think that you can go out and buy brood sows or pigs to fatten, that you can go to the feed dealers and buy Red Dog flour and middlings and tankage and these other concentrated feeds, and take these two foreign grown products and grow pork under your conditions at a profit. Money from producing any meat product depends from a farmer's standpoint, upon the amount of those food products consumed that are produced on his own farm.

The thing that is keeping the dairyman down to-day is not primarily the low price of milk. It is the high price for the food that he is buying in the bag of a hundred pound lots, or in ton lots, and upon him not insisting upon getting a dollar's worth of food, to find a basis that carries the greatest amount of efficiency. Therefore, the farmer that can grow corn and wheat and rye, remembering that any grain product in itself, not ground or not concentrated, belongs to that grade of foods that we call carbohydrates and essentially necessary in producing heat and energy, and remember that the concentrated portion of your corn, as gluten, linseed meal and cotton seed meal, are the sources of protein, and that it is just as essential in the growing of pigs to have those two nutrients in proper proportion as it is for the mason to have bricks and mortar if he is building a house.

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Now, I want to emphasize this one point particularly this morning, and if you will take that concrete illustration: here is a mason building a house. He has bricks and mortar. If he runs out of brick, he can build a frame and finish up the building with concrete. But, if that same man runs out of mortar, he cannot put those bricks up further with any degree of efficiency or with any lasting qualities.

So, if you can get your carbohydrates or fat producing foods from those that supply units of this product in large amounts and economical sources, and then go to your digested tankage or skimmed milk or linseed meal for the source of your protein, you can make pork much cheaper than if you feed corn exclusively and let him wait, so to speak, until the protein in that particular food reaches an efficient point where he can utilize to advantage more carbohydrates.

Now, do not look entirely at the pleasant side of the swine industry. We have drawbacks just as surely as we have points of encouragement.

The colony house will solve one of the great drawbacks, and that is the question of sanitation. Because, while a pig is a dirty animal, as he ordinarily is recognized, if you will put a colony house at the far end of a half acre field, and let him have his feeding trough at the other end of that particular field, I will venture to suggest that house will not need to be cleaned during the entire winter. You will have your manure voided or distributed over the field where you want it, and get that item of exercise going to and fro and you will solve that old unfortunate saying about the pig, that he is a dirty animal.

Then there is this important item of hog cholera or swine plague that is causing millions of dollars of loss, not only in the corn belt, but in the east. What we need is a means of obtaining hog cholera serum quickly and efficiently, as a preventative, not a cure. They are utilizing it and manufacturing it by the million cubic centimeters in the West and in the corn growing regions and they are supplying preventative measures that are efficient. But in New Jersey, as yet, we do not have the proper facilities for the distribution of this serum which is so useful and essential and successful if used in time, in preventing hog cholera.

Now, I trust, Mr. Chairman and Secretary Dye, that while I have stopped or intended to stop promptly on time, that I have brought to a keen realization of the farmers who are represented here the importance of this pork problem. There are possibilities in growing this product in New Jersey and the man who gets on the ground floor, with useful animals and feeds them only those grades of food that I have named and uses this colony house system and alfalfa rack, and utilizes the waste products of his farm to the best advantage,—the South Jerseyman can utilize his small potatoes and some of his vegetables to good advantage,—but do not expect a pig to live on tomatoes alone. He cannot do it.

If I may say just a word more in reference to the great possibilities of this pork producing industry, from the Eastern standpoint. I would refer to this matter of feeding what we can of garbage extract. You are aware that in New Jersey a great many of our seaboard cities, like New York, Philadelphia, Jersey City, Newark, in fact, every large city, are getting to a point now where they have their sewage disposal plants, but a great many of the hotels have garbage that they are practically giving away to a man who comes there and hauls it away. Now, some New Brunswick farmers are doing this. They are taking that garbage from the high class hotels, decreasing it by means of cooking it in vats and letting this grease form at the top, skimming that grease off, putting it in barrels and selling it at six cents a pound; taking that refuse liquid that is called stock, concentrating that particular product, neutralizing its acidity, mixing it with meals, adding a little corn meal, and utilizing that for pig feeding, and I confess that if I told you today the rate of gain and the cost of gain which resulted from a single experiment that we have conducted with that at the station, you would hardly believe me, and yet I remember a hundred and fifty pound pig, one among twenty, that gained three and a half pounds a day, and at a cost of less than three cents a pound. It is only a bee in your ear to suggest that pork production in New Jersey holds an important place. (Applause.)

Vice-President Cox—If any of the members would like to ask Prof. Minkler any questions, I feel sure he will be pleased to answer them.

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A Member—I know a farmer in Pennsylvania who is making a business of raising young pigs, he buys them from the adjoining farmers and he claims that he makes a pound of pork a day and when they get to about two hundred pounds he prepares them for market. Now, he claims that his secret is feeding hominy. I would like to know if you can tell us about the food value and cost of that. Have you ever experimented with it?

Prof. Minkler—Hominy is very useful as a stock food when it can be purchased at a price two dollars less per ton than corn meal. The analysis of hominy is not very different from the analysis of corn meal, and while it is in a fine form and perhaps a little more easily digested than some of the coarser products, I do not think that it has any advantage over ear corn, providing your corn is supplemented with a high grade of protein such as digested tankage.

And I would say this in reference to hominy, that it is variable and not so reliable as tankage and some other forms of protein, and the item to remember is that you want the pig to gain every day in his life.

Vice-President Cox—The Board will now take a recess until 1.30 today.

AFTERNOON SESSION.

The meeting was called to order by Secretary Dye and shortly afterwards President Frelinghuysen entered and took the Chair.

President Frelinghuysen—The first business of the afternoon session will be the call of Counties for a representative on the committee to nominate officers for the ensuing year. Each County is entitled by custom to one member on this committee. The Secretary will call the Counties:

Secretary Dye then called the Counties and the following-named committee was nominated from the floor:

Atlantic—Carl Schirmer.

Bergen—A. I. Ackerman.

Burlington—Fred Lippincott.

Camden—Benjamin Barrett.

Cape May—Prof. R. D. Maltby.

Cumberland—Allen D. Ackley.

Essex—E. R. DeCamp.

Gloucester—George Gaunt.

Hunterdon—W. W. Foster.

Mercer—Allen G. Hendrickson.

Middlesex—John M. Emmons.

Monmouth—Chas. C. Basley.

Morris—S. E. Young.

Ocean—No representative.

Passaic—George W. Winters.

Salem—Louis Edwards.

Somerset—Jacob D. Quick.

Sussex—Theodore M. Roe.

Union—Hart S. Van Fleet.

Warren—James I. Cook.

President Frelinghuysen—The Committee on Nominations is requested to meet immediately after this session for organization in the room on the left hand, and they will govern themselves accordingly.

The next item on the program is an address by Mr. Howard R. Heydon, of the New Jersey State Chamber of Commerce, on the relations of the State Chamber of Commerce to the agricultural industry.

I will say for this organization, that, during the past two years the prominent business men, the prominent manufacturers and farmers have gotten together and formed a statewide Chamber of Commerce. The strongest men in the State are in this organization at the present time.

They intend to interest themselves in all matters of public welfare. It is an organization entirely free from politics, because it has men of all complexions of politics in it, an organization which is organized without any idea or desire of individual or special privilege or benefit, simply for the good and welfare of the State. The men behind it are public spirited men, and we hope that as an organization it will do great good to shape public opinion in the State. That organization has a Committee on Agriculture and the organization itself is very much interested in the

subject, because the members realize that the welfare of the State depends largely upon this State's agricultural prosperity.

I take great pleasure in introducing to you Mr. Howard R. Heydon, and I am going to ask him to speak for fifteen minutes if he can kindly limit himself to that time.

Mr. Heydon—Mr. President and Members of the State Board of Agriculture:

Mr. Heydon then read his address, which was as follows:

New Jersey State Chamber of Commerce.

BY HOWARD R. HEYDON.

It is with profound appreciation of the courtesy extended to the New Jersey State Chamber of Commerce that I appear before you as representative of that body on this occasion. The State Chamber is perhaps the youngest of the many organizations participating in the current activities of the State. As yet it has attracted little popular attention to its work—rather has it avoided publicity on the theory that accomplishments speak more forcefully than proposals. Yet the honor of being included in the program of the Annual Meeting of the New Jersey State Board of Agriculture furnishes an opportunity to formally announce the policies of the State Chamber and show its relation to agriculture and industry.

As the allowance of time for this presentation is somewhat limited, if you will indulge me, I will follow my manuscript rather closely, as it was prepared with the view of touching briefly on the several phases of the statewide scope of the Chamber.

THE NEED OF A STATE CHAMBER.

For some time a feeling had been gaining credence that business men of New Jersey had much in common. It became quite clear that there should be some method by which they could ascertain and express their consensus of opinion on matters which affected them. This gave rise to the suggestion of organizing the business men to work together upon business principles for business objects of business value to the State. The original impulse may have been selfish, it is true, but quite a different selfishness than that of private interest.

I will not review the gradual evolution that has brought about our present organization. It will suffice to say that the gentlemen, among whom there was no one more prominent than Col. Frelinghuysen himself, who have been instrumental in the formation of the Chamber, have given it of their own strong characters and it stands today a credit to their stalwart citizenship.

To insure personal interest and direct responsibility it was decided at the outset to have only individual membership. The individual is the citizen. No firm, corporation or body of men can exercise the function of citizenship. So in confining membership to the citizen it leans upon his public spirit and calls his business or professional experience into the State's service.

It was next seen that some restriction would have to be placed upon the membership, otherwise the members from the more thickly populated industrial

centers would outnumber the members from the rural sections and defeat the broad-gauged plan of equitable representation from every part of the State. If twelve congressmen could represent the State in the national assembly, it seemed eminently just that a proportionate number of representative men from those twelve districts could constitute an equitable body to look after the business man's interests at home. Therefore the State was divided into the twelve congressional units and a quota of memberships apportioned to each district in accordance with its population. As a working basis the membership in the Chamber was arbitrarily limited to one thousand and divided into two classes of five hundred each. For example, Congressional district number two, comprising Burlington, Atlantic, Cumberland and Cape May Counties, with a total of about two hundred and twelve thousand population, is eligible to forty-two members of each class; district number four, comprising Hunterdon, Somerset and Mercer Counties, with a total population of about one hundred and ninety-nine thousand, is eligible to thirty-nine members of each class, and other districts in similar proportion.

You can readily see the fundamental principle of equity upon which the Chamber is founded, in the desire to represent the entire State impartially.

Furthermore, these memberships will be represented on the board of trustees on the same pro rata basis and the committees are composed, so far as is practical, of men from different sections of the state. For example, the harbors and navigation committee is constituted as follows: One member each from districts Nos. 1, 2, 3, 6, 10, 11, 12.

The State Chamber in reality is the embodiment of the principles of a progressive board of trade or local commercial organization in the larger field. It treats New Jersey as a communal unit, if you please. Its relation to the whole State is identical to the relation of a local body to its community. Yet the combination of its statewide scope and its limited individual membership has given it a distinct character of its own. To quote its first president, Mr. Frederick Frelinghuysen, "Other assemblies may be influenced by political or local bias, but the State Chamber affords a tribunal where a wise and impartial consideration of public interests can be assured."

Such matters as legislation, taxation, transportation and the like, which are everybody's business, are nobody's business. The resources and advantages of the State have never been properly placed before the public simply because no individual or organization has been specially commissioned for the task.

"Jersey" is still known to many as the Traitor State because of the publicity given to Lincoln Steffens' article, or for its former "easy-going" trust laws. It is still the butt of the paragrapher's wit. The cartoonist insists the mosquito is its trade mark. Even its strategic location is made the subject of derision by insistent reference to the sleeping room for the great metropolis to the north and south.

Do the critics of the State take into consideration that there is manufactured an annual per capita product of over four hundred and fifty dollars; that over one hundred and sixty-nine millions of dollars are annually distributed in wages; that the pristine trust laws have been supplanted; that large areas of meadows have been reclaimed with the result that total extermination of the mosquito is within reach of accomplishment in the near future.

There is a point where forbearance ceases to be a virtue. The time has come to reverse these conditions that have worked to the State's injury. Instead of permitting the State's progress to continue along haphazard lines an effort is being made to safeguard the business and economic welfare, to anticipate future

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needs and consort all the forces which are striving in their separate localities to accomplish the same results.

To this end the work of the State Chamber will include a careful surveillance of legislation, the establishment of reciprocal relations with local commercial organizations, industrial development and publicity.

LEGISLATIVE SERVICE.

The Government, the State Legislature and the courts are constantly passing upon questions which should have consideration by our business interests as a whole.

Governor Fielder in addressing the State Chamber at its annual meeting called particular attention to the fact that "the Legislature is very anxious to legislate properly and wisely for our industries and our business; that the majority of the members, irrespective of politics, are anxious to do what is for the betterment and promotion of the best interests of New Jersey, and that the State Chamber could be of great help to the legislators themselves by crystallizing public opinion so that they may ascertain what is right and fair to the people and be prepared to act intelligently."

Many measures which would have been beneficial have failed, and many more, less worthy of enactment, have become laws owing to the lack of an organization representing the statewide interests.

Often the various bodies of manufacturers, bankers, farmers, and many professions have advocated or objected to certain legislation with indifferent success owing to it being taken for granted that their views were biased or that their motives were selfish. Should a matter become the concern of the State Chamber, however, by the very nature of its organization the charge of localism or of self-seeking becomes impotent.

Accordingly it has provided for a representative at Trenton during the legislative session. Copies of all bills are received as printed and their progress through the Legislature closely followed. Bills general in character are analyzed to determine their purpose and possible effect, and reports are made to the membership through frequent bulletins.

With this definite knowledge the State Chamber, by the referendum vote of its membership, will be able to get an expression of the sentiment of the people and determine the general attitude of business men in every section of the State towards pending legislation. Furthermore, through the department of municipal development the local commercial bodies are asked to co-operate with the State Chamber in opposing inequitable bills and supporting meritorious measures.

MUNICIPAL DEVELOPMENT.

While the Chamber's primary object is to unite men of affairs in the common cause of the State's advancement, it is also the clearing house or State association for all boards of trade, agricultural societies and various organizations in New Jersey. It is a well-known axiom that the whole is the sum total of its part and it naturally follows that the development of the whole depends upon the development of the several parts. It should be an all-round development in which every interest and section, every business and profession, every locality, whether city or country, should be made responsive.

The geographical limitations of New Jersey are particularly well adapted to a reciprocal relationship between the several communities and the State Chamber

for the purpose of increasing local efficiency on the one hand and of securing local assistance in State matters on the other.

By reason of the membership being restricted to individuals, it is free to act with any local body impartially and as a part of its general policy, it is interested in each community in the same proportion that the community is interested in itself. Already the committee on education is working with several cities on the installation of bureaus of industrial education and vocational guidance. This means more efficient workers for our employers and less of the spirit of unrest in industrial circles.

The committee on local and co-operative organization has assisted in associating leading citizens in a movement to form boards of trade for their towns. And I might say right here that it is hoped the Chamber will soon be in a position to help establish a body for business and civic purposes in every town that at present has no such central or inclusive organization.

The local board or chamber of commerce promotes the physical resources of its community, inducts its social ideals and moulds its civic character. It holds itself responsible for the public weal and through its efficiency contributes to the prosperity of the whole State.

The State Chamber has also benefited several rural districts through the courtesy of Dr. Jacob G. Lipman, Director, New Jersey Agricultural Experiment Station, and Mr. John H. Hankinson, Farm Expert, Mercer County Farm Bureau, who volunteered their services on special occasions to work under the auspices of the committee on agriculture. In this field, however, there is much to be accomplished. As has been aptly stated by Seth Low, who is a close student in matters pertaining to the farm, "The fundamental difficulty with the farmer is that he buys at retail and sells at wholesale." Organization and co-operation will reverse the prevailing process. The purchase of supplies and the marketing of produce through the medium of farmers' exchanges and co-operative societies will result in greater benefit not only to the tillers of the soil but to the consumer as well. And this the State Chamber hopes to promote.

Besides these activities the Chamber has held four statewide conferences during the past six months that brought together representatives of every section and every interest for the interchange of ideas and counsel in matters affecting the industrial, agricultural, civic and social welfare of New Jersey.

INDUSTRIAL DEVELOPMENT.

The rapid growth of the State during the past decade or two has brought forward many problems and projects on which there is a wide variance of opinion. To conserve the common interests of manufacturing and commercial establishments already located in New Jersey there is the need of a wise plan of co-operation and a strong body to lead in the work of accomplishing it. Representatives of railroads, traffic managers of industrial plants, merchants and the Board of Public Utilities Commission must be brought together to study and overcome the difficulties confronting the producer, shipper, carrier and receiver. This concerns those interested in every phase of business, the farmer as well as the manufacturer. The shortage of cars or the delay in freight transit affects the marketing of the product. Discrepancies in rates can be traced out and called to the attention of the Interstate Commerce Commission. Better service can be secured. Already the committee on harbors and navigation has taken action to support a State policy to correlate the various waterway projects existing and proposed into a comprehensive plan of development and to improve the

harbor frontage in order to create unsurpassed terminal facilities. Other committees are endeavoring to attract new industries to locate within New Jersey by presenting to outsiders the splendid industrial, residential and recreative facilities the State has to offer.

The committee on commercial arbitration has a most valuable function. It endeavors to aid in the amicable settlement of disputes between industrial factions.

The State Chamber is not interested in the extent of the resources of New Jersey, but in the utilization of those resources to the greater prosperity of the State. Its province is to make enterprise still more enterprising. In this connection it will endeavor to work in co-operation with the various State authorities in a great campaign of education.

New Jersey is called the Garden State. Farming has ever been one of its chief industries. The State Board of Agriculture has commanded the attention and respect of the country because of the character and ability of its personnel. Its various reports and publications are models of excellence and bespeak the wide knowledge and efficiency of Secretary Franklin Dye, Dr. Jacob G. Lipman and the other authors under whose direction they have been issued. The effort to teach better farming methods has been well begun. An ever increasing interest is manifest in the attendance at the State Agricultural College. Yet is this work progressing as rapidly as it should? The only criticism of the farmer is his vocational ignorance, the same that can be made against the manufacturer or the banker who has not kept up with the latest improvements in his business. Scientific farming, generally speaking, is not practiced in New Jersey today. According to the best authorities the two million acres of farms now under cultivation yield less than half what they should, while there are a million additional acres of undeveloped land within a short railroad haul of New York or Philadelphia which with a comparatively inexpensive system of irrigation can be transferred into a most valuable agricultural section. It is easier to make a farm than make a market. For that reason agriculture becomes a most absorbing problem in industrial development.

The State Chamber wants to be of service to the Board. It wants to bring to the attention of the farmers in the most attractive form the numerous agricultural achievements so that they may profit by the success of others.

A good example of what I mean can be found in the results obtained by Mr. A. P. Seabrook of Bridgeton. By irrigating a certain four acre piece of land he has raised three separate crops during the growing season. The first was lettuce, one carload of which netted \$1,100. The second was beets for the canning factory, over one hundred tons at \$8.00 per ton. The last was another batch of lettuce returning \$1,000 to the acre.

The Chamber feels that it can supplement the work of the Board by widely disseminating such information as this showing the farming prospects in New Jersey, the price of land, the kind of crops most suitable to its soil, and other data, in a way that will be easily understood by the lay mind. Also by publishing a year book and other literature founded on the work of the State Board, but sent out as a prospectus of the opportunities in New Jersey's agriculture.

Furthermore the Chamber desires to bring the banker, the business man and the farmer in closer relationship by showing them their interdependence. Conferences can be arranged for the discussion of matters of common interest, such as farm credit facilities, etc.

A speakers' bureau can be maintained to take the educational campaign into each community and in addition to the general question of scientific farming,

such subjects as irrigation, soil tillage, drainage, crop rotation and seed selection can be taken up by experts.

Thus briefly are some of the activities that can be undertaken by the State Chamber in co-operation with and under the direction of the State Board in the furtherance of their mutual efforts to serve New Jersey.

In closing I would like to read to you the names of the Committee on Agriculture of the State Chamber so that you can see its representative character:

Chairman, Putnam A. Bates, a Farming Engineer of Convent; Frederick L. Atkins, of Bobbink & Atkins, Horticulturists; Hon. Joseph H. Frelinghuysen, your President; Senator Gaunt, Dr. Gardener, of Newark; Lloyd W. Smith, and E. B. Thomas.

President Frelinghuysen—I am sure we are all very grateful to Mr. Heydon for his explicit speech telling the purpose of the New Jersey State Chamber of Commerce. A motion for a vote of thanks to him is in order.

A vote of thanks was then moved, and duly seconded, and, on a vote, carried.

Vice-President Cox was then called to the Chair.

Vice-President Cox—The State Board will now be favored by its President, who will deliver his annual address, and there is no necessity to introduce him to the Board, the Hon. Joseph S. Frelinghuysen. (Applause.)

President Frelinghuysen—Mr. Chairman and Members of the State Board of Agriculture, you have my sincere sympathy. For forty-one years the members of the Board have had to listen to an annual address which is supposed to sum up in that address the activities of the State Board during the year, and inasmuch as this duty has devolved upon me, you have got to bear with me for a few minutes:

President Frelinghuysen then delivered his address to the Board, as follows:

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Address of President Hon. Jos. S. Frelinghuysen.

The members of the State Board have congregated today at this annual meeting, which marks the forty-first year of its existence.

The State Board of Agriculture was organized in 1872 under a statute for the laudable purpose of promoting the cause of agriculture in the State of New Jersey. Its promoters, sensible of the inestimable benefit that would accrue to the commonwealth through the development of the land, formed this department of the State government in the most desirable and practical manner that could be devised. Realizing that service could best be rendered by those interested in the purposes for which the organization was formed, they left its administration with the farmers themselves, so that the motive power and impetus of its progress would be furnished from the beginning by the County Boards of Agriculture. Added impetus was given later by the organization which became associated with it, the Grange, Horticulture Society, the Cranberry Growers and other societies organized for similar purposes, the influence and control thus being centered in these County and State organizations had back of them directly the farm and the farmer. The Board became, and always has been, a governmental department of, for and by the farmer. The men who were the pioneers in the movement did not burden the organization with useless and high salaried officers, leaving it untrammelled by political influence, and removing it as far as could be done from the shock of the change of parties in the State government.

We are face to face today with the question: Is the present agricultural department of the State as effective and useful as it might be, and should there be a change in the plan of administration?

Following the established custom in existence for over forty-one years, your President is supposed to address you annually on the existing conditions of agriculture in the State, and present his views and suggestions for your consideration and action. He acts somewhat in an advisory capacity, and the authority which he possesses together with that of the Executive Committee comes from you, the delegates of the farmers. Therefore,

it seems necessary that I should deal directly here and now with this problem, leaving the matter with you for discussion and action.

I said we were face to face with the question: is our organization effective or, can some other organization be formed that will be more effective? Sometime ago the legislature appointed an Economy and Efficiency Commission. The chairman is Senator Edge, of Atlantic County, and the object of the investigation was to inquire into the departments of government and make recommendations to the legislature looking toward more economy and better efficiency. No one can criticise the worthiness of this legislative inquiry, or the motives of the high-minded men who compose the commission, nor the energy that has been applied to their investigation, they having studied the departments of the New Jersey State government exhaustively.

During the course of inquiry, they invited your President and Secretary to give their views as to how this Agricultural Department of the State government could be improved.

At the same time Dr. Lipman, Director of the Experiment Station, and his colleague, testified, as well as the Chief Inspector of the Tuberculosis Commission in Animals.

A review of the entire situation disclosed the fact that to the basic law which formed the State Board and armed it with complete authority had been added other departments both educational and executive.

The establishment of the Experimental Station co-operating in an educational way by assisting the farmers in the Farmers' Institutes under the State Board, and the Department of the Station, such as Entomology, Plant Pathology, Bee Inspection, Poultry, and others, doing the police work of the State, was work that was under divided authority and pay from the State Board and the State and Experiment Station, and it was thought that both were acting in a somewhat dual capacity.

In addition to this, the Horsebreeding, Tuberculosis, Dairy Inspection and Forestry were under other Commissions and Boards in the State, the point being made by the Economy and Efficiency Commission was that the administration of the departments for the protection of the agricultural interests in in-

spection work, and the execution of the protective laws belongs strictly to the State Board, and should be united under a department with a Commission, while the educational work belonged to the Experiment Station. The question that was pressed on Secretary Dye, Dr. Lipman and myself, was whether the Department of Agriculture with a salaried commissioner under whom would be placed all present departments and commissions representing agriculture, would not be more effective and useful, leaving the Experiment Station alone to continue its education and experiment work, to which I replied, Mr. Dye and Dr. Lipman concurring: "Undoubtedly an ideal plan would be such a department, but from New Jersey's standpoint, but from the farmers' standpoint, NO." (Applause.)

Mention was then made of the fact that I had suggested a Department of Agriculture and a Commissioner, in a previous speech. I said I had, and a committee of the State Board had considered it, and had concluded not to change the present prosperous condition, and place the destinies of the agricultural interests within the realm of politics, as that would be hazardous, and we had better leave well enough alone. (Applause.)

My statement in regard to this was made in my last annual address, and I now repeat it for the information of those present.

"Would not better results be obtained by the formation of a Department of Agriculture with a commissioner and deputies appointed by the State Board, having as an advisory board the officers and executive committee of the State Board? Many States now have their Departments of Agriculture. Such a department could administer all laws relating to agriculture now being managed by separate commissions, such as Tuberculosis in Cattle, Live Stock Inspection, Nursery Inspection, Forestry Laws, and Dairy Inspection, and could keep all records and accounts. Better results would be obtained and the present appropriations for the various objects mentioned above would undoubtedly support such a department. To this could be added the inspection of nurseries, bees, and several other duties belonging to the State now performed by the Experiment Station.

"The functions of the Experiment Station and its relation to the State must be maintained. What is their function? Edu-

cation, research and experimental work! Is it their duty to do the State's police work? The function of the State Board of Agriculture must be preserved and its relation to the State must be maintained. What is their function? Supervision and the promotion of agriculture. The State Board of Agriculture of New Jersey by a most singular series of traditional influences which generations have cherished and preserved, by such influences custom has been embalmed and law represented, and with this we have created the strongest organization of agricultural interests, an organization that cannot be destroyed or impaired in any way."

For over forty years the agricultural interests have never suffered from political influence, but you create an organization having salaried plums, and I fear the value of personal and voluntary service and unselfish interest of the farmers would be lost. The farmers control the organization now, change it, and politics will control it. Secondly, even if the present relations of the State and Experiment Station interlocked, no good would come by tearing them apart.

The great aid of the Station to the State Board in educational work directly to the farmers, and in the protection of the farmers' interests, is too valuable to the State, and its people, to change.

The State Board and Experiment Station are bound together in holy wedlock and should not be divorced, a union under which exists perfect understanding and co-operation, and results in great good to the State.

Thirdly, I doubt whether such a change would result in any saving to the State. In fact, I believe it would cost the State more.

During an experience of six years in the legislature and now three years, as President of the State Board, our appropriations have been used to the best advantage, and I have never seen a cent wasted or any suggestion of graft.

The matter rested with these statements, until a few weeks ago, when your President was asked by the Commission to recommend any change in the law looking toward the establishment of a department of agriculture, or any change that he might deem beneficial.

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I brought this request to the Executive Committee and reply was formulated, which was sent, and in effect was as follows:

"That the officers of the State Board had testified and given their views to the Commission, and there was nothing to add thereto; that they would await the report of the Commissioner and submit the suggestions to the members of the State Board of Agriculture, and if they approved of them undoubtedly they would have our support. If not, we would undoubtedly oppose them."

Aside from the worthy desire of the Economy and Efficiency Commission to do good for the State, where does the agitation for a change come? Now and then, we hear rumors of a change to be made by the legislature. It is said there ought to be improvement. There is not enough progress. Sometimes I suspect there is some one or somebody desirous of getting a job, back of the agitation to make this change. I bow, of course, with respect and submission to the authority and wisdom of the legislature and the Chief Executive of the State legislature, recognizing that their decision will be law, and we must submit, but I doubt very much whether the legislature in this year 1914 will countenance any change in the present conditions. Our critics say we are spending too much money. How much did we spend in 1913? I am giving you the population of several states and the sums that have been spent in 1912 in these States for the State Agricultural College, Institutes, etc.; these figures, however, include appropriations for engineering and all other purposes pertaining to agriculture, but if the figures were separated into purely agriculture, you would find that we are getting even less than is shown in the following comparison.

	Population.	Total Income per annum.
California	2,377,549	\$2,199,588
Illinois	5,638,591	2,197,273
Wisconsin	2,333,860	2,165,863
New York	9,113,614	3,023,754
New Jersey	2,537,167	284,886

Is this not a very small sum? And yet the standing of the farmer as a force in our national life has never been so high

as it is today. From all over the nation, yea, all over the world, come reports of the increased interest that is being taken in the welfare of the farmers. Sometimes I think the earnest solicitation by prominent men in political life will spoil the farmer, and it would were he not wise, hardheaded and patriotic.

Our economists have suddenly realized that he is somewhat necessary to human existence, and that the material prosperity of the nation depends upon his labor. The President of the United States very forcibly and wisely presents to Congress at length (forming a large part of a special message) the necessity of paying marked attention to the improvement of agriculture through beneficial laws to encourage the farmer to develop the land more extensively.

Only a few days ago Governor Fielder in his inaugural address, showed his interest in the State's Agricultural Department by mentioning the need of bringing within the reach of the farmer advanced educational ideas. Yes, the farmer has at last become quite important in the eyes of the statesmen, so important that they have decided to place him in the creditor class and lend him money, so, on the whole, the calling of the farmer seems to have taken on a new dignity. Yet in this State the calling has ever been dignified, for has not the State Board always had its best citizens as well as the best farmers as officials and members?

It has called to duty to head the organization its most prominent citizens, making, of course, the usual exception. Scan its list of Presidents. The first one was that great Governor, Joel Parker; during the time he was Governor, he was President of the State Board of Agriculture; ex-Governor William A. Newell, of Allentown, and those other prominent men and useful citizens who occupied the office: Thos. T. Kinney, of Newark; Hon. Thos. H. Dudley, of Camden (honored by President Lincoln on a special mission to England); Hon. Edward Burrough, and then Hon. D. D. DeNise, member of the legislature, the 6th President, and one of the active and efficient workers today in the State Board. Dr. E. B. Voorhees, honored, loved and respected by every farmer in the State. The value of his service can never be measured. I think I can say without detracting

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from the work of the honored men who preceded him, and the one who has followed him, that this great, unassuming man did more for the cause of agriculture than any one has ever done before or since.

I might go on and mention the faithful and efficient secretaries, Dr. Cook, State Geologist, Quinn, of Newark, Taylor, of Burlington, and that other vital force that always lives so in advance of the most progressive of us that sometimes I suspect him of being a bull moose.

Day and night he works in the interest of the farmers of the State, tiring younger men by his energies. Sometimes I think as an explorer Franklin Dye has put Ponce de Leon to shame, and has found the font of eternal youth. (Applause.)

While speaking of our own organization, the years have brought the alliance of other associate organizations that by their co-operation and assistance have added strength to the administration to the agricultural laws through the State Board.

The Grange, that fraternal, beneficial, potent force in the pulse beat of the commonwealth; the Horticultural Society, the Cranberry Growers and other allied and associate societies. And with these organizations have come men, high-minded men whose public spirit, patriotism and unselfish service have been of great benefit to the State.

The Honorable Senator Gaunt, the little giant of the Grange, (applause), Mr. Cox, our Vice-President, one of the most honorable men I know, serving on the Executive Committee and other committees, Decamp, Brown, Rider, Darnell Collins, Randolph, and other names equally prominent, who without emolument devote their services year in and year out to the State.

The question is: Shall these services be discontinued? Shall these men pass on? Shall their energies and activities cease? Shall their efforts be wiped out? Shall this volunteer army inspired only by patriotism and love of the State be supplanted by paid soldiers?

I hope not, for the sake of the State and the farmer. We have progressed under the administration of the State Board. The State has grown in population since 1872 from 907,000 to over

2,500,000 in 1913. The progress in agriculture has more than kept pace with its growth in population.

The valuable reports and estimate of crops now furnished by Secretary Dye were not available in 1872, but we can begin with the year 1879. In the census of 1879 we find the value of crops, (corn, wheat, rye, oats, buckwheat, hay, white and sweet potatoes, \$15,000,000) and in 1913, similiar crops, \$36,000,000, an increase of \$20,500,000, or 231%.

Comparing all field crops and dairy products since 1900: In 1900 we find a value of \$24,000,000, and in 1913, \$71,000,000, an increase of \$47,000,000. Of course, we must realize that the increase in the high cost of living, or the cost of high living accounts for some of this gain. You will see in the Secretary's report in detail the activities of the State Board through the medium of the Farmers' Institutes and the County Board meetings, what an increased interest has been manifested. This means of instruction in scientific and up-to-date methods by men who know reflects in the results obtained by the work of the State Board. While I believe there is more interest and enthusiasm than ever before, I must say some of the County Boards are asleep and overgrown with moss. Two years ago Morris and Sussex Counties were the objects of special attention by your President. Morris is waking up. Several meetings well attended have been held and there seems to be a growing interest. In the Poultry Show at Elizabeth, Morris County has twice taken the cup given by your President. This beautiful fertile county is awakening to its possibilities, and should be the subject of much congratulation. I have not heard so much of the activities of Sussex, although I think they are improving too.

The joint meeting with the Horticultural Society in December was very successful from the standpoint of exhibits. A very significant part of this exhibit was the showing made by the Corn Clubs and the Schools. The splendid exhibits of corn by the young farmers of the State, and the handiwork of the school children in domestic science shows what the educational program is doing to promote interest in country life.

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I cannot devote more time to the activities of this Board, and must pass on. But before leaving this subject, I want to say that I am not in favor of a change in the present construction of the State Department of Agriculture.

For myself I wish to say that I have done, and will do all I can to the limit of my capacity. Undoubtedly there are many men who as President can do more, and better than I, but I have tried to do my best as the head of this organization.

To head the Board is a great honor. In my opinion it ranks very high with other important positions in the State, and I believe that with the volunteer services of a President and a Board as now constructed, no better organization can be found for the State. A better system may be devised, better methods of administering the laws may be found, but until some plan that is practical is approved by the farmers themselves, I feel that the present plan is the best for all concerned, and that the State Board cannot now step out of its true path without losing its dignity and impairing its usefulness. (Applause.)

Agricultural Education.

In 1903 Dr. Voorhees, then President of this Board, in his annual address, in speaking to the topic "Agricultural Education in the Public Schools," said:

"This question is a perennial one and yet is of the utmost importance. Unless there is a demand for education, we cannot get it until the farmers themselves ask for it." He suggested that the Grange, County Boards, and farmers' organizations arouse the farmers to the importance of the knowledge that can be gained from the study of science as applied to agriculture. He voiced the fear that this instruction might not be carried to the district schools, and to the farms, so to speak.

How far seeing Dr. Voorhees was! He knew the needs of the farmer's children.

In the discussion which followed, Mr. Rider, in speaking to this subject, said:

"The matter of education in the public schools in the line of agriculture, I think a most appropriate one. I am in thorough sympathy with it. I believe the reason why so many boys drift

from the country, and are looking for places among the professions, and in the stores and other employments, is because there is nothing in the curriculum of the study in the public schools where farmers' boys attend, that helps them to understand the principles of agriculture beyond the elements they all get in reading, writing and arithmetic.

"I believe thoroughly that we should inaugurate a system and have it adopted in our different schools, that will give the farmer an equal chance with the professional man, and in that way we will raise the farmer to a high level."

These remarks were made eleven years ago. Nothing was done to carry out these recommendations until the reorganization of the State Board two years ago. Now agricultural education is being developed, and is an established fact in the country schools. When we realize that the boys and girls of ten who were in the schools at the time this subject was taken up, eleven years ago, are now men and women, we fully realize how slow the State has been to adopt this very important subject.

The present Board of Education under Commissioner Kendall has established practical agricultural instruction in the country schools of the State. Those who want it, can get it. The State Board needs the co-operation of the country school boards, and I am glad you are going to hear Dr. Kendall tell you what has been done. Through his department he has formulated the plans for teaching agriculture, and has written with the aid of the learned men at the Experiment Station and their expert authorities, special pamphlets bearing on the methods of teaching, and I challenge anyone to say they are not most practical, and based on practical experience.

One is introduction to the teaching of elementary agriculture. Then, in addition we have a pamphlet on gardening and corn-growing, and several others prepared by the experts in this direction.

In addition to this, the Summer Courses were arranged at New Brunswick to prepare teachers in agriculture and the summer schools are doing likewise. Many of the schools are taking up the practical end by having small plots near the schools for experiment work. And still further, the State Board has been encouraging better and more sanitary buildings in the country

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districts. A misunderstanding has arisen in regard to this. The position of the State Board of Education has been that many of the schools have been replaced, but the act is not mandatory. It has been a missionary campaign, so to speak.

A few days ago a Committee of the State Grange consisting of two men from every County met with the State Board of Education and discussed this question. Never before has a problem been placed before the State Board of Education in such a businesslike and concrete form as was placed before them then. It resulted in a thorough understanding of the desires of this great organization, and an understanding of the position of the State Board of Education, and as a member and its vice-president, I am very grateful to know that we will have the hearty co-operation of the State Grange in our efforts to better conditions in the country schools of the State, and do it reasonably.

One of the great problems, and I am not going to enlarge upon it, is the question of the education of the teachers and the getting of proper teachers; and I want to say to the farmers of South Jersey just a word of advice. South Jersey wants a State Normal School, it needs a State Normal School, the daughters of the farmers ought to be educated and ought to have the opportunity of education in South Jersey which can be obtained in the northern part of the State, and that can be obtained now only by unity of action. If you work together you can secure what you desire. In unity there is strength. If, however, each county insists as a condition of its co-operation, that the school must be within its borders, the demand is then not from all South Jersey, but from one county. Get together, insist on a normal school for the entire section. When that has been secured, then each locality can point out its particular merits. If that is done we will obtain a school. Otherwise we never will.

We are absorbing every year thousands of foreign born men and women in this State. To properly assimilate them in the body politic, we must educate their children. This and this alone is the crucible of civilization, that will preserve our republican form of government.

It is true it creates a great burden of taxation, and taxation is one of the problems of the future. It is one of the problems of today. But the citizens of this State and the patriotic farmers have ever been ready to bear their share of taxation. It is unjust taxation, and unequal taxation that they complain of.

The men serving on the State Board of Education are honestly trying to do their best for the people in this regard. Don't criticise them unjustly. Suspend judgment until you know the facts, and I think your better reasoning will lead all to support their administration when you accurately find out what their policies are, and what they are doing.

Tuberculosis in Animals.

Under the Constitution and by reason of the fact that I am President of the State Board, I am also President of the Commission on Tuberculosis in Animals.

I consider this department one of the most important to the farmers of the State. It has been a long, hard fight in checking this disease so destructive to the dairying interests.

Your President desires here to express to you, the State Board, and the Grange, his gratitude in upholding his hands in this great work. The Secretary of the Commission, or the Chief Inspector, will make a detailed report. I will take a few moments to tell you briefly what has been accomplished. We have prevented the wholesale dumping of diseased cattle from other States into New Jersey, protecting the farmer against this infection. We have inspected many herds at the request of the owners, and removed the infected animals. We have shown others States that they cannot ship diseased cows past our borders by careless inspections and tests, and we have compelled all unscrupulous dealers to obey the law.

The Commission is now composed of prominent men in the State, who are interested in the work and who have paid close attention to it. The work is under the direct supervision of Chief Inspector McNabb, whom the great success of the work has been due. The State has been districted and there are at present five inspectors guarding the State line to prevent violation of the law by the inshipping of cattle without test. To

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these faithful men, some of whom are veterinarians, I wish to accord the highest praise. Only fairly paid, they have honestly administered the law often at the risk of losing their popularity and professional income.

Last year 16,388 cows were imported from other States, and were examined and certified to by our inspectors. In 1912, 16,085 head were imported. How much does it cost to inspect these cattle? The State pays between \$30,000 and \$40,000 to protect the farmer from diseased cattle. In addition to this upon application we inspected 227 home herds in the State. We condemned and killed 424 animals. The State paid the owners \$17,489.

The appropriation for the entire work is,	\$50,000 00
Salary of Secretary, Treasurer and Stenographer,	2,160 00
Salary of Chief Inspector and five District Inspectors,	7,200 02
Paid owners for cows condemned,	18,089 25
Balance of fees and expenses of the Commission brings sum up to....	39,000 00
We received from shippers for listing cattle,	4,979 50
We received from meat and hide sold,	3,976 74
Which amounted to,	\$8,956 24

We returned this to the State in addition to the \$10,623.82 that we had left over from our appropriation, making in all \$19,580.06 returned to the State. It cost the State to administer this law \$30,500. The important fact in this statement is that 16,000 cattle were imported last year in New Jersey, a million and a half to two million worth of cattle. What a reflection on the farmers of New Jersey! It has been boldly suggested that we pay a bounty to the farmer for raising heifers to milk. This is too paternalistic for me. I would rather pay a bounty to have more good American children in the State. Then we will get some good results. (Applause.) By creating a sentiment and appealing to the farmers, we have brought about the raising of more calves but we are met by the practical statement that with the high price of feed, a farmer cannot afford it. And that is so. It costs about \$40 to raise a heifer calf. Yet it will pay if we improve the breed. Minnesota is lending the farmers money to buy good breeds, so important do the State authorities believe the industry to be. Does not the fact that by raising your own

cattle to milk you eliminate tuberculosis, thereby avoiding the loss of cattle that you may bring into your herd that may become infected, make up somewhat for the chance you take in spending a little extra money to raise a calf? It is with a great deal of pride that I tell of my experience in raising my own herd. I told you last year of the test of 131 head at my dairy, the Raritan Valley Farms, being tested by the Chief Inspector and veterinarians of the New York Medical Milk Commission. I began the experiment about a year before of raising my own heifers from the herd. A year has passed, and that test resulted in not one reaction. A year has gone by since then, and we now have about 160, including calves; thirty-five young stock are away at another farm being wintered. But of the 115 milking cows and young heifers and bulls at the Raritan Valley Farms, tested on January 14th, (in their own particular and accurate way) the New York Medical Milk Commission did not find a single infected animal. (Applause.) It proves my theory—to keep tuberculosis out, raise your own herd, and tuberculosis will stay out.

Now, I want for this coming year to ask all the farmers in the State Board to raise any good individual calf they may have, and to try and induce their neighbors to do so. It may cost you a little money, but let us do it for patriotic reasons, and bring the number of those imported cattle down. If we don't, good cows will soon be as scarce as buffaloes, and as expensive as elephants.

I think our Board has proven their efficiency and results justify the statement I made to the legislature when the law was passed—that if they would give me the appropriation and authority in law, the situation would be controlled.

There are those in the State, I believe, who covet the control of this Board. Whether they wish it for selfish reasons, or because they believe that they can do better than somebody else, I do not know. From my own standpoint, I should undoubtedly like to be relieved of the burden of the work of the administration of this Board, but for the welfare of the State and the protection of human life, I do not want to see this great humane work placed in careless and indifferent hands, and in this, I be-

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lieve, that public opinion will sustain us and endorse our work. (Applause.)

Farm Loans.

Several years ago Senator Price of Sussex, introduced a bill in the legislature providing that the State should loan money on farm mortgages. I opposed the plan. The State did this once, and still has some of the farms. Such a plan would bring in my opinion too great a risk by reason of politics, and the influence which would surround the loaning of the money. Yet it seems that some plan should be devised by the State to assist the farmer to develop his land and market his crops. I believe some method should be devised to provide long time, low interest loans to farmers and settlers. Under present conditions the laborer who has invested his savings in farm land usually has little left to supply the money needed for sowing, cultivation and harvesting of crops, or to purchase equipments, make improvements, or erect buildings. The loan shark often gets him, and with an unfair burden on his shoulders, his venture generally spells failure. The improvement of the credit facilities of the farmer in America in order to secure capital with which to carry on his business is what is needed, and New Jersey must meet the question.

The States of Idaho, Indiana, Iowa, Oklahoma, Oregon and North and South Dakota have invested their school funds in farm loans for short periods with considerable success. I do not favor this, but I think that funds realized by the State from other sources might be safely invested to a limited extent in this way. Give a worthy farmer money to do business on, and he will pay his note. Some co-operative plan should be tried in New Jersey. I refer the subject for consideration to the legislative committee of the State Board.

Farm Bureau.

A considerable part of the acreage of New Jersey is not cultivated. Much of this idle land can be profitably tilled. There are some abandoned farms, and some that ought to be abandoned

for the reason that their management is a failure. These farms are generally for sale. Some method should be devised whereby this land can be occupied, and it is distinctly a function of this Board to provide the means.

The government's failure to furnish immigrants and others with full information concerning lands for settlers has also resulted in the emigration of some of our sturdiest and most desirable residents to the Dominion of Canada. For the five fiscal years from 1908 to 1913, about 49 per cent. of the total admissions to Canada from the United States (274,364 out of 557,800) were classified as farmers, or farm laborers. About \$133,000,000 was brought into Canada by emigrants from the United States in one year (1911-1912). "This emigration of our good farmers furnishes much food for thought, for they are superior to most of the immigrants we are receiving," comments the Commissioner of Immigration at New York.

Thifty-seven states have immigration bureaus, or labor, land and agricultural bureaus, largely devoted to the task of outlining plans "for an effective exploitation of the resources of the state and of the opportunities for investment therein." Lists or registers of the names of all persons inquiring about land are compiled by some states, for the use of the real estate men of that particular state. The unscrupulous agent is now enabled to use these lists for his own ulterior purposes. No attempt, however, is made to obtain for the investor a register of those real estate agents whose lands are good and cheap and who offer bona fide opportunities for settlers.

The state land bureaus or offices are interested merely in the sale and disposition of state lands, and do not concern themselves with the purchaser's plans for the disposition of his property. "Colonizers," or "Colonizing Companies" who make such purchases then exploit such lands by means of brilliant advertisements, circulars, etc. Their activities are not recorded or investigated. As a result of the colossal frauds thus made possible, aliens residing in another state have been induced to buy ponds, sand pits and jungles for a home or farm. Once deceived or defrauded, it is very hard again to interest them in land, or in a farm, or to encourage saving for a home in this country.

The agricultural development of the United States, the one large field which has not as yet been thoroughly exploited, and on the development of which the wealth and prosperity of a nation depends.

In the report of the Executive Committee to this Board in 1903, eleven years ago, we find the statement:

"Professor Voorhees submitted for the consideration of the members the need there is for some central agency qualified to furnish reliable information concerning farms for sale in New Jersey to inquirers who are seeking homes and farms, and requested the members to devise a feasible plan if possible."

Your President has discussed the need of some such Bureau of Information publicly and with the Executive Committee, and during the past year, the question has been a live one. Quite frequently we have received communications asking information as to what farms are for sale, and whether the State Board can give any information on the subject. We have replied that we have no information on file.

With the steady flow of immigrants to our shores from other lands, among whom there must be worthy and reliable men, who will make good citizens (for many have been peasants in their own country) the beneficial distribution of the alien after arrival and his protection are questions involving our State policy.

In addition to the alien seeking a home are the farmers coming from the West to the East, and from North to South, for reasons of health, advantages, better climate, etc. This State will lose many desirable citizens unless a more successful method of assimilation is adopted, and I cannot see any better method than through the agency of the State Board, through a central bureau. If established, it must be simply an information bureau for record, only of available land and farms. To this might be added an employment agency, but the State cannot become a real estate dealer, to be exploited by unscrupulous real estate agents, or fake employment agencies. It must be confined simply to a bureau of records. We have done nothing with the matter for two reasons:

First: Because other activities have prevented our devoting the time to it and some additional legislation; and

Secondly: The funds of the State Board are limited and the feeling has been that they should not be withdrawn from other worthy objects, such as our exhibitions and institutes.

If the members have any views, or wish to discuss the subject, the President and the Executive Committee will be pleased to have these views.

I have spoken of the present policy of the national administration in helping the agricultural industry. With a U. S. Department of Agriculture this important branch has always been recognized, yet I believe the present policy of practical, rather than theoretical assistance will accomplish far better results.

I believe this country has still a great future opening out before it, but if we are to enjoy it, and give our children its benefits, we must still rely on the principles of the Constitution, the influence of the Church, and the school house, and if we do this, we need have no fear for the future of this Republic.

I am not standing today in the dark valley of pessimism, but on the hill heights of optimism, with a firm belief in the government of the United States, and the good judgment of the American people. (Applause).

Secretary Dye—Mr. Chairman, there are so many good points in this address of our President that ought to be brought before the Board, I would move, sir, that it be referred to a Committee of three to be appointed by the Vice-President.

This motion was duly seconded, and, on a vote, carried.

Vice-President Cox—The Vice-President at his leisure will appoint this Committee to which this paper will be referred and when it is reported back by the Committee tomorrow, then will be the proper time for a discussion of the subjects therein treated.

President Frelinghuysen then assumed the Chair.

President Frelinghuysen—Gentlemen of the State Board, it gives me great pleasure to introduce to you the Hon. Job Lippincott, who will speak on "The Effect of Present Automobile Legislation. Future Requirements."

Mr. Lippincott. (Applause.)

Mr. Lippincott—Mr. Chairman, and Members of the State Board of Agriculture, Ladies and Gentlemen: I wonder if your Chairman, when he introduced me, recalls the fact that some years

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ago he was appointed a special inspector, and after the administration of the Department changed, I asked him to continue, but that he insisted on resigning that onerous office. I was glad, however, that he did not resign, as he made plain in his letter, from any reason of criticism of the policy of the present administration, and I am especially glad that he is here today and that I have had the honor to be introduced by him. I listened with great interest to his excellent address, and, while, possibly, some of the latter points I could not entirely agree with, yet he showed to me what I had not appreciated, and that is, the vast scope of the activities of this State Board of Agriculture; and I think a great many of us who have not specialized in that line of work do not understand the vast influence and the great work for good that your Board is accomplishing in New Jersey, and I was very glad to have an opportunity to be present to listen to your President's most excellent address on that subject.

But as I have been asked to come here to talk about automobiles, I am going to confine myself strictly to that subject.

Mr. Lippincott then read his address, which was as follows:

Effect of Present Automobile Legislation.

—Future Requirements.

HON. JOB LIPPINCOTT, COMMISSIONER.

In discussing the subject assigned to me, namely, the effect of present automobile legislation and the need for new legislation, I shall give especial attention to the second part of my subject, as I believe that the best method of indicating the effect of new law is to discuss the needed amendments or changes in such law.

It is an axiom of political economy that no law and no legal system can be perfect any more than those charged with the law's enforcement can be free from errors of judgment.

With the changing conditions in our social and economic life, we find new problems confronting our legislators and new questions which our public officials have called upon to solve. As a general thing, such problems and such questions have either been improperly covered by our present laws or have not been the subject of any legislation whatsoever.

Especially might this be said to be true of the regulation of the automobile, for the reason that the automobile problem is a comparatively new one, and is at the present time in the course of development. The laws on the subject are therefore naturally experimental, and each year demonstrates new weaknesses and new subjects which have not been covered in our present automobile legislation.

the State's policy work? The function of the State Board of

It has been said that the average automobile law is little better than a series of rules passed to fit special cases, and that automobile laws not only in New Jersey, but in other states, as a whole, are unscientific and should be the subject of careful and complete revision.

From the standpoint of one charged with the direct enforcement of our automobile law, I can say that there are numerous problems recurring each week and each month which do not seem to be properly covered in our present act. One of the great difficulties with the law is that many of its provisions have failed to receive the united support of all of the people of our State. There have been widely divergent views expressed as to what our automobile laws should provide, and the question is not yet old enough to have settled into those definite grooves into which all legislation must settle if it is to receive the united support and approbation of the people in any community.

The problem, however, is fast approaching solution. The automobile is no longer regarded as a luxury, but as a necessity, and automobile legislation has therefore passed from the category of class legislation to legislation in the interests of both the motorists and the general public. I think it is safe to say that there is no longer any burning automobile question; that all classes of people regard the automobile as a necessity, and that all classes desire only such legislation as will tend towards proper regulation and proper protection of life and property.

While I think that everyone will agree that the above is true, we are still suffering in our automobile legislation from those laws which were passed at a time when the automobile question was regarded as a class question, and when the laws passed regulating automobiles were either flagrantly in favor of the motorist or flagrantly against the motorist.

To rectify these mistakes, we must approach the question without bias, and with a desire to do only simple justice to all of the many interests and many classes of life which are involved.

I shall, therefore, in the brief time allotted me, deal with some of the more important general defects in our motor vehicle act—defects which are not alone confined to the New Jersey law, but might be said to exist in almost every motor vehicle act of any State in the Union.

Probably the first great mistake which has been made in the regulation of automobiles has been the fact that there has been too little regard in the past for the policy and attitude of other States. The automobile question is of necessity an interstate problem. Formerly, when the only vehicles which traveled our roads could make but a comparatively few miles a day, there was no need of strict traffic regulation between States.

This situation has been completely revolutionized by the use of the high-powered combustion engines, permitting men to travel hundreds of miles in a day and in many cases making it possible for them to tour within two or more States in a comparatively short period of time. The result is that the roads of States like Massachusetts, Connecticut and New Jersey have, during the summer months, as many cars from other States as there are cars licensed within their own borders.

It therefore becomes necessary for New Jersey to develop a policy the success of which is dependent upon the attitude of the States from which these machines come in such great numbers.

One of the great defects, therefore, in our traffic system is not a defect in our automobile act, but is a defect in the New York automobile law. The New York automobile law gives no authority for summary revocation of license of even

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revocation of license after hearing, except for certain crimes and by magistrates after an arrest. The New York State law gives the Secretary of State not even power to refuse a renewal of a license even though he might have before him conclusive evidence showing that the applicant was an unfit person to receive such license. With a situation such as this, conjoined with the fact that so many machines from New York State travel our roads under our reciprocity agreement, it is plain to see that traffic regulation between New York and New Jersey becomes a practical impossibility. The only method left to us in regulating the tourist from New York is to arrest him and try him summarily. This is very often impossible. The only purpose which motor vehicle tags serve is to act as a means of bringing an offender to justice or as a means of identifying any one against whom the authorities may desire to make complaint, and are almost useless in the case of New York.

In order to rectify this situation, the department has been in constant communication with the authorities of New York, and this year they will recommend the passage of a law giving their automobile authorities power to revoke licenses. With the passage of such a law, it will be possible for New Jersey to arrange to co-operate with New York and to establish a continuous system of traffic regulation such as now exists between New Jersey and Massachusetts, New Jersey and Connecticut, and in a certain degree between New Jersey and Pennsylvania.

I have pointed out the need for uniformity in traffic regulation between States, and now come to another important defect in our system; namely, the question of complete and uniform traffic regulation within the confines of our State.

The motor vehicle department is charged generally with the enforcement of the motor vehicle act. This does not in any measure relieve the local police authorities from their obligation to enforce the motor vehicle law as well as every other criminal statute of the State. In order to enforce the motor vehicle law, we are equipped with fifteen inspectors. Last year we had only eight. In neither year did we have enough to more than provide for temporary enforcement in any one given locality.

Appreciating that the motor vehicle has revolutionized road traffic, the authorities are forced to the conclusion that traffic regulation must be not only within the crowded cities, but continuous on those traveled highways frequented during many months of the year by countless automobilists.

The motor vehicle department with its limited facilities cannot and is not expected to provide continuous traffic regulation throughout the State. Our inspectors can be used for little else than for the purpose of instructing local authorities, examining licenses, protecting the revenues of the State, investigating accidents and enforcing traffic regulations in different portions of the State at regular intervals. In addition to the inspectors, there should be a complete system of traffic regulation. In other words, every community should be provided with its police officers, especially trained and especially detailed for the regulation of traffic. In carrying out this scheme, I would recommend that a certain portion of the fines which are now paid to the State be retained by each local community and by them applied by mandatory act to the salary of such traffic officer.

I would also recommend that the law compel all officers dealing with the regulation of motor vehicle traffic to be guided by the rules and regulations which are laid down by the motor vehicle department, and that no local traffic ordinance be permitted except such as have the approval of the motor vehicle department.

There is before the legislature today a resolution creating a traffic commission

for the purpose of formulating all road rules and traffic ordinances into a statute which can be adopted and which would apply to all classes of communities. This recommendation is in the interest of the motorist as well as of the general public, and such a statute would provide absolute uniformity in traffic rules within the State in the same degree as the above plan would provide for absolute uniformity of enforcement of such rules within such State.

Another question upon which a good automobile law is necessarily dependent is that of road construction and road building, and on this problem we enter into the discussion which leads us to the question of the raising of the necessary money to repair and build roads.

In my annual report I advocated the abolition of the personal tax on automobilists and an increase in the fee to one dollar per horse power. Since investigating the subject more thoroughly, I have come to the conclusion that a dollar per horse power would place an undue burden upon the owner of a cheap and small machine, while it would allow the owner of a large and expensive car to pay no more, and, in some instances, less than is paid now in combined registration fee and personal tax.

With the desire that my position be not misunderstood, I have taken this opportunity to say that I do not believe that one dollar per horse power would be fair to the owner of the small machine, and I believe that any revenue measure calculated to raise money for the repair and construction of roads should be so framed that were the personal taxation on automobiles abolished, the combined fee paid for registration would not be greater than the combined money now paid in registration and personal tax. It seems to me that this is the only sound method of approaching the subject, and that the need for such legislation is apparent to any one who travels the roads of New Jersey and sees the deteriorating condition into which they have fallen. The Road Department is handicapped for the lack of proper funds, and while Colonel Stevens has given that department the most excellent and painstaking management, he finds himself powerless without an added revenue from motor vehicles to maintain the former high standard of roads in this State.

To briefly touch upon the new problems which the last year or two have brought about in automobile legislation, I desire to speak about the proper lighting of automobiles on country roads. The high-powered search lights which are used upon the newest and most-up-to-date machines, while providing a means of lighting the road for a great distance in front of the driver and thereby making his driving possibly safer, have also tended to dazzle the eyes of persons coming in the opposite direction, thereby causing many and grave accidents. I believe that our law should compel the hooding of these lights in some manner which will prevent the rays from directly striking the eyes of drivers coming in opposite directions. I believe that this can be brought about by the use of lamps whose position would be such as to throw the searchlights rather upon the road a certain number of feet to the front than into the eyes of pedestrians or other drivers.

In this connection, I might say that there is also a conspicuous lack of enforcement of the law requiring that all horse-drawn vehicles should carry lights. It is as important for the safety of the driver of a horse-drawn vehicle as for the safety of a driver of a motor vehicle that both vehicles should be properly lighted. In order to meet this condition, we have recommended to the legislature that our inspectors be given general powers of regulation over all classes of traffic, whether it be motor vehicle traffic or horse-drawn vehicle traffic.

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Another strange defect in our present law seems to have been the failure to provide any additional fee for the licensing and operating of motor busses. With the prevalence and perfection of the automobile, the day of the trolley car would seem to be passing, and in its place will come the motor bus, operating without tracks or without permanent road fixtures. At the present time a motor bus line can be established in any community of the State by simply licensing the busses used at the regular price which would be charged to any private citizen. It is manifestly unfair that practically a public utility should be operated over given and definite routes, collecting a set fare, without either paying tax to the State in the form of a franchise tax or paying some additional revenue which can be credited to the road department.

A motor bus from its nature and construction, from the fact that it travels regularly over a given route, causes more damage to any one given road than could be assessed against an average motor vehicle. For this reason, the department has recommended this year a bill which would make a charge for each motor bus operated of a dollar and a half per running mile of route, such charge to be an annual charge and to be paid at the time when the license fee is paid. It is our belief that the motor bus lines, as such, should be incorporated, and that at this time no prohibitive charge should be made. The department has made investigations of this question in other States and in foreign countries where the motor bus business has attained a greater degree of perfection than in our own State, and we find that a number of States and a number of communities have approached this subject from different standpoints. For instance, New York City charges five per cent. of the gross receipts, while London assesses a gasoline tax, and Paris charges three per cent. of the gross receipts.

Under all of these different systems, the motor buss lines pay a greater fee than they would under the present bill now before the legislature. The bus line will mean the opening up of vast suburban tracts and an increase in the price and desirability of a great deal of property located in isolated communities. As I have said, everything should be done to encourage such lines, but no encouragement should be at the expense of good government and proper road construction.

There are a number of matters which could be discussed relative to the making of a more perfect automobile law. Time, however, prohibits the discussion of these questions, and I can only say to the members of the State Board of Agriculture, who have always given me their support and encouragement, that it rests with bodies of your character to aid in the proper solution of all such problems.

In the administration of any law it is necessary to have public approval. It is necessary to have suggestions as assistance, and the department has always looked to your Board and to the officers of your Board for the advice and support so necessary to the proper administration of any department.

President Frelinghuysen—I am sure we are all very thankful to the Commissioner of Motor Vehicles for his excellent and able address. A motion will be in order to thank Mr. Lippincott for coming here and addressing us.

This motion was made, and, duly seconded, and on a vote, carried.

President Frelinghuysen—Are there any questions you would like to ask of the Commissioner?

A Member—Yes, I would like to ask why it is that the farmers cannot get any redress against anyone without coming to Trenton. We have got four or five instances of complaints and we cannot get redress or anything else. We cannot come down to Trenton and I don't see why we can't bring them before a jury up our way and have the discretionary power in some of our officers. We must either come to Trenton to go before the Department, or else go to the Supreme Court, which will cost us a hundred and twenty dollars.

Mr. Lippincott—As I understand, your question is whether or not in order to gain redress in an automobile accident it is necessary to come to Trenton?

The Member—You wrote me that.

Mr. Lippincott—Yes, because your complaint was in the form of a letter. There are two methods of redress from automobile accidents, either you can get the name and address of the owner by taking his number and writing to Trenton for it—

A Member—How will you get the automobile number?

Mr. Lippincott—The right way to get the number is to read it.

A Member—Yes, read it on a dusty road, running as hard as he can go and with three or four numbers—

Mr. Lippincott—We cannot help that. That is outside of our province. The numbers are made as large as it is possible to make them. We cannot prevent that. After you get the number, you get the name and address of the owner, you can swear out a warrant for him, in the owner's care and send one copy to the department to be served by our inspectors and he will be compelled to appear there. That is one way of getting at it. Another way is to make a complaint in the Motor Vehicle Department asking to have the man's license revoked. We have revoked a number of them in the last year. If you make that kind of a complaint you simply write a letter stating the facts and forward affidavits, if you do not wish to appear in person, and the man will be examined before the Commissioner in Trenton, and if he does not make a proper answer to those affidavits, and prove different from the complaint, then his license will either be revoked or suspended, in accordance with the severity

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of his action. The average motorist would rather pay any reasonable fine than have his license revoked. We have revoked some hundreds during the last year. In fact, in the Summer time there are at least thirty cases down before me every week. In some of those cases the people never appear at all, simply send affidavits, properly executed, and if there is any doubt in my mind I have an inspector investigate; but we always tell them when the hearing comes on to allow them an opportunity to come personally and press the case and if they do not come we take the case up, and I think everybody will admit that those cases are treated as fairly as any other cases can be.

In the other matter you are mistaken about the possibility of punishing a man in your own home town. He may be arrested by an officer appointed by the Township or by the County or by yourselves if you cannot find an officer. And he may be brought before a jury in your own town. It all depends upon whether the Justice of the Peace has some summary method of disposing of the cases before him. In some cases he has a summary rule, in some cases he has held them for the grand jury and let the jury try the defendant before the court. That depends entirely upon what your local magistrate does. If you have confidence in your local judge and your local magistrate, then you can bring it before him. If your local judge and your local magistrate is not competent, then you may find the cases are not tried so promptly.

A Member—What proportion of the moneys for licenses gets back to the roads?

Mr. Lippincott—All of the money that is collected for licenses, for transfer of licenses, for driver's licenses and for card registration, all our moneys go to the Department of Roads direct for the repair of roads, with the expenses of the Automobile Department, which are deducted. Those expenses amount to a little less than nine per cent. of the total receipts, a lower percentage than the expenses of any automobile department in the East here. We collected \$661,000 this year and the expenses of the department amounted to something like fifty thousand dollars. The rest of it went to the roads.

A Member—I would like to ask one question as to the rules of the road that automobiles are guided by. I was ascending quite

a stiff grade with a very heavy load, and another team just as heavily loaded, and we were about to pass a machine and he crowded us over so that we almost went off the road. It was only the quickness of the man driving which prevented an accident in that particular case. What was our rights and their rights?

Mr. Lippincott—You say you had a heavily loaded truck?

The Member—We were both heavily loaded.

Mr. Lippincott—Was there room for the machine to pass on the proper side?

A Member—No, there was not, he had to get off the concrete; and if he put the heavy loads over there they would dump over.

Mr. Lippincott—He had no right to do it. That would be construed, no matter what speed he was going at, that would come in under reckless driving, and it was reckless driving if he forced the driver of the wagon off the road. He should have slowed up and waited until there was room to get by, provided the wagons were not trying to crowd him, trying to hog the road, so to speak.

In any of those cases, if the gentlemen will only report them to the Department, we will have them investigated and have some action taken.

The Member—I have his number yet. It was some months ago, though.

Mr. Lippincott—Send it to us.

A Member—Does it make any difference whether a wagon is heavily loaded or empty? Are they to give half the road?

Mr. Lippincott—It all depends upon the condition in which the road happens to be at that point, I should judge. You have got to use judgment on those things. An absolute rock bound rule on that is almost impossible. But if the wagon is very heavily loaded, and the road conditions are such that by getting over to the side he would upset his wagon, that is something that would not be expected of anyone.

A Member—I have looked up the law, and you will find the law to be that heavy loads, going or coming, you are supposed to give them half the road.

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Mr. Lippincott—Yes, that would be it.

A Member—Last night I was driving from my place to the Dunellen station and at the end of Seventh street, which is the street last out of Plainfield on the Stockton road, I met a machine, right at the end of it coming right to me. I drove past it, and just immediately ahead was a machine and he pulled out of that road when I turned, and I did not know which way he was going to turn until he did turn, then I went to pull to the right hand side of the road, but instead of waiting for me to get over there as far as I could he pulled over to the right hand side there and he just missed me, that is, by not more than a couple of inches. If he had hit me what redress would I have had if I had no number?

Mr. Lippincott—If you had no number probably you would not have been able to identify him unless he stopped and gave you his name and address.

The Member—If I had had the number then what would I have had?

Mr. Lippincott—Then you would have had the number and you could fix the responsibility between you and him for the proper management of those cars. If it was proven that he was negligent then you would have redress against the owner of that car for damages, or you might bring it up in a criminal action, or under the automobile law for reckless driving or the road law, or, as I say, you could have redress in the civil courts.

President Frelinghuysen—The Chair does not wish to interrupt the proceedings but wishes to point out to the member that the Chair thinks he should consult a lawyer in regard to this. (Applause).

The Member—One thing I want to ask which I think the Commissioner does understand. Last summer some time I was one Sunday afternoon coming out of Asbury Park with my wife, and between Asbury Park and Farmingdale there is a turn in the road and at the base of this road at that turn there is quite a ravine, and approaching it we met a young fellow on a motorcycle with a girl on the handle bars of this motorcycle. Now, the wheels of my machine were right alongside of the rail on the bridge as close as I could squeeze, and I was past the middle of the bridge, I was to the right of the middle of the bridge and he

ran into my machine with his motorcycle, and yet he raised quite a disturbance there. He wanted to know how much of the road I wanted, and we went to looking at it to find out how much I had. Now, he did not make any trouble because he saw he was wrong in two ways; he had more than half the road and he had this woman up on the handle bars of his machine.

Mr. Lippincott—I am afraid the law permits him to take his girl on the handle bars of the machine.

The Member—Well, he did not say anything when he saw the position he was in. But does a motorcycle get as much of the road as an automobile? That is the question I wanted to find out. Now, I have given him more than half of the road.

Mr. Lippincott—Well, a motorcycle is a vehicle, I presume, technically speaking, he would have the same right as any other vehicle. But, of course, it is a narrow gauge machine, and I think ordinary common sense would come into that. I don't think any court would construe that that way, but would consider if the man had a reasonable space to get by.

President Frelinghuysen—The Vice-President is recognized, as he desires to announce the appointment of a committee.

Vice-President Cox—The Vice-President was by a resolution of the State Board authorized to appoint a special committee to consider the address of our honored President. I now take great pleasure in appointing on that committee the following: Hon. George W. F. Gaunt, of Gloucester County; Mr. D. H. Jones, of Monmouth County; Mr. E. E. Cooper, of Somerset County.

Mr. Brown—Mr. President, I should like to ask one question: Is there any good reason why the foreign automobile should not pay something for the use of our roads?

President Frelinghuysen—The Commissioner will answer the question.

Mr. Lippincott—The Commissioner would prefer that the Chair would answer the question. In answer to the question, my position has always been in favor of reciprocity. I have never tried to conceal that fact. I imagine that a great many of this Board are probably against that, but I have been in favor of reciprocity, because I believe it is the only practical means of bringing about a partial solution of this very difficult question. I do not believe

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it is an absolute means, and I believe as time goes on a better solution will probably be found, but I think most of us who have automobiles in New Jersey, are anxious to run over to Pennsylvania now and then, or over to New York now and then, and probably down to Delaware or Maryland or up through New England, without paying any additional fees. The same thing is true of the people in New York and Pennsylvania and other States. That they want to come here without paying extra fees. The difficulty is that New Jersey gets the worst end of that bargain because she gets a great many more machines from other States than we send in the foreign States. But, nevertheless it seems to me to be the only solution of the problem at this time, to give fifteen days' reciprocity period, and I figure that we still get from the foreign automobiles very close to a hundred thousand dollars in registration fees. That is my position on the matter.

President Frelinghuysen—Mr. Lippincott, I do not wish to prolong this discussion, but I should like to ask if you have any information on this matter; you say the entire income of the Department is about six hundred thousand dollars?

Mr. Lippincott—Six hundred and sixty-one thousand dollars.

President Frelinghuysen—And that on the foreign cars you get a hundred thousand dollars.

Mr. Lippincott—Well, I would not say absolutely. I would estimate that we get in the neighborhood of something over seventy-five thousand dollars. Although that is not based on figures. But I know this, I know that in the seacoast resort section and in the section around Atlantic City, all along there, and in the other resort sections, that our inspectors during the months of July and August, and part of June and part of September, averaged an income of about a hundred dollars a day, registration fees, that were gained from people outside of the State, which the inspectors turned over to the department. I cannot give the actual figure, but that is close to it. Now, taking the number of people that every year get licenses in New Jersey because they come to New Jersey in addition to that, I figure that we get something like seventy-five thousand dollars from people outside of the State.

President Frelinghuysen—The residents of the State pay about

five hundred and ninety thousand dollars and the non-residents pay about seventy-five to a hundred thousand dollars?.

Mr. Lippincott—That is about it.

President Frelinghuysen—And that is the point that the farmers are interested in. It will come up for discussion in the resolutions of the committee when they report, and I think if you are going to be here tomorrow at the time of the discussion that you can make yourself valuable, if you could be available, we might like to ask you some questions. I won't prolong this discussion now, but the point is this, the taxpayers of New Jersey feel at the present time that a great amount of damage is done by the non-resident cars, that New Jersey has greater road traffic than any other State, and that to call upon the taxpayer of the State to pay this great amount of damage repair on the roads is just a bit unfair and unbalanced. That is the one point and the most important and potent factor in it I think. Here is seventy-five thousand dollars collected from cars that use the roads or damage them as much if not more than the resident automobiles, and those resident automobiles pay nearly six hundred thousand dollars. It does not seem quite fair.

A Member—How much does the State give for the different roads all together?

Mr. Lippincott—The State provides about seven or eight hundred thousand dollars in addition to the automobile funds. My figures are not absolute.

President Frelinghuysen—Approximately the Automobile Department contributes about five to six hundred thousand dollars, and the State provides about seven hundred thousand dollars, and then, if you add to that the Counties, what the Counties themselves give, you will reach about a figure of two million dollars annually for the repair and building of roads. That is as near as I can get to it now.

Mr. Lippincott—Of course, you know, Mr. President, the Department keeps in touch with the Departments of the other States. Now, there is a very strong demand being made on New Jersey today to repeal the fifteen-day reciprocity and adopt a thirty-day resident system. I have been absolutely against that. I said that the fifteen-day reciprocity was going far enough for a State like

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New Jersey. That we could not afford to throw away fifty thousand dollars of that hundred thousand dollars which came from outside sources, which we would do if we adopted the thirty-day resident scheme, which is being adopted in Massachusetts, Connecticut, New York, Pennsylvania and other States.

That is what they are demanding of New Jersey now, that we throw down the bars there. I don't think it is wise to do that I have said so publicly and I think that may be of some interest in your discussion of this question.

The thirty-day residence idea is simply establishing a residence, as maintaining a place of business or a place of residence, whether in a hotel or a house or other place in the State for thirty days. Any man who does that has to have his machine registered here, otherwise he can tour the State indefinitely without registration. That is the scheme they are trying to force on New Jersey from the outside, and they are already threatening retaliation against the New Jersey machines unless we adopt it.

A Member—What is that license fee? How much?

Mr. Lippincott—It depends. In Connecticut and some other States it is fifty cents a horse power; in New York it is a little bit higher than New Jersey, in Pennsylvania it is a trifle higher than New Jersey; in Massachusetts it is about fifty cents, I think, a horse power. Some of these States have checks on automobiles and some States do not; but in a State that has the system of roads and advantages of New Jersey, that is one argument against reciprocity, we offer more than the other States do.

Senator Gaunt—I would like to ask Mr. Lippincott to give us some idea of the comparison of automobiles coming into the State, as to those that are registered. We have listed between forty-nine and fifty thousand last year. I don't suppose it is possible.

Mr. Lippincott—It is not possible to do more than estimate on a question of that kind. That you can do from a simple observation of the inspectors on certain roads in New Jersey, namely, the road that leads from New York to the coast resorts, the Asbury Park section, or the road that leads from Philadelphia to Atlantic City, the White Horse Pike, the roads especially travelled on Saturdays and Sundays, the ratio is five out-of-State machines to one New Jersey machine on those roads. But that ratio does not con-

tinue all the week. This is during the summer time, during two months. But during the winter months I should judge there were more New Jersey cars touring all over the State than foreign cars. Of course, after September has gone and up to the middle of June, the proportion of New Jersey cars is very much greater than out-of-State cars. It all depends upon the time of the year we are discussing that, and also the time of the week, Saturdays and Sundays, then you get this vast number of New York and Pennsylvania machines.

Senator Gaunt—I understand from a pretty reliable source, that the Sunday right after the so-called reciprocity was passed the proportion was ten out-of-State cars to one New Jersey car that went to Atlantic City. That was the observation of those who were around the roads that first day. Of course, as Mr. Lippincott says, it depends all together on the time of the year. My opinion of it is, take the year around, the out-of-State automobiles would be very much more numerous than ours.

Mr. Lippincott—No, all the year around I don't think so. I think in the summer time that is true, but not in the winter time. It might average up pretty nearly even.

President Frelinghuysen—The next business will be the reading of a resolution by the Secretary.

Secretary Dye (reading)—By the Burlington County Pomona Grange:

“Resolved, That it be the opinion and belief of the members of the Burlington County Pomona Grange in meeting assembled, that the Automobile Reciprocity Act should be repealed, as it is not reciprocity in any sense of the word.

“At least twenty-five automobiles come into the State where one goes out.

“Our expensively built stone roads are wearing out and are in bad condition from the constant use by automobiles, and we are deprived of the revenue we should receive from the non-residents of our State, who are constantly using our roads, to keep them in repair. Therefore, we ask for the repeal of the same.

“Resolved, That we condemn the creation of new offices and the increase of the salaries of many of the present incumbents of various offices, as the increase means an extra burden for the taxpayers of the State.

"Resolved, That we ask for the repeal or modification of the Widows' Pension Act. Many applicants are asking for assistance who have friends or relatives who would come to their relief if necessary, or whose children would never be allowed to become a charge on the County or State."

President Frelinghuysen—If there is no objection the Chair will dispose of these resolutions by referring them to the Resolutions Committee. The Chair hearing no objection, that will be the order.

The next business on the program is five-minute reports by Delegates to the State Board as to the progress and needs of agriculture in the several counties. Counties will be called in alphabetical order. I wish to say, gentlemen, that the Chair will hold you to the five-minute rule, and hopes that you will not be offended if at the end of five minutes you are called to order.

The Secretary will call the roll of counties and we will be glad to hear what has been done there during the year in agriculture and how active your agricultural organization has been.

Secretary Dye—Atlantic County?

Mr. J. L. Purzner—Mr. President: In Atlantic County last year we had a meeting in connection with the County Board and had a very instructive meeting. We had a large attendance, and we also had some other meetings. In the last few years we have mixed our own fertilizer and have liked that way of doing very well, but not a great many want to go back to the ready mixed fertilizers.

Secretary Dye—Bergen County?

Mr. A. I. Ackerman—Mr. President: The conditions in Bergen County at the present time are greatly improved to what they have been in the past, and the Bergen County Board of Agriculture believes that they have been doing a good work up there. I know a short time ago when I first joined the Board, the farmers did not realize what the Board was doing, but now they are taking better hold of it. They are having their meetings and we have our Board Room in our new Court House, and are doing great work in connection with the Grange; but it seems the different farmers of the County are trying to get more out of the soil than what the soil will give, they are entirely too much inclined to use commercial

fertilizers in different sections. Of course, Bergen County has all kinds of soils and all kinds of farmers: fruit farmers, truck farmers and gardeners, and, of course, to cover all those different ones it is quite a hard matter. In the upper end of the county, near the New York State line, they are mostly farming for fruit, and fruit can grow on almost any ground; but down to the lower end of the county they are farm gardening, and anyone knows who has been in the gardening business that it takes quite a lot of study to do it to perfection. In my section we are entirely in the trucking,, sweet corn especially, and if we could not raise a good crop of sweet corn around there we would not know that we were living at all. We are trying to get sweet corn down as near perfect as we can possibly get it. We of course are trucking for the New York market, some to Newark, but principally to New York. We are trying to get sweet corn down to perfection and to get it as good as it can be grown. Every year we have some trouble, of course, and last year we suffered very much with the drought. We are trying now in every way possible to so work the ground that we can save the moisture. Another great hindrance is leaving the ground too much open in the winter time. For about two weeks' time we have very severe winds and one can sit there and see the dust blow for miles. That is a hindrance to our farmers of Bergen County. The farmers there want to look more after cover crops, that is one thing they are delinquent in. We ought to get more after them. I have been in consultation with some of our people on that and we hope to make it a point. I have done some planting of cover crops on my own place in the last two years and I have seen the good effects of it. I have a good crop of crimson clover at the present time, and not a speck of dirt blows off when those hard winds sweep over that field.

Another thing we need in Bergen County is more farmers' boys. We are very close to New York City and close to Newark, the commercial cities, and the boys are leaving the farm and going to the cities. I am one of the few exceptions around there, I suppose. I could name many farmers in my neighborhood where there are twenty-five boys, I suppose, all gone to New York. On Sundays and the holidays they like to come out to the country, but when it comes to the work they don't see it; they would

rather go down to New York and work in an office for about six or seven dollars a week, but when they come around the farm they are always tired. When they come around the farmers' boys with a little money in their pockets they prove an attraction for the cities. That is one of the hindrances that we have got in Bergen County—keeping the boys on the farm, and if the Board could help us interest the boys enough to keep them on the farm we would very much appreciate it. I think that we can have the best things on the farm and the nice things, but if we cannot keep the boys on the farm what is the farm good for? We have got to have somebody to look after it. As soon as we can get interest enough in the farm to keep the boys on the farm we are going to have successful farmers in Bergen County. (Applause).

Secretary Dye—Burlington County?

Mr. J. B. Evans—Mr. President: The farmers of Burlington County are fairly prosperous, up to date men, generally speaking. They are watching our experimental station very closely and appreciate the efforts being put forth by the experiment station and the State Board of Agriculture.

Some institutes have been held down there, but they have not been very well attended. I cannot tell you just why. The people do seem to be interested, but do not turn out. We had one held last week at Pemberton and not more than fifty people were present at any one time during the day. We had morning and afternoon sessions and one in the evening. It has been very interesting to anybody who was interested in agriculture.

Our farmers are paying close attention to the analysis of fertilizers. They are pretty careful what kind of fertilizers they use to know that the ingredients are suitable to their soil.

In my section of the county, near the county seat, tuberculosis has come up in the dairy cattle to a very alarming extent. Most of those farmers are interested in the production of milk and keep anywhere from twenty-five to sixty head of cattle, and they find the older cattle the best, those bought two years ago have made some money, those bought last Fall did not make so much.

The hay crop has been pretty good. Last year it was pretty heavy. A number have hay growing and some of them are going to make some money out of it.

Taking it altogether, I think the farmers of Burlington County are an up-to-date class of people and on the subject of new men. A great many of our men are new men, some want to farm and are seeking for farms. I have a son twenty-one years old that I guess is going to stick to me provided I give him rope enough and don't work him too hard. That is one thing that drives a great many young men off the farm, if they are held down to it and worked as hard as some of us were when we were young men, they will not stay there; you cannot keep them there, they must have some pleasure and fun. We must get them interested and give them something to work for besides dollars and cents, or they will not stay with you. (Applause).

Secretary Dye—Camden County? Is there any representative of Camden County here at present? If not, the County will be passed.

Cumberland County? Is there any representative from Cumberland County present?

Mr. Allen D. Ackley—Mr. President and Members of the State Board of Agriculture: In Cumberland County we are in a progressive condition, at least in the northern part of the county. That is a section in which every farmer is interested in growing sweet potatoes, and the northern part of the county is a section which is a dairy farm section, and the farm crops grown there are suitable to that business.

Some people are working with irrigation down there, and I have been informed on one piece where they have an irrigation system they have marketed nineteen hundred dollars worth of radishes already this winter, so it must be a good investment on that farm. Other farmers are considering putting in irrigating systems on their farms. In the vicinity of Bridgeton the Minch Brothers are operating on an extensive scale. They have thirteen farms under their supervision now that they are farming, and I think we are progressing very nicely in Cumberland County.

Others here can probably report on the southern part of the County. Cumberland County is adapted to diversified farming, the northern part, general crop is hay, grain and wheat, most anything can be grown through some of the southern parts of Cumberland County, like fruit crops and market gardening produce.

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President Frelinghuysen—Cumberland County has a few minutes more. Is there any further report? If not, the Secretary will call the next County.

Secretary Dye—Essex County?

Mr. E. Oscar DeCamp—Mr. President: Do you want a report of the County Board of Agriculture or of the Pomona Grange?

President Frelinghuysen—We want a report on the agricultural conditions in your County, whether it is from the Board or from the Grange.

Mr. DeCamp—I am a delegate from the Central District Pomona Grange. The other delegates, Brothers Cook or Harrison, are not in the room at the present time, and I will proceed with the report.

I am not like Brother Ackerman from Bergen County, one of the lucky ones to stay on the farm. I was one of the boys who saw a job in the city and grabbed it.

I am the secretary of the Central District Pomona Grange, and they always recognize the secretary as their delegate to sort of pay him for his trouble as secretary, and I am supposed to take notes down here and report back to the Central District Pomona Grange. Of course, I am a farmer in one way, I am a Granger. I have been a Granger ever since I was of the age to become one, and I think the farmers of Essex County are large farmers, if you attempt to hold an agricultural meeting or a grange meeting, they are so busy with their farms that they don't attend to them as they should.

The main subject for Essex would be dairying and you all know that we have the Fairfield Dairy up there, one of the best dairies in the State, and in the little Borough of Roseland, where I come from, we have a dairyman named Mr. Becker, who started selling twenty-five quarts of milk and today he sells over thirty-five hundred quarts, and his dairy is just as good as the Fairfield, only not as large. He is just as up to date and thorough in his dairy as the Fairfield Dairy.

Secretary Dye—Gloucester County?

Mr. H. Edwards—Mr. President: In Gloucester County the in-

stitutes were fairly well attended, not as well probably as they might be, but fairly well, and they seem to me to be doing good work. We have several dairy farmers who have got much good from them. We are keeping our boys interested by having a corn contest and lots of them are taking an interest in it. Some of our farmers started in with alfalfa and are making a success of it. I think they are planting more and more all the time. There are quite a good many dairy farmers there, and they are getting better stock all the time and more and more milk.

Secretary Dye—Hunterdon County?

Mr. H. E. Deats—Mr. President: Mr. John T. Cox could make a better report than I can of Hunterdon County. I don't know the conditions nearly as well as Mr. Cox, and he is in the room and I will ask him to make the report for Hunterdon County.

President Frelinghuysen—Mr. Cox, our Vice-President, is called upon to report for Hunterdon County.

Mr. Cox—Hunterdon County, Mr. President, is still on the map. The County Board in Hunterdon County is now proving an efficient organization. If the progress is slow, we do not think that is the fault of the County Board, nor the fault of the State Board, but the fault of the farmers of Hunterdon County. Conditions as they have existed in the County are found to be due very generally to the lack of interest, and while the State Board has been furnishing Hunterdon County with the very best institutes possible, the farmers generally have failed to appreciate to the full the opportunities that have been afforded to them by their interest.

I have made no preparation for a report at this time. I fully expected, since the County Board had two representatives here, one or the other would make a full report on the conditions in our County.

I believe one of the delegates is not here, and Mr. Deats, being a new member, is not well prepared perhaps to talk at this time, but Mr. Deats will be again the member from the Hunterdon County Board next year and I know he will furnish you a report worth listening to.

Secretary Dye—Mercer County?

President Frelinghuysen—Mercer County has been called. I see

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Mr. Hankinson in the room. Can he make a report as to the progress in Mercer County?

Mr. Hankinson—Mr. President: It is unfortunate that there is no representative of the County Board present, for they could give the conditions, I am sure, better than I can. I can only say for the County Board that they have held two very well attended meetings in Mercer County this year, one at the farm of Mr. Cruzer, at Hopewell, in which the attendance was well over one hundred, and another was in the Farmers' Institute at Lawrenceville, in which the attendance was well over one hundred.

In addition to that the members of the County Board have been interested in the farm bureau work of this county and have carried on a good many demonstrations of interest, and the members of the County Board are in large measure the members of the Executive Committee of the Mercer County Farm Bureau, so that the work is going along in harmony and we hope that results are coming on.

If there were any member of the County Board here he could report further.

Secretary Dye—Middlesex County?

Mr. John M. Evans—This, as I understand it, is not a report of the County Board of Agriculture, according to the information given to me, but whether it is or is not, you are asking a report of the conditions we find in our County. The section of the County which I represent is exceptionally situated from an agricultural standpoint. The largest part of the farming class out there are people who went to New York, made a little money and came back home. Now they are spending it. Most of the farmers there now are people who made money away from there. I find that the same thing exists there that exists in almost any other locality or any other business, the man that applies himself will prosper. He will do all right. And we have there a lot of people who are doing well, and some people who are not. We have some people there who just spend, well, thousands on thousands of dollars every year without getting any return.

Some of the things we need up there are better taxation systems, from what I find since I have gone up in that section, the taxes on my property have been, or the assessment has been raised every

year since I have been on it, with the exception of one year. I have had the place eight years and it has been raised every year but one year. This year it has been raised so high that I appealed it. Some of those things should be looked after.

I think you will find that condition exists everywhere.

Secretary Dye—Monmouth County?

Mr. Charles C. Basley—Mr. President: We speak of New Jersey as the Garden State, and I believe the root of it is down in Monmouth County.

Our conditions there are very nearly all that could be asked. But we are like *Oliver Twist*, we always want more, and that more would be a Farm Demonstrator, that would be first rate. We don't know it all yet.

We are very prosperous. Our Farmers' Exchange has worked wonderfully for us. I guess on a pinch we could buy two hundred and fifty tons of home mixed fertilizers among those different farmers.

We are men of big ideas, and we do big things, and we do not go into cities to make the money, but we stay home, our boys stay home, and I believe they all appreciate the farm. I know that the sons of a great number of farmers in Monmouth County have attended the Short Course in New Brunswick, which goes to show that they stay home and they don't have to go to New York to make money. Our farmers have got it, they are making it there and they have made it there, and they are spending it there, and our farms show it; they are prosperous and all that.

The County Board of Agriculture has held three prosperous meetings. We had one at which there were five hundred people, and I don't know whether you could tell whether you were at an automobile show or a farmers' meeting. The lane was filled with automobiles. It denotes prosperity. And at that meeting we had some addresses from the Experimental Station.

And then we had our corn growing contest in November, the small boy whose thoughts are still small, but whose achievements have been wonderful in the way of growing corn and produce of all kinds; so that that series of small boys is going to stay home, too.

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We, through our Exchange, have the best market facilities that there are and things are in A1 shape.

Secretary Dye—Morrins County?

Mr. S. E. Young—Mr. President: I can report progress in Morris County, and that is shown because a few years ago it was just on the map, only two or three years ago, it was a Garden County, but not much in the agricultural line. Since that time, with a bad year and everything else we have now two of the finest prizes that were ever put before the Board. Mr. Felch has gone to Florida for two or three months and I am taking his place. He told me that I had to come down here before this Board for him. I told him I could not talk and there was no use of my going down and he said there was no use trying to get out of it, I would have to go and tell you that we are doing well.

It is thirty-one years last December since the Morris County Board was organized and in that time I have missed three meetings.

There was some little trouble to get speakers, and about all we could do once in a while was to get one out there from Morristown, so that sometimes we would have a pretty good meeting and sometimes we would not. A great many State Board reports were sent us and it was almost impossible to get rid of **them**. They did not seem to want them, they did not seem to mean anything to them, but last year I did not have near enough reports to go around, they sent for them to the house and came to the house for them, and the reports were all gone.

This last year we had three or four meetings. At Dover we had a very good meeting and they all took an interest in it.

At Florham Park, they had a very interesting meeting, but there was unfortunately not many there.

The last year was very dry in most parts of our County and we had poor crops. Our corn crop was about a half crop, and potatoes in some sections better than in others where they were well tilled to keep the moisture.

Last fall we sent out some exhibits to go to Elizabeth; they went around for different things, and I told Mr. Felch that I did not think we had better send down there, that we would not get

anything this year. But he says, "We will do our best." And we did our best and sent the exhibits down there, and we gathered in a cup again.

Secretary Dye—Ocean County?

Mr. R. C. Graham—Mr. President: There does not appear to be any delegate here except myself, so I suppose I will have to speak for Ocean County.

I think Ocean County is in good condition. We are a resort county, we have got Lakewood and about fifty miles of resorts on the bay, and those resorts give us a fine market for vegetables that grow in the County. There are no large farms, about ten to a hundred acres, and the farmers make a very comfortable living by raising this stuff and taking it over to the seashore and selling it. And quite a few have gone into the chicken business. But I think in our section the large chicken men are the only ones who make anything. We have one of the largest chicken farms in the country, along the seacoast. But the farming is not quite so brisk probably on account of the mosquitoes, but if the State will keep up the work of extermination, I think they are going to do a good thing for the whole lower part of the State.

We are gradually increasing the cranberry growing in Ocean county and I consider it on a larger basis now than it ever was.

I think Ocean County is all right.

Secretary Dye—Passaic County?

Mr. George W. Winters—Mr. President: Our neighbor from Burlington County complained that they could not keep the boys home. I never expect to have trouble of that sort, but I do think I would like to keep one of my six girls at home.

In Passaic County we have a lot of good farmers who are good citizens and who are practical men, but who have to an extent failed to appreciate what the Board of Agriculture, and incidentally our County Board of Agriculture, through the institutes, can do for them and will do. But I think that prejudice, if I may call it that, is being gradually removed, and I hope when the time comes around that Secretary Dye can come to Passaic County with an institute that he won't forget Passaic County. We want it up there.

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Secretary Dye—Salem County?

Mr. Louis Edwards—Mr. President: Our President has been very sick and he asked me to tell you that he was not able to be here; he could not come out of the house.

Conditions in Salem County are very nice. Eleven institutes have been held and the attendance was very good.

We also have an exchange in the County, for the Salem County farmers. It is composed of part Salem County, part Cumberland and part Gloucester farmers. They have done a very good business there this year and I know the farmers are pleased with it.

We are raising a great many cattle. Lots of farmers in that County are raising their own heifers.

The help problem is getting so that we can hardly get men to milk. Lots of farmers have to do their own milking and lots of them are getting milking machines, and doing away with some of the men. During the last year the different granges sent a petition to the Board of Freeholders for a county demonstrator, but they have not seen their way to name one yet, or to put up the money for it, so we have dropped it.

The last meeting of the Salem County Pomona Grange sent in a resolution to the Board of Freeholders before they met for a County Demonstrator, and so we hope to be in line with the other counties with a demonstrator in a short while.

Secretary Dye—Somerset County?

Mr. Randolph—Mr. President: There has not been a great deal done in the last eighteen months or two years in Somerset County Board. Last spring they called an open meeting, but it did not bring out a very large attendance. May I be permitted to say that I have been with my daughter a portion of the time up in Paterson and I have not been able to look after things as I should properly, but there has been very little done in the County Board.

Secretary Dye—Sussex County?

(No answer.)

Secretary Dye—Warren County?

Mr. James I Cook—Mr. President and Gentlemen: Warren County, is, I think, fairly on the progressing line. Our ground is a little diversified up there, we have several large muck tracts which produce large quantities of truck garden stuff and our valleys also are producing at the present time very fine corn, and as fine wheat as I ever saw grow in the Middle West or South Dakota. We also have in our county, largely due, I think, to the State Board of Agriculture, two very fine breeding establishments of Holstein cattle, one at Squireville, belonging to Mr. Edward Quick, and one at Blairstown, belonging to Dr. Sharpe.

Our County Board is holding regular meetings, the attendance is not quite as large as it might be, but there are always a few progressive farmers there.

Our farmers had a meeting in July, due to the State Board of Agriculture, and there were demonstrations in mixing fertilizers and they are going to mix up their own fertilizers and save a whole lot of money by doing so.

The silos are growing up through Warren County. They are built in a permanent manner, built of concrete and vitrified brick, and our farmers in Warren County are beginning to learn that heavy corn fields fill their silos and that with alfalfa which they can grow they can produce just as much milk as they can up in Sussex County where dairying has been the great industry for a long while.

As I have said, we are diversified, we have got large mountains up there, some of them covered with roaming bands of deer, affording a great deal of pleasure. The lakes up in the mountain tops are surrounded with boarding houses and they are freely patronized, and while I do not think we have got exactly a flower garden, we have got a county up there that I am not ashamed of and Mr. Paul will tell you in a very brief way a few of our needs.

Mr. A. R. Paul—Mr. President: I am a recent comer in the State. I came from Massachusetts in November, 1912, and what observations I have made here, I think that one of the greatest benefits that could possibly come to Warren County would be, as we call it in Massachusetts, the State extension. That can be done in either one of two ways; the better plan is a special train, which perhaps some of you know of. But the explanation

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of that is that it is a train made up of five or six ordinary day coaches, one car devoted to each specific branch of the farming, such as dairying, poultry, bees, fertilizers, soils, etc., and then the upholstered seats of each car would be about half removed, on one end and in that end in the place of seats would be a thorough equipment for that particular branch, and also each car would be supplied with one or more demonstrators thoroughly competent to demonstrate. Then the public could take their choice of industries that they were interested in; such as if one was interested in poultry they could go in the poultry car and the dairyman could go in the dairying car.

The other method of doing it is by demonstration, conducting meetings at certain of the farms in the county, and perhaps that would be the better plan, because more people could hear the demonstration and explanation in that way than they could in a car. I think that either one of those methods would be very good for Warren County.

Secretary Dye—Union County?

Mr. Hart S. Van Fleet—Mr. President and Members of the Board, Ladies and Gentlemen: I consider it an honor to represent the Union County Board, because it is composed of five hundred members, the Union County Board of Agriculture and the New Jersey Poultry Association.

We have held our second annual Poultry and Agricultural Show at the State Armory, which included four days and four nights, and was largely attended and greatly appreciated by the citizens of the whole county.

We have asked for a County Demonstrator and we certainly need one.

All of our meetings are well attended, and there is more interest being taken than ever there was before.

Very frequently in our county the people come from the city and buy a little home and they will start on some chickens and things like that and the next they know they want to raise their own vegetables. The first year the city man plants his tomatoes and his cabbage and his egg plants two or three inches apart; a great mistake, but he does not like to ask anyone and the first

year he is very much handicapped in that. If we had our County Demonstrator he would have someone to go to.

Another thing our Board has taken up with the assistance of the Secretary of the Board of Trade of the City of Elizabeth is a City Market, or in other words, a farmers' market, whereby the farmer can sell his things direct to the consumer. At the present time a great many of our farmers will drive from the other side of Plainfield to Newark, a distance of twelve to seventeen miles, and the next day those same goods are brought back to Elizabeth which has a population, I think, of eighty thousand. Now, that is a loss of time. By having this market there the people will be able to get goods cheaper, the goods will be fresher, and the farmers will derive a larger revenue, and the consumer will be able to buy cheaper.

We have considerable available land in Union County which can be purchased for two hundred and fifty to a thousand dollars an acre, and there are a number of people who have made over a thousand dollars an acre on strawberries. This ground is lying there now in some instances, not being cultivated, and I think a good idea is to get out a pamphlet letting the people know so that they can come into our state and take up those advantages. There is land lying idle where strawberries and celery and other vegetables can be grown.

If our Board continues the way it has we will certainly feel highly elated.

Mr. Ralph Schellinger—Mr. President, Cape May County was not called that I noticed.

Secretary Dye—That was an oversight and I will call it now.

Mr. Ralph Schellinger—I just wanted to report for fear the boys might think that we had slipped out of existence. If the automobile is any indication of progress, we are progressing quite well. Our needs are many.

Senator Gaunt—Mr. President, I want to verify what our friend Schellinger says about Cape May County. I was down there a week ago and attended one of the liveliest meetings I ever attended in the county and they made quite a demonstration. There was some agitation. The Public Utilities Commission had dedicated a road down there and they are going to build a new road across some marshes and sand lots, and some

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of those fellows in Cape May County have got the idea in their mind, I don't know whether they are right or not, that there was some real estate scheme that wanted that road to come across, and were pushing that road, and you ought to see the lively bunch of fellows there was up at the station. They almost stopped the progress of the Pomona Grange for a couple of hours to protest against taking away their rights. They had so many cars there that I know Cape May County is very, very much alive today.

Mr. Schellinger—We have several Granges also.

President Frelinghuysen—The next number on the program is the report of the Committee on the Potato Quarantine, appointed to visit Washington at the December meeting of this Board. Prof. Melville T. Cook.

Prof. Cook—Mr. President and Gentlemen of the State Board of Agriculture: It is hardly necessary for me to tell you the result of the hearing at Washington on the subject of the Potato Quarantine, for I suppose you have all learned that through the papers, and know that the quarantine which already existed against certain countries of Europe where the Wart Disease of the potato was known to exist has been extended to cover all of continental Europe and the British Isles, and also to include a considerable part of the British possessions to the north of us as a result of the presence of the bacterial scab in those countries.

The committee appointed by the State Board consisted of three persons: Senator Gaunt, Director Lipman and myself. Senator Gaunt found it impossible to attend, Dr. Lipman was in attendance for about an hour, and then his business required him to return, and so it left me with the burden of the work. There were some other representatives from New Jersey present, representing organizations in the State, but as I was not acquainted with them they did not make themselves known until after the hearing was over.

The first part of the proceedings was devoted to hearing the protests which came in from all over the country. Those protests were sent in by agricultural associations, granges and various other bodies, and appeals to representatives in the House

and the Senate. These were presented that morning, and in the afternoon the representatives of the foreign countries presented their case. This part of the work was led by the Secretary of Agriculture for Ireland, Mr. Gill, a former member of the English Parliament, and was followed by the protests by the plant pathologists of the various states, the State of Maine, the State of Delaware, Minnesota, Wisconsin and New Jersey being represented by their plant pathologists, and it was left to us to give a report concerning the character of this disease as it was in other countries.

Now, some of the results of this quarantine, you know that we have heard a great deal of complaint and seen quite a little in the papers about potatoes from parts of Europe shipped to this country from Belgium and Holland which were not included in the original quarantine a year ago last September. That was true and potatoes affected by this disease were found in the market in the United States and they were traced back to shipments made from Holland by way of Belgium.

Now, we have reason to believe that this disease did not exist in either Holland or Belgium, but that those governments had shut their eyes and allowed the Germans and the Scotch and various other people to bring potatoes to Holland and Belgium and reship them to the United States. But, having found the disease on potatoes that were brought in that way, the Board took the view that those countries must be infested with the disease, so the new quarantine includes Holland and Belgium, and they cannot ship potatoes from Holland and Belgium until they prove themselves free from these diseases.

There will be little reaction as a result of this and I wish to speak about that for just a minute. I have just returned from a three days' trip in that connection, where I attended a state meeting of the Potato Growers and Farmers of Maine, and so there I met some of the Canadian friends, who told me that there is quite a little agitation there against the United States because of this quarantine, and it is possible that their legislative bodies will pass such legislation as will prohibit the American potatoes from crossing the line into the British possessions. So if some of you people here in New Jersey are accustomed to sending your early crop potatoes up in Montreal or Toronto, it

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is possible you may have some trouble before you as a result of that. However, that is no reason for your opening the doors to that section of the country where those diseases exist.

I would like to refer to my visit into Maine, if I may, for three or four minutes more. There are several good results to come out of this meeting at Washington, and one of them is in its reactionary effect on the potato growers of Maine.

You probably know that the potato growers there have been very proud and have been very loath to listen to anything from other states, but at this state meeting to which I refer, they invited Mr. Harrison of Burlington County, as a potato grower, and myself, to come there and present the case of the New Jersey potato growers, to state to them something about our demands in regard to seed, and Mr. Harrison spoke on the subject of purity in seed, while I took up the question of the diseases which we found upon the importation of seed in the Spring, and also I might say that Mr. Orton of the United States Department of Agriculture from Washington, was there and substantiated our statements, not only for the State of New Jersey, but also for other states to which Maine ships her potatoes, and as a result of that, they held a conference yesterday morning, yesterday forenoon, in which they took steps by which men who wish to grow seed in the State of Maine could have their fields inspected at least twice during the growing season, so that in the future the New Jersey growers and other growers to the south of us will be able to get certified seed and will be able to get seed potatoes coming in from that state that bear certificates showing that the potatoes have been inspected in the field and that they are reasonably free from disease.

Now, of course, it will be some little time before that can be brought about; you cannot get all of the seed certified the first year, but that is the course of their work.

I might also say that this seed might leave the State of Maine in apparently good condition, but as it comes south and comes into our warmer climate, diseases which would not come out up there would immediately come to the surface on the potato and show itself, so that the potato growers of Maine are not necessarily dishonest.

Now, just a word more in regard to protecting ourselves

against the bacterial scab. I am very much afraid that they already have the bacterial scab in the State of Maine. It has been found in two places already. It has been found in Presque Isle, which you know is in Aroostook County, but, apparently, so far as the United States authorities have been able to determine, that which was found at Presque Isle, which I may say was found on the market, came from across the line. The disease has also been found at Gardinor, Maine, but on one farm only, and, of course, that one farm has been quarantined.

Now, so far as those cases are concerned, we feel safe, but it is the cases which may exist in Maine which have not been discovered which are the ones which are likely to prove dangerous. However, the State authorities and the United States authorities, are making every effort possible to determine whether any other infections are present or not and to take precautions. And, of course, our people are getting seed potatoes from Maine and no doubt will get seed potatoes from there this year.

Now, my friends, it is impossible to inspect all those seed potatoes that come into the State. It would be impossible for me as State Plant Pathologist to inspect those alone, and our people are so unfamiliar with the disease that it is impossible to find a sufficient number of competent inspectors for that work. Furthermore than that, in its mild form it is practically impossible to distinguish it from our common scab, which already exists. So, even with the most thorough inspection, it may get a foothold.

I have prepared a press bulletin in which I have described the disease and in which I have given recommendations in regard to precautionary measures. I have today examined a proof of that publication which will be out in a few days and will be sent to the newspapers of the State and to all the Granges.

Now, you people the potato growers of New Jersey, can do a great deal more at the present time to prevent the invasion of this disease than anyone else can do. You yourselves must make a careful examination of your potatoes if you have any reason to be suspicious, why let us know, and we will come and make an examination and do everything possible to prevent the invasion of the disease. But this is really about the best that can be done at the present time.

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If we are fortunate enough to escape the disease this year, if it is true that there are no other infections in Maine than those that I have mentioned, and we escape the disease this year, I feel that the way is fairly clear for us to escape it in the future, because by the time another year rolls around there will be enough people in the State of Maine and also in the State of New York, and, as far as that is concerned, the State of Wisconsin, which was the first State to take up the question, to give us certified seed, so that we can be reasonably sure in the future of getting seed that is free and clear and free from disease.

President Frelinghuysen—Are there any questions on this report before you wish to take any further action on it?

A Member—I would like to ask the Professor how the potato crop is there, if they had a large crop this year?

Prof. Cook—Yes, the potato crop in Maine was good.

Now, to speak a little bit of the future. On that point, there has been a little bit. I might say, a great deal of misrepresentation in the press in regard to the potato crop of the country. A great many statements have been made that it was poorer than in the past and a smaller yield. Well, now, the potato crop of this year is less than it was a year ago, but greater than it was two years ago, so that—and it is greater than it has been for the past ten years, so that we are in no danger of a potato famine this year. It may be that potatoes will be held in some parts of the country for higher prices, in fact a government report just came to my attention today on that subject, but I have not had time to read it.

Mr. Collins—I would like to ask the Professor if he has any recommendations to make to our potato growers as to taking care of this scab and taking care that it does not get onto us?

Prof. Cook—The only recommendation I can make is for the grower to examine his potatoes very carefully, and do everything to prevent it that he knows, and if he suspects disease, to let me know and I will make a personal examination for it. That is the only recommendation I make at this time. In this press bulletin which I will issue in a few days are given recommendations in regard to the disease in general, and as I said, it would be impossible for me to inspect every potato that came into the State. I could not do it.

Senator Gaunt—What has become of the sacks of those that have been shipped here from the foreign countries? What has become of them? Have they been burned or fumigated or what has become of them? I judge there is more danger in those sacks now than in anything else.

Prof. Cook—That, of course, is one point that was taken into consideration by the Federal authorities. I do not know that we can tell what has become of them. There are of course some people who try to disinfect them.

Senator Gaunt—Don't you believe that there is more danger of getting the disease by having the potatoes remain in those sacks than in any others?

Prof. Cook—Yes, sir.

Mr. Hankinson—If that infection came in in the sacks, would the formaline treatment help it?

Prof. Cook—There is no known treatment for the bacterial scab. The formaline treatment does not seem to control it. On this visit to Washington when I appeared before the Federal Board, I went down there a little before so as to have an opportunity to look over all the literature there on the subject which I did very thoroughly, and the formaline treatment as used in Europe has not proved successful. It has, of course, reduced it to some extent, but we claim our old-fashioned Bordeaux has given better results for bacterial scab than the formaldehyde.

Mr. Hankinson—There is one point; would it make any difference whether your potato is actually affected with the scab or simply came in a bag which affected potatoes had come in, of course they would come in contact with what is on the bag, but would not then the formaldehyde be much better than if the potato was infected in itself?

Prof. Cook—As it works in the potato it works down in the potato and becomes chronic, like the old-fashioned scab, and when that works down in the potato the potato not only receives the disease but forms a layer of bark just in around the infection, and in case this bacterial disease is under that bark it goes down into the potato and the formaldehyde would not reach it and would not be nearly as effective as the case where the spores were simply collected on the surface.

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The report of the Potato Growers' Association was as follows:

Potato Growers' Association Report.

(DR. MEL. T. COOK, STATE PLANT PATHOLOGIST.)

The severe epidemic of potato diseases emphasized the importance of adopting measures for the improvement of the seed potatoes which our growers are compelled to buy from northern sources. Therefore, August 5th a number of the potato growers met at the College Farm at New Brunswick and organized the New Jersey Potato Association for the purpose of co-operating with the National Potato Association of America and with the various potato growers' organizations in other states. The first annual meeting of this association was held in the Second Regiment Armory at Trenton, N. J., December 10th, 1913, in co-operation with the State Horticultural Society and the State Board of Agriculture. The meeting was called to order by President Frelinghuysen of the State Board of Agriculture, who invited Dr. Mel. T. Cook, President of the New Jersey Potato Association, to the chair. The program with a résumé of the addresses is as follows:

President Cook called attention to the Federal quarantine laws, the enforcement of the quarantine against the European black wart and the proposed extension of the quarantine to include the powdery scab. Also to the prevalence of diseases which are brought to us on seed potatoes and the desirability of co-operation with other organizations for the purpose of overcoming these difficulties; to the desirability of a potato association in New Jersey; and to the work of the society.

The first speaker was Dr. Thomas J. Headlee, State Entomologist, who spoke of "The Effect of Spraying and Dusting Mixtures on Potato Flea Beetle and Other Common and Important Potato Insects." A résumé of his address is as follows:

Dr. Headlee—Mr. Chairman, Gentlemen: The insect doing the largest amount of harm to the progressive potato grower during the past season was the potato flea beetle. Although so small as just to be easily visible to the naked eye, it has been

present in such large numbers over such a large area that its activity has seriously affected the yield.

This creature prefers to attack the under sides of the leaves, eating away an irregular patch of tissue, leaving only the upper skin of the leaf and in some cases not even that. In many cases where the skin has been left, the drying which follows the work of the beetle, causes it to break away. The first evidence the average grower has of the work of this obscure insect is the presence of fine holes in most of the leaves of his plants. This destruction of the leaf tissue reduces the food-making power of the plant, and the beetle passing from plant to plant frequently spreads early blight from infected to non-infected plants. Indeed, some plant pathologists go so far in their belief in the beetle as a means of spreading blight as to say that if the beetle should be controlled the early blight would not give serious trouble.

All recorded experiments that bear on the control of the potato flea beetle indicate that the application and maintenance of a complete coating of Bordeaux mixture will prove the best method of meeting the pest. Partly for the purpose of determining the effect of standard spraying mixtures on the work of this insect and for the purpose of finding out whether certain new mixtures would be successful, a potato spraying and dusting experiment was carried out on the farm of J. Harry Kandle at Elmer, N. J. The details of this experiment will be given by Mr. G. W. Martin.

In this experiment there were eight different blocks, each consisting of 18 rows covering about .87 of an acre. One of these blocks was treated with home-made Bordeaux and Paris green, one with "Pyrox," one with Bordeaux-lead, one with Kil-tone, one with a mixture of powdered arsenate of lead and sulphur (1 part of lead to 3 parts of sulphur), one with a mixture of powdered arsenate of lead and sulphur (2 parts of lead to 2 parts of sulphur), one with a mixture of powdered arsenate of lead and sulphur (3 parts of lead to 1 part of sulphur) and one other with powdered arsenate of lead alone. The spraying and dusting began when the potatoes were about six inches high and continued throughout the larger part of the growing season. All told four treatments of dust and liquid were given.

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Observation throughout the season showed that the blocks which had been treated with dust were freer from the work of the potato flea beetle than were those treated with liquid. All the dust blocks were about equally free, the powdered arsenate of lead treatments showing perhaps a little greater freedom than the rest. The cheapest of these dusting mixtures was the one composed of one part of arsenate of lead to three parts of sulphur.

We must bear in mind that the greater efficiency of the dust is borne out by only one year's trial and govern ourselves accordingly.

The stalk borer appears practically every year as a potato pest. Its work is easily recognized by the fact that the potato stalk is hollowed out from a point where the worm enters to the point where it ceased feeding. A stalk thus hollowed out ceases largely to perform its function and the tuber yield is likely to be very small. The stalk boring worm is easily recognized by the fact that it looks as if it has been cut in two and a piece of an entirely different worm inserted between the two ends—the color of the middle portion is very different from that of the front and rear ends. The early life of this worm is passed in weeds and grasses and that type of culture which prevents the growth of high grass and weeds about through the field is therefore the one likely to keep the potatoes free from this type of injury.

There is another type of stalk borer in the potato fields of New Jersey. This is known as the potato stalk borer. Potato plants infested with this creature show no well marked entrance hole. The grub doing this work is dirty white or dirty yellow in color. When the creature is full grown it transforms inside the old stalk and attempts to pass the winter there. If, therefore, the potato grower will gather the vines from his infested field as soon as the potatoes are out of the way and burn them he will prevent that field from becoming a source of infestation to itself and surrounding fields. Should this potato stalk borer appear in large numbers co-operative measures for its control would be necessary.

There are many other insects which have proven more or less injurious to the production of white potatoes in New Jersey this

year; but I feel that you are so familiar with them that I am not justified in taking your time to describe and discuss them.

The discussion of this paper emphasized the importance of devising methods of controlling the flea beetle, the stimulating influence of Bordeaux mixture and the relative value of several insecticides. Paris green is a most efficient insecticide if used with lime to prevent burning, but arsenate of lead is the better if the insecticide is to be used alone.

The President then called the Vice-President, H. D. Jones, to the chair.

The second paper was on "The Prevalence of Diseases of Potatoes in New Jersey, 1913," by Dr. Mel. T. Cook.

The year 1913 will be remembered by the New Jersey farmer as the year of the epidemic of potato diseases. This epidemic was due to several causes, some of which were preventable. Much of our northern seed was poor, many shipments containing rotten tubers which infected the healthy tubers. The plantings from such seed during the cold wet March weather resulted in poor stands, although plantings from the same seed two weeks later, when the weather was warmer, gave better results. This was due to the fact that in the earlier plantings the seed piece decayed before the young plant could become established. Formaldehyde treatment of the seed would have proved helpful.

Of course, there was some loss due to drouth, but it was small as compared to loss due to disease.

The silver scurf (*Spondylocladium atrovirens* Harz.) was very common on our northern seed. It is an European disease reported in this country but once previous to this year. It is now widely distributed throughout the eastern part of the United States, but I do not believe that it will prove serious in New Jersey.

The disease which caused the greatest loss did not come to us on the seed. It is the southern bacterial wilt (*Bacillus solanacearum* Smith) one of the serious diseases of the south. It also attacks tomatoes, egg plants, peppers and tobacco. It was especially severe in South Jersey, reaching its maximum in the immediate vicinity of Mullica Hill and diminishing in severity very rapidly from Burlington northward. Those of you who have observed this disease closely have noticed that the plants wilt during the day, revive during the night, wilt again the second day, after which

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they seldom revive, the stems turn an amber yellow and finally black. The disease is due to a bacterial organism which chokes the water passages of the stem. It is most severe in dry seasons and on dry soils. It is probable that our mild winter of 1912-13, followed by a dry growing season, was advantageous to this disease.

The common scab (*Oospora scabics* Thaxt.) was prevalent throughout our potato growing districts. This disease can be controlled by treating the seed with formaldehyde (formalin) or corrosive sublimate and by planting in clean soil. Our experiments in many places in the State show that this treatment can be given with profit.

Some of you will remember that last year I called your attention to the scurf (*Rhizoctonia*) on potatoes on exhibit in this building, and that I told you that sooner or later this disease would give you trouble. This disease has been quite severe during the past season on the late potatoes. It can be reduced by treating the seed with formaldehyde, but the corrosive sublimate is more efficient.

The dry rot (*Fusarium oxysporum* Schlecht.) was prevalent throughout the State, but rather more severe in Mercer and Monmouth counties than in other places. It can be greatly reduced by careful selection when cutting the seed and throwing out of all tubers that show discolorations beneath the peel, starting at the stem end. Treatment with formaldehyde is of very little value.

The black leg (*Bacillus phytophthorus* Appel) was prevalent throughout the State and the cause of losses. The diseased plants are dwarfed, stand very erect and die early without producing tubers of market size. Seed treatment will greatly reduce this disease.

The early blight (*Alternaria solani*) (E. & M.) J. & G.) is not a serious disease in New Jersey and would be of very little consequence, especially on the early crop, if it were not for the flea beetle which carries it from plant to plant.

The late blight (*Phytophthora infestans* (Mont) DeBy) is seldom a serious field disease in New Jersey, but northern seed affected with it give a proportionately poor stand. The diseased tubers show a yellowish brown rot beginning at the surface and working inward.

Conclusions: (a) Throw out diseased seed; (b) treat with formaldehyde or corrosive sublimate; (c) when cutting throw out all tubers that show discoloration; (d) have each cutter use two knives, one of which should be kept in formaldehyde (1 part in 3 parts water) and when a diseased tuber is cut, change knives; (e) rolling in sulphur is beneficial, especially if the weather is very wet at planting time.

In the discussion, Mr. Fraser of New York stated that the formaldehyde gas treatment was likely to injure the tubers. Further discussion indicated that this treatment was not so efficient as the soaking in formaldehyde (1 pt. to 30 gallons of water).

The question of sending delegates to Washington to attend the hearing on quarantine against the powdery scab before the Federal Horticultural Board was then taken up and the State Board of Agriculture requested to send delegates.

Vice-President Jones introduced Mr. E. A. Rogers, of Maine, who addressed the meeting. A résumé of his address is as follows:

A great deal depends on the handling of the seed; some men get better results with poor seed than others do with good seed. The conditions in Maine and New Jersey are different and the seed must be handled differently. Seed should not be allowed to sprout in the cellar, because it loses vitality. Always treat the seed with formaldehyde before planting. After treating the seed, we (Maine growers) put it on the ground in the sun, until partially sprouted. It is doubtful if this can be practised for early New Jersey planting. Use a thin bladed knife for cutting. Dust the cut potatoes with sulphur. Provide each cutter with two knives; let him keep the extra one in strong formaldehyde and when he cuts into a diseased tuber change knives.

In the discussion, Mr. Rogers stated that second size seed was all right if the tubers were from strong, healthy plants. He also explained the method of planting, cultivating and using fertilizers.

Vice-President Jones then introduced Dr. J. G. Lipman, who made a short address. A résumé of his address is as follows:

New Jersey is becoming more and more prominent as a potato growing state. According to the census of 1910 our crop increased from about 46,000 to 73,000 acres, which is relatively large when we consider that the total acreage under cultivation

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in New Jersey is only eleven hundred thousand. There is every indication that the potato growing industry will increase and every precaution should be taken to guard our interests. The introduction of European diseases may result in the suspension of potato production on a profitable scale in New Jersey for a number of years. The potato failures in Ireland due to disease caused an enormous emigration to this country. It was a great political and social movement and, while the reduction of our crop owing to the importation of an European potato disease might not give a similar result, yet our State Board of Agriculture should be properly represented in Washington one week from today.

Vice-President Jones then introduced Mr. G. W. Martin, who made a short address on "Experiments for the Control of Insects and Disease of Potatoes Conducted by the New Jersey Agricultural Experiment Station in 1913." A resumé of his address is as follows:

The results of our one year experiments are very small as compared with the amount of work that needs to be done. We have barely indicated lines of work for a series of years. We should conduct a long series of experiments to test the conditions in every part of the state. Practically all of our experiments, except the one at Cranbury which was a complete failure, were to determine the value of sulphur as a preventative of the diseases of the potato. The one at Elmer was to determine the value of dusting with a combination of sulphur and arsenate of lead as compared with the standard wet sprays. Three parts of sulphur and one part of arsenate of lead proved just as efficient in controlling the Colorado beetle and almost as efficient in controlling the flea beetle as pure arsenate of lead, and was much cheaper. The dust treatment is easier to handle than the spray treatment. One man can dust three acres with a Johnson duster in one hour while the spraying would require a man and boy four hours. The possibility of poisoning of the laborers in using the dust must be investigated. For wet spray, we used 5-5-50 home-made Bordeaux mixture plus three pounds of Paris green and three commercial preparations, applied with a Watson 3 nozzle per row sprayer. The yield on the dust plots was slightly better than on the sprayed plots. Some minor points omitted

by Dr. Headlee in his discussion of these experiments were (a) the crop as a whole was slightly better on the side where the dust was used, (b) the seed was all from second crop but was grown from two lots of Maine seed, one of which was slightly better than the other, (c) it was all treated with formaldehyde, (d) there were two cutters and the pieces used in the dust plots were slightly greater than in the sprayed plots, (e) the sprayed plots were planted a very little earlier than the dust plots and plants slightly larger when caught by the frost; all of which was slightly in favor of dust plots. The home-made Bordeaux treatment cost less than half that of the other wet sprays and the dust cost still less. The cost of the dust can be reduced when purchased in large quantities. The experiments with sulphur for scab were very generally inconclusive, but some should be mentioned. Four hundred pounds per acre in our experiments reduced the scabby, unsalable potatoes from 23 per cent to 4 per cent. Another experiment with 400 pounds sulphur per acre increased the yield 12 per cent. and 800 pounds per acre increased the yield 17 per cent. These results are suggestive for future experiments. We want the co-operation of the farmers in this work.

Vice-President Jones then introduced Senator Gaunt, who gave a short address urging the farmers to support the committee which is to be sent to Washington to attend the potato quarantine hearing by the Federal Horticultural Board. He also urged the importance of appropriations for buildings, equipments and the carrying on of the agricultural experimental work throughout the state.

President Frelinghuysen—Are there any further questions? Is there any other business?

The Chair calls attention to the evening session, the third Session, tonight, which will be held in the auditorium of the State Normal School, where there will be delivered what is supposed to be a very interesting lecture, with lantern slides. The Committee expected to have moving pictures, but owing to the refusal of Dr. Greene to have a moving picture machine in the school building we had to cut that out. But this lecture is "From the Great Lakes to Puget Sound," and the lecturer comes to us from New York with a splendid reputation.

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The meeting will stand adjourned until eight o'clock tonight at the State Normal School, and thence at 9:30 sharp tomorrow morning in this room.

EVENING SESSION.

The session at the State Normal School was in charge of Secretary Dye, who called the meeting to order at 8:00 o'clock. He called upon the principal, Dr. J. M. Green, who made a brief address and outlined some of the work they are doing in the State School in the teaching work along agricultural and horticultural lines. The Secretary then introduced the speaker of the evening, Mr. Robert C. Weyh, Jr., of New York City, who gave a very interesting and beautifully illustrated address on "Our Country from the Great Lakes to Puget Sound."

SECOND DAY.

Trenton, N. J., January 30, 1914.

The meeting was called to order by Vice-President Cox. The session was opened with prayer by the Rev. Judson Conklin, pastor of the Clinton Avenue Baptist Church, Trenton. President Frelinghuysen then took the chair.

President Frelinghuysen—The regular order of business this morning calls for the report of the Committee on Credentials, and for the proper information of the Committee on Credentials, the Secretary will now call the list of delegates and the delegates will please respond.

The Secretary called the roll.

President Frelinghuysen—Is there any unfinished business to come before the Board at this time?

Mr. Schirmer—The Nominating Committee is ready to report.

President Frelinghuysen—What is the pleasure of the Board?

A Member—I move that the report be received.

This motion was duly seconded and carried.

President Frelinghuysen—The report of the Nominating Committee will be received.

Mr. Schirmer—Mr. President, the Nominating Committee would beg to submit the following nominations:

President, Joseph S. Frelinghuysen; Vice-President, John T. Cox; Treasurer, J. Harvey Darnell; Members of the Executive Committee, George E. DeCamp, A. J. Rider and Theodore Brown.

(Signed) Carl Schirmer, Chairman,

Albert I. Ackerman, Secretary.

President Frelinghuysen—You have heard the report of the Nominating Committee. What is your pleasure?

A Member—I move that the report be adopted and that the Secretary be directed to cast a ballot for the nominations as reported by the Committee.

This motion was duly seconded, and, on a vote, carried. The Secretary cast the ballot accordingly.

President Frelinghuysen—As presiding officer I will declare those gentlemen elected the respective officers of the Board of Agriculture for the ensuing year.

President Frelinghuysen—The matter next in order is the introduction of new business. Is there any new business?

Secretary Dye—There are some resolutions here which might need to be discussed and if you desire I will read them?

(The resolution was read and referred to the Committee on Resolutions, and the action taken on it appears later in the proceedings in the place where the report of that Committee is made. It was not deemed well to write out the whole resolution at this place.)

Mr. Brown—Mr. President, I have also a resolution here which I would like to offer.

(Mr. Brown then reads his resolution about bill No. 9987 in the H. R., and it was also referred to the Committee on Resolutions.)

Mr. Schirmer—I have also a resolution here, which I will read.

(Mr. Schirmer then reads his resolution which was also referred to the Committee on Resolutions. It was in regard to killing minks, etc.)

President Frelinghuysen—The resolution will be received and referred to the Committee on Resolutions. Are there any other resolutions?

Secretary Dye—Mr. President, what I have to say bears on our

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next annual report. Many of you attended the special meeting down in the Armory, and you heard as best you could, some valuable addresses there. That was a special meeting, but we would like to have some of those addresses printed in the annual report, and there are several other addresses that have not been acted on, and it seems to me that this Board should take some action with reference to those papers. You will recall that there was one address by Dr. Lipman, a most valuable paper, and then we have a cranberry address which should be published in the annual report by all means and a separate lot struck out, say a hundred copies, for answering the calls for information on this subject. Then there was the lecture by Dr. Gay on horse breeding.

My thought is that if you would refer the papers printed in that report to the Executive Committee to have the same printed as they might see fit in the annual report that they could request the Commissioner of Documents to do so. It would be a wise thing to do.

We have also Dr. Headlee's report the State Entomologist and Dr. Cook the Plant Pathologist.

President Frelinghuysen—The Chair will entertain a motion to that effect if it is the pleasure of the Board.

Dr. Lowe—Mr. President, that appears to be a very proper motion to be made, and there is no doubt that a number of those papers should be published and I so move, as the Secretary suggests. This motion was duly seconded and carried.

President Frelinghuysen—Are there any other resolutions to be offered at this time?

Senator Gaunt—Mr. President, the Special Committee appointed by the Vice-President on the address of the President is ready to report.

President Frelinghuysen—The report of the Special Committee will be presented by Senator Gaunt, the Chairman of the Committee.

Senator Gaunt—Your committee appointed to go over the President's address, congratulate the State Board on having a President who is able to make such a masterly address. We commend the address to your careful consideration, and especially do we concur in the suggestions recommended that the State

Board of Agriculture be left alone as it has been for the past forty-one years.

We especially call your attention to the comparisons made of the appropriations made to the States of California and Wisconsin with populations less than the State of New Jersey. Ours, \$284,886. California and Wisconsin over \$2,000,000 each.

We are glad to note that the Governor in his inaugural address has shown such interest in the State's Agricultural development.

We especially recommend the careful perusal of that section of the address which alludes to Agricultural Education.

The section dealing with Tuberculosis in Animals should indeed be very gratifying to the members of this State Board. When a comparison is made, the cost of conducting this Department, with those of some other States, will be found to be very much less, and just as efficient.

The matter of farm loans should be very carefully considered before it is adopted as a State's policy.

We recommend that the various counties of this State favorably consider the matter of establishing Farm Bureaus in connection with the Farm Demonstration work.

The advice given by the President along conservative lines in the management of all governmental affairs, and the control of public corporations, should be carefully considered by the members of the State Board and the farmers generally.

President Frelinghuysen—You have heard the report, what is your pleasure?

A Member—I move that the report be received and printed in full in the annual report.

The motion was duly seconded, and, on a vote, carried.

President Frelinghuysen—Is there any further new business to come before the Board at this time?

Secretary Dye—Mr. President, we have about fifteen minutes to spare, and, if there is one question more than any other that is often debated, it is "What does it cost to raise a calf till she is a cow and comes into production." And we would like to know, gentlemen, how much in your judgment it costs to raise a calf. This thing is going through the papers all the time, one says twenty-five another thirty, another forty and another man

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says it don't cost anything if we do not keep any account of it. Won't you tell us? Does it cost forty dollars to raise a calf till she is two years old?

A Member—It depends on how you raise it.

Mr. Fithian—Mr. President, I have been raising them for the last forty years quite extensively, and I have had a chance to know. There are several different breeds, that is worth knowing, and I raise my own stock as this man spoke of yesterday in his report, because you have to do it to keep clear of tuberculosis. I find that is the only method, and I find that a Jersey or a Guernsey or Ayreshire will cost considerably less than those large Holsteins. I would think it would cost to raise a Holstein cow on the average of fifty-five to sixty dollars in our section of the country, until she is three years old.

I have raised a great many of them and I know all about it. I know that you cannot get it down too fine. I find that the lighter cows will cost about forty to forty-five dollars to keep them, but we cannot count it exactly, and we only know what the hay and fodder costs; but there is ten or twenty dollars difference between the different breeds of cattle. Those animals differ according to weight and size, like horses. Fifty-five to sixty dollars for the Holsteins is what they cost me, and from forty to forty-five dollars for some of those smaller breeds, and I have been raising them for more than thirty years and raised a great many of them. I have a hundred head of cattle.

President Frelinghuysen—Mr. Fithian has told you what, in his judgment, it costs to raise a calf. May we hear from some of the other members here?

Mr. Kurtz—Mr. President, I have raised fourteen calves and kept a strict account, and they cost me \$42.50 to \$46.80.

President Frelinghuysen—Now, somebody else?

Mr. A. R. Paul (Belvidere)—Mr. President, I have moved here from Massachusetts, as I said yesterday afternoon, and I have kept account of the price and the cost of raising stock, and I find that if they were raised from Fall or Winter calves the cost was not as great, it would be about \$39.50 to raise a heifer to maturity, whereas if it was a Spring or Summer calf it would cost from forty-two to fifty dollars.

President Frelinghuysen—May we hear from someone else?

Mr. Roe (Sussex County)—Mr. President, I would like to say that among our farmers we prefer to give sixty dollars for a two year old heifer coming fresh than to raise them ourselves.

A Member—I have great trouble with farmers when they talk about raising calves, they tell me what the milk costs and what this and that costs, but their own labor is nothing. We ought to be worth something besides our board and keep. Down in our section in Monmouth County you cannot raise a heifer calf for fifty dollars. You can get a dollar a week for pasture and after the calf is a year old she certainly eats as much as a dollar's worth; that would be fifty dollars the second year; and you cannot keep them in the Winter as cheap as you can in the Summer, and when I raised calves, I am still raising a few but not as many as I did, we feed them all Winter, and found it makes a better cow. I would prefer to pay seventy-five dollars for a calf properly raised than raising any, and I think it would be money in my pocket, if I knew the stock was as good as my own and properly raised. You can't raise a calf for fifty dollars or sixty dollars or sixty-five dollars, and count anything for your own work. If you count your own work it will cost much more than that.

Senator Gaunt—Mr. President, I have just been informed that the Governor has arrived at the State House, and my judgment is that there should be a committee of three appointed to wait upon him and ask him to come before this meeting at his pleasure. I will make such a motion.

This motion was duly seconded and carried.

President Frelinghuysen—I will appoint as such committee to wait on the Governor, Senator Gaunt, Vice-President Cox, Secretary Dye.

President Frelinghuysen—Before we pass from the discussion of the cost of raising heifers, I would like to hear from Mr. Cortelyou, of my own county, who has had a great deal of experience.

Mr. Cortelyou—Mr. President, raising heifers is a good deal like all other lines of business. Some men, some breeders can do it cheaper than others can. Some men can farm cheaper than others. Some men can raise ensilage and fill their silos much cheaper than others, and there is a whole lot of different

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ways of figuring. For instance, take the question of silos. I have often seen in Agricultural papers, and I have often heard people talk of what it costs to raise ensilage. They say it costs so much to plow the ground, that it costs so much to fertilize the ground, and it costs them so much for seed, and so much to put the ensilage in the silo, which would come to somewhere about two dollars a ton. Well, that is all very well, but, from my standpoint, that is not the way to figure. When I figure the ensilage that I consume on my farm, I figure what that field would raise me in corn, supposing that I had planted that field in corn and raised a crop of corn. We don't raise very big corn out there where the Senator and I live, but, supposing that we raised fifty bushels or sixty bushels of corn to the acre, that would be worth a certain amount of money. Now, you take the sixty bushels of corn and you take the stalks that that acre would give you, and then figure in what your expense is of growing your ensilage and putting it in and you find out what the ensilage costs. Your ensilage would cost you what that crop of corn would be worth.

As I say, there are two or three different ways of figuring. Now, it is the same way in raising a heifer. We take a calf away, wean them when they are young, twenty-four hours old, sometimes younger, and sometimes a little older, depending on the condition of the cow's udder, etc.

The milk is worth,—well, it is not worth a great deal in Somerset County at the creamery, in the neighborhood of four cents a quart, and then you can figure just how much milk it takes to raise a calf.

You have got to give it sweet milk, or it should have sweet milk about three months. That is, if you want to raise a pretty good kind of a calf. If you want to raise just an ordinary kind of a calf you can give it a little milk and quite a good deal of water and it won't cost you near so much to raise; but we don't think that we can raise a heifer calf up to two years old short of a hundred dollars in any way, shape or form. Then we hope to have a pretty nice kind of a heifer.

Our cattle are all thoroughbred Holsteins, and if they don't cost more than a hundred dollars we are entirely satisfied. The heifer is worth the money at that time that it costs to raise and

often pays a good profit. We like to have them somewhere about two years old, and then they will commence to build up.

And I think our heifers cost very little less than a hundred dollars apiece when two years old and, in the sales I have seen lots of them sell anywhere from a hundred dollars to five hundred dollars under two years of age.

That shows what it is worth to raise a good heifer and it also disposes of the question of raising of war beef in Somerset County. I have seen that advocated. I think that is a little on the line of the ensilage. I cannot see that we can raise beef in this section of the country when we can raise a thoroughbred Holstein heifer two years old to bring you anywhere from a hundred and fifty to a hundred and seventy-five dollars. I saw only a day or two ago, a heifer calf under six months old sold for eight hundred and fifty dollars, a very nicely bred heifer. And in raising a calf it is true as in all else, if you just raise a medium kind of grade calf it will cost you the same when it gets to be two years old as if you had raised a real nice article, which is the only kind to raise.

(At this point, the Committee to wait upon the Governor returned, escorting the Governor in the room, and the members received him rising from their seats and applauding.)

Senator Gaunt—Mr. President, it gives me great pleasure to present to you, and through you, the Governor of New Jersey.

President Frelinghuysen—It gives me great pleasure to present to the State Board of Agriculture, the Governor of New Jersey, Governor Fielder. (Applause.)

Governor Fielder—Mr. President and Gentlemen of the Board, Ladies and Gentlemen: Instead of being here addressing the State Board, it would be very much better if I were a listener and sat at the feet of you people who know something about agriculture and the agricultural industries of our State.

There was a time when Hudson County was very much of a farming county, and I can remember back to that time myself, when my grandfather owned a very large tract of land up on the Bergen Hill, a great portion of which he farmed. And I spent a great many years of my life in the house that was built

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on what was formerly the potato patch that was connected with the old homestead of my grandfather. But those days have gone by, and we of this generation in Hudson know nothing by practical experience or by observation of this great industry that helped to make the State of New Jersey famous. •

It has been my fortune, however, during the last summer and fall, while not intent particularly upon seeking information with regard to agriculture, nevertheless, to travel around the State rather extensively, and to learn something, or have the opportunity to learn something of the farming industry of the State. I have very much to learn yet on this subject, but I did see enough to convince me that it was a very much greater proposition than we city people of Hudson County would be apt to realize; and I saw enough to convince me that the State ought to give very serious attention and very serious consideration to this wonderful business in which such a large part of our population is engaged, not only for the benefit of themselves directly, but for the benefit of the whole State and for the benefit of the neighboring States, because we must depend upon the farmers from the farming section of the State of New Jersey to furnish the food supply, or a great portion of it, for the rest of the State, and for the adjacent territory of neighboring states. And I was very much surprised to see the extent of some of the farms in the southern portion of the State, and to learn the modern methods that had been put into force and operation on some of those farms, the use of heavy automobile trucks with which the loads of farming produce was carried into Philadelphia, and I realized that not only was it necessary for the proper advance of this business that modern and scientific methods should be placed in operation with regard to farming directly, but I discovered also that the subject of good roads was very closely allied to the farmers' interests, and that while it was possible to get many loads of produce into Philadelphia or the neighboring cities or to the railroad station through the use of the new method of transportation by automobile trucks, it was necessary for the State to provide the proper kind of roads and the proper facilities by which those modern methods of transportation might be more readily taken advantage of by the people who are adopting them.

So I came through my experience in traveling about the State with this very interesting knowledge, perhaps somewhat cursorily, but at least very much more than I had before, of the things in which you people are interested and concerning which the State can very profitably give its attention and aid, and I have no doubt that you will find the legislature very willing to assist you in the things that you determine to be of advantage and for the benefit of yourselves and for the rest of the State. And I am very glad to be in a position where I may be able to give some aid and assistance, and I want to assure you that I shall be ready at all times to receive any suggestions from you, to talk with any of you people as individuals or to talk with any committee whom you may desire to represent you, to the end that I may be better interested and be in a position perhaps to afford you more assistance and to give you the help that you have the right to expect from the Chief Executive of the State.

This is a pleasant surprise, being here this morning. I did not expect that I would be able to have the opportunity to come in and meet you and greet you, and say these few words, but when the genial Senator from Gloucester and my two old friends waylaid me at the door of the State House, even had I wanted to avoid coming in there would have been no escape, but I assure you I came along very peaceably and quietly, and it has been a great pleasure to have this opportunity to see you all and talk to you for these few moments. (Applause.)

President Frelinghuysen—The Chair hears a vote of thanks for the Governor for his visit and his address and as many as are in favor of that will please vote “Aye.”

The motion was unanimously carried by a rising vote, and the members remained standing while the Governor retired.

President Frelinghuysen—Now to proceed. There is a subject that has had state-wide discussion in all the papers and in which all the farmers are interested at the present time, and that is the “Relation of Education and Its Needs in Our Agricultural Sections.” The head of the State School System of New Jersey, the Commissioner of Education, is with us this morning, and he will address us on the topic “Some Needs of the Public School System of New Jersey.” I introduce to you Dr. Kendall. (Applause.)

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Dr. Kendall—Mr. Chairman and Gentlemen: Whenever I hear a discussion such as the one that I heard here this morning from the gentleman from Somerset about raising heifers or about the raising of alfalfa I think how satisfactory it would be to those of us who are engaged in the work of education if we could measure our results as accurately as you farmers these days are able to measure your results in your various farming activities. One of the difficulties with us is that we are dealing with the mental and the spiritual and the moral processes of the children and it is hard to measure results. It is hard to bring out figures and statistics and say with definiteness that this particular thing is worth while.

My first experience in teaching was in a one-room country school in New York State. * * * We have heard much of late about opening up the school houses, particularly in cities, for social purposes, for lectures, for political meetings, and all that sort of thing. When I first went into that little school district up in the hills of New York, I asked the trustee of the school the first morning for the key of the school house. Of course it was my job to build the fires and sweep out. And he said, "We hain't got any key." They had a new school house and were rather proud of it; they had a right to be. "What," I said, "haven't you any key?" "No. We haven't any key." Well, just before I started for the school I thought I ought to remonstrate with him a little bit, and what I said was this: "I think we ought to lock up the school house; the tramps will get in and sleep there if we don't lock it." Finally he took his pipe out of his mouth. "Well," he said, "the tramps can't get a better place to sleep in this neighborhood, can they, than the school house?" And they did get in and sleep once in a while, and I do not know that the children ever lost anything. In those days the children supplied their own paper, books, etc. But this I want to say, gentlemen, is the first recorded instance in all the United States of the opening of school houses for social purposes.

But my theme this morning is as printed on this program, "Some Needs of the Public School System of New Jersey," and I am going to talk particularly of rural schools because you men are interested chiefly in the rural school.

The whole educational situation bristles with unsettled questions. Let no man here think that any commissioner of education any where or any school teacher or superintendent has settled or thinks he has settled all these problems of education.

There never were so many unsettled, pressing, burning questions in education as in 1914. The educational proposition in this State is a big one.

People sometimes say to me that the schools of the State cost a lot of money. And they do cost a lot of money. And they have got to cost a lot of money. The reason is that in the schools of New Jersey this 30th day of January there are over five hundred thousand children. That number of children is equal to the total population of the State in 1852 or 1853.

The education of the children of the State is by all odds the greatest enterprise in which the State is engaged. I am not speaking merely of the importance to the children. I am speaking also of the magnitude of this great State business of education.

Now, what are some of the needs of our schools?

Before attempting to answer this question I think we might well consider for a few minutes what are the factors or the elements that make a good school.

Every man in this room, and every women, too, is anxious to have the best kind of schools. And we cannot afford to give a whole lot of attention to good roads, important as good roads are, and neglect schools. For the school is the institution by means of which the men and women of the future are molded.

The first question to consider is the teacher, for we can never get away from the fact that the teacher is the primary essential in making a good school. Now that is old-fashioned doctrine, but it is also new-fashioned doctrine; and I want to say that in this consideration of the teacher we must remember that most of our schools are taught by women, and that the number of things which a girl who wants employment can do nowadays besides teaching school is very great.

We need a higher type of teacher in many rural schools. And I should not be doing my duty here this morning if I did not say this, that our duty towards schools is not done simply when we

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have provided a school house and put in a teacher. You have the school but you may not have a real educational institution.

Now, we need in our schools more teachers with good scholarship. We need more teachers who are trained teachers. I know perfectly well that some gentleman here may say, "Well, we have had a normal trained teacher in our district and she was a failure." That is true sometimes, but, all other things being equal, the chances for success and for doing real good work in schools are very much greater when you have a trained teacher than when you have an untrained teacher.

I am going to be more concrete. We need in this State larger opportunities for training teachers by means of normal schools. So far as high schools are concerned, we are doing pretty well in New Jersey. The number of high school pupils last year was nearly 20 per cent more than the preceeding year. That is an enormous increase in high school pupils. And may I say that some of the increased cost of transportation is due to the fact that increasingly large numbers of girls and boys want high school advantages; and under the laws of this State, or under the Constitution of the State, they must be given an education until they are eighteen years of age.

In the rural schools we need not only a trained teacher, but we need a teacher who is trained in the right way.

And we ought not to have so many changes of teachers in rural schools. In one county in the State that I happen to know about, out of seventy-five one-room schools this year forty-nine teachers are new to their work. And that is a continuous performance in that county

For whom am I speaking? I am speaking for the children of the State. If it is not for them I am speaking, I am not speaking for anybody. The children in that particular county suffer by the constant change of teachers, by the teachers who live in satchels, and don't have time to get their roots down into the life of the community. There is a continual exodus of teachers. In country schools the permanency of teachers is much less than in city schools, and the country children are suffering in consequence.

If I were Czar—I am not Czar; I am very far from it—do you know what I would do in regard to these rural schools and teachers? I would do this: I would have a normal school established

somewhere in a rural district, in the country, and I should make the course of study for that normal school, and for the practice school in connection with that normal school, from the standpoint of the rural school. (Applause.) I should have a practice school, a one-room practice school, with all grades in it, into which those girls could go for observation and for practice in the kind of school in which they will be called upon to teach. But something else would have to be done.

If I were Czar, I should encourage these rural girls, these girls out in the country, to go through the high school, a four-year term high school, to get a good foundation, and then I would have that girl go to this kind of normal school of which I have spoken.

If I were Czar, I should have that girl come back and teach the home school, or teach in her own home township. And I say this because in that way we shall get greater continuity of service. That girl would come there and might stay there. And continuity of service is one of the great needs of the rural schools.

We have three normal schools in this state. The little state of Connecticut, with only one-third of our population, has four. The state of Massachusetts, with just a few more people living in it than live in New Jersey, has how many? Eleven state normal schools. We have three.

But you will not get graduates of normal schools to go into the rural schools and teach unless they are paid adequate salaries. Now, I simply must say this, though I don't like to mention the question of salary; I wish I never had to mention it. But I want to say that in some sections of this state where the children are taught by teachers who get only four hundred dollars a year or less, you are not going to get normal school graduates to go into those schools and teach. And why? Because they can get larger salaries in other places, and particularly in the cities of the state.

Now I am talking facts, and I am talking in behalf of the children of the state, not in behalf of the teachers. There is no reason why I should stand up here and plead for the teachers. Not a bit of it. Nor for commissioners nor superintendents. But I am pleading for the children of the state. And a lot of these children in our rural schools are not getting the kind of educa-

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tion that they should get because the communities cannot afford, or think they cannot afford—you know more about that than I do—to pay such a salary as will attract a good teacher, and keep her when she is found.

So much for the teacher part of it, except to say once more that we may talk about making rural schools better all we choose, but we shall never get the thing done unless we have good teachers in those schools and can keep them when we get them. For the teacher makes the school.

Now as to the work that should be done in the rural schools.

I feel that the rural schools ought to have courses of study and the kind of work that will make, or have the tendency to make, country life and farm life attractive to the country girl and the country boy. I do not know what you men think about it, but I will tell you what I think. I may not be right—but I think I am—when I say that too many girls and boys in the country are going to the cities. I don't know what the cities would be without them, but the cities will take care of themselves.

I feel that New Jersey is fortunately situated with respect to its great agricultural resources. There are great chances for girls and boys, who later will be men and women, on New Jersey farms, providing we give them the sort of training or education they need, so that they can use the soil more intelligently. That training or education may be given by the father; it may be given at home; it may be given in the schools; it may be given under the auspices of the Experiment Station at New Brunswick, or by the Department of Agriculture at Washington. But I am convinced that these older boys and girls in the grammar schools and the high schools ought to have a kind of training in those schools that will cause them to see the possibilities of country life. Too much of the teaching in the rural schools, I want to say, is done from the city point of view. We need more of it from the country point of view.

We just had a meeting of county superintendents. They were here two days, and I wish every man in this room could have been at that meeting. We devoted one day to hearing reports as to what is going on, particularly in the rural schools, in this subject of agriculture or industrial training. And I could

talk here for an hour, men, giving illustrations of what has already been accomplished. For example, up in the northern part of the state a high school girl raised this last season, on one-tenth of an acre, \$70 worth of tomatoes, which were sold to the Lackawanna railroad which runs through that territory. In another county in this state a boy raised and sold from one acre, \$60 worth of corn. In each of these instances the labor of the boy or girl was charged. These amounts were net profits.

Now, I want to be perfectly frank and candid about this. It is only fair to say that this work was not done by means of teachers in the schools. The schools encouraged it, the schools favored it, but it was done under the direction of an expert who was in each of these particular regions and who helped these boys and girls to put some brains and skill into these two particular enterprises.

Now, one other illustration. In a certain high school down in the eastern part of the state, over towards the seashore, the boys and girls in their botany lessons in the high school are raising flowers. Down in that particular part of the state there is a great market for flowers. And what have those pupils accomplished? Well, I will tell you. They have sold for six cents apiece carnations which they raised in connection with that school. At the same time these pupils were learning lessons in botany.

Now, I do not know why in our instruction in botany, for example, children should not learn how to raise vegetables and flowers which they can sell, if you please, just as well as to study the kind of botany that some of us did, namely, going out and getting leaves and putting them in books and pressing them.

I want to say to you men that I feel there is a great future for these rural schools in training these girls and boys how to use their brains by making greater use of the soil of the state.

We are getting out a pamphlet entitled: "What Can the Schools of New Jersey Do for the Teaching of Agriculture?" Any man here who wants that pamphlet may have it.

Way up on the border of New York state in a little suburban town in Bergen County I found this sort of thing going on the

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other day. Back of the schoolhouse is a hennerly, a little 10x14 building. And who built it? A carpenter? No. The boys built it. This was as it should be. There ought to have been an injunction from the court if a carpenter had shown up there and driven a single nail. We don't get children in our schools enough into action. The children ought to take care of the school yards. The girls ought to help take care of the school rooms, as lessons in housekeeping.

Well, now, I want to go back to the town I mentioned. These boys built the hen house. They got together a little money and bought 12 or 13 hens. In the higher grades the boys and girls are being given instruction as to the care of hens and as to what they should be fed in order to make them lay during the winter.

Some person here is saying, "O, well, I guess if they are doing all that up there they are not teaching English, spelling and arithmetic."

I beg your pardon. They are teaching those things. And how are they teaching them? They are having those children write compositions about the raising of poultry and the production of eggs. That is their English work. They are having those children keep an accurate account of what they are spending on those hens in the production of eggs. That is work in arithmetic if I know what arithmetic is.

I was in the principal's office one very cold morning during the recent cold snap. A boy came in and put five eggs on the principal's table. I thought I would have a joke with him and I said, "Well, now, I guess this boy stopped down town and bought these eggs and brought them in here because he thought the Commissioner of Education was going to be here this morning." The boy took me seriously; he did not see the joke. He insisted that that was the product of the day for the 13 hens.

Now what do they do with the eggs? I don't know whether you are interested in this or not, but it is just an illustration, men, of what I think the rural schools can do in this way, and at the same time give girls and boys instruction in arithmetic and English and spelling, which these boys and girls in the country need just as well as boys and girls in the city.

Well, I will tell you what they do with the eggs. They have a cooking school and the eggs are sold to this cooking depart-

ment at the market prices in the groceries of the town. There is no gift about it. The cooking school serves luncheons; a lot of school boys and girls come by transportation; some teachers and some of the men and women in the town come in; they eat this school luncheon every day and pay for it. And who prepares the lunch? Why, the girls. And what becomes of the garbage? Now, you know what becomes of it in a well ordered school. It goes right over to that hennery and is fed to the chickens. See what a beautiful circle that is.

The day that I was there visiting that school a man who has a combination plant of fruit trees and chickens dropped in. He said that was a good combination. I do not know anything about that. I expect that my friend Dr. Lipman, whom I see over here, knows about it. And I asked him to answer this question, in the presence of the school: "Is it possible by means of this school to teach these children how to raise poultry, how to produce eggs in mid-winter when the prices are high, by means of school instruction?" "Why," he said, "That is just the thing the schools ought to do, and it is entirely feasible and practical to do it, providing"—that is where his good hard sense came in—"providing you have the teacher who knows how to do the trick."

What do you think of that? Here was a practical man who had never taught school a day in his life, and could not get a teacher's certificate, I suppose, to save him from state's prison. But that is it. That is what we need in our schools.

Now I would like to say, gentlemen, that I hope we may extend this agricultural education. We don't need a great big building; it can be done in the simple way that I have described.

I do not know whether this is true or not, but I read in the newspapers that nine hundred cases of eggs were imported last week into Philadelphia from Germany. Think of it; from little Germany with a congested population.

I should like to ask you to remember the fact that the law that was passed last winter by this legislature, has generous provisions in it for the encouragement of industrial and agricultural education. It provides among other things for a new type of school in New Jersey, a county vocational school. I re-

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gret to say that although that law has been on the statute books some eight months we have as yet made little progress in the rural schools. The cities are rapidly taking advantage of it.

I do not hesitate at all, men, to say that to get this kind of teaching into our schools it is going to cost some money to train teachers. They are doing that for us at New Brunswick. But the demand for such teachers is very greatly in excess of the supply. The girls should not be left out of account in this training. I know of no reason, if one girl in Sussex County can raise \$70 worth of tomatoes from a tenth of an acre under proper guidance and instruction, why other girls cannot do that and still go to our high schools. I am not at all worried when people say to me, "O, you are putting commercial and mercenary motives before these young people when you stand up as you have done several times and publicly advocate that the girls and boys in our schools should be trained to be—what? Producers as well as consumers. They should be trained how to make their own living. I have not much use for the girl or boy who, when through with her or his early education, is not able to earn, or has not the disposition to earn, a dollar.

The great purpose of the school is to train for citizenship, for character, and for all that sort of thing; but we will get the citizenship and we will get the character and we will have these other things, too.

The policy of the state department in regard to these rural schools is to help in every possible way. I have heard it said that we are trying to force consolidation in rural districts. Not in a single instance have we ever tried to force consolidation. We have neither the legal right nor the disposition to do it. But we have the disposition to advise it, for I believe that in spite of the disadvantages of transportation, we shall not, in the long run, get as good an institution in the one room school as we shall get in the consolidated graded school. (Applause). In the one room school the teacher has so many classes that the children suffer. How do I know that they suffer?

You know that in our law there is a provision that the Commissioner of Education twice a year shall make tests for examinations of pupils in the highest grades of elementary schools. We have been doing that for two years. And what do our re-

sults show? They show that the rural school children do not do as well as city children. Why don't they make as good a showing in their tests in arithmetic and English as city children? Aren't they as bright? Indeed they are as bright and as keen and as alert. But they are not as well taught. That is the reason.

The policy of our State Department is to work in co-operation with you people. Not to force consolidation, but to advise it. Consolidation is going on slowly throughout the State, by means of it we are going to get better teachers into the consolidated schools, because Normal school graduates—good, bright, able men and women—prefer to teach in consolidated schools. We cannot help that. The Governor of the State cannot help it. The Legislature of the State cannot help it. Only bear in mind that bright, alert, smart teachers are in tremendous demand. If they cannot get a job in New Jersey they will go where they can get it. And we want to keep those people here, and we want to get the best kind of teacher for these rural schools. Consolidation of schools will help to bring this about.

In respect to school buildings, I am not so much interested in the schoolhouses as I am in teachers. A fine school, a splendid school is not made, and never was made, and never will be made, simply because you have a fine school building. Some of the best schools I have ever been in, east and west, are schools where the buildings are old and common; and some of the poorest schools I have ever been in are schools which are housed in magnificent buildings.

Granting that all this is true, still, a good building helps. We need clean schoolhouses, we need decent and sanitary out-buildings, and we are beginning to get them. The tax-payers of this state during this past Summer have done splendid work for the children in the renovation and the building of a lot of out-houses that are decent and sanitary and fit for an innocent girl or boy to go into.

Now, there are some districts in the State where the buildings are not as we should like to have them. Since I have been in office, school moneys have been withheld in six or seven districts in the State, and they ought to have been withheld there.

We said to these people in one township, "We want you to

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do something every year. Do something this year; do a little something next year; fix up that school and that building a little at a time, if you cannot do it any faster, if you haven't the money to do it faster; but we want to see some progress here for the sake of the children." Now, what are they doing in that township? They are building an additional room, which was very much needed. And that is all they will do this year. We are satisfied with that. Next year they will do something with another school on the edge of the woods. And so, in the course of four or five years, we shall have good school accommodations through that whole township.

I thank you men for your attention. I feel that the committee from the state granges, which was appointed to confer with the State Board of Education, is going to be a splendid committee to help us in the solution of many of these problems connected with the rural schools. As the Governor of the State said here a few minutes ago I will say, any suggestions that you men may have to make at any time for the betterment and improvement of the rural schools will only be too thankfully received by the Commissioner of Education.

A vote of thanks was extended to Mr. Kendall.

(During Dr. Kendall's address President Frelinghuysen surrendered the Chair to Vice-President Cox.)

Vice-President Cox—The next matter for consideration this morning is "Economical Dairy Feeding," by Prof. Harry Hayward, Dean and Director, Delaware College and Agricultural Experiment Station. Dr. Hayward. (Applause.)

Dr. Hayward—Mr. Cox, Ladies and Gentlemen: It gives me great pleasure to rub elbows with the members of the Board of Agriculture of New Jersey. You are a somewhat larger body than we are in Delaware, where the State Board is made up of three members, one from each county.

You may think it a long cry from a discussion of a burning educational subject to one in feeding dairy cows, and before we leave that question, I want to say Amen to all I heard Dr. Kendall say this morning. As a member of our State Board of Education in Delaware, I am somewhat familiar with the conditions that obtain in our rural schools and from what I know of the question I am convinced it is one largely in the hands of the

men in the country themselves. They are very slow to act in regard to these vital matters, they do not seem to realize that the boys and girls of today will take their places about the day after tomorrow. In fact, I have been reminded by what I have seen in Delaware of the School Committee in Maine that met and resolved to build a new school building, then it resolved to use the old building until the new building was ready for occupancy. Then they resolved to use the material in the old building for the new building; and then they resolved to adjourn. (Laughter.)

Mr. Hayward then read his address as follows:

Dairy Feeding.

By H. Hayward.

This a subject of never ceasing importance to all dairymen, and one that has been studied as much by scientific investigators as any other one problem pertaining to farm practice.

Possibly no other matter has called for so much printer's ink as this. If there is any virtue in the admonition of "Line upon line—precept upon precept," the principles and practices of dairy feeding should be thoroughly understood and successfully practiced by the average dairyman of today.

However, this topic is not yet worn thread bare, its essential principles are not well understood, and only the best informed and most progressive dairymen are applying them. This is not due to any dereliction of duty on the part of our experiment stations, or on the part of the Agricultural press or the publishers of our Agricultural books. We are therefore forced to the conclusion that any lack of information on the part of the dairyman must be his own fault. In support of this statement, may I be allowed to quote from bulletin number 130 of the Minnesota Experiment Station? The author, Prof. T. L. Hackler, one of our best authorities on Dairy Feeding, states that about eight years ago, the editor of Hoard's Dairyman sent a representative into Minnesota to take a cow census. He collected data in regard to the yield of milk and butter fat and the cost of feed from one hundred herds containing in the aggregate 990 cows.

The cows yielded, on an average 3,800 pounds of milk and 169 pounds of butter. In dividing these herds into two groups (putting the cows that were owned by men who did not read dairy literature in one group, and the cows owned by men who read dairy literature in another group) it was found that the first group yielded on an average 2,668 pounds of milk and 114 of butter valued at \$20.00. The cows belonging to the farmers who read dairy literature yielded on an average 4,442 pounds of milk containing 233 pounds of butter valued at \$40.00. That is, the farmers who read dairy literature received \$40 per cow, while those who did not, received only \$20 per cow; there being a loss of \$20 per cow for want of knowledge in regard to their care and feeding.

The conditions that were found to exist in Minnesota are no doubt largely the same in the East. They are a reflection upon our dairymen, the most of whom would find that they are keeping and milking cows at a distinct financial loss, if the truth were known.

In the mind of your speaker, there is no phase of agriculture in the Eastern States that is in such need of reorganization and redirection as dairying. Until that redirection and reorganization comes, a large number of farms will be decreasing in fertility and the farmers who till them will grow poorer and poorer.

There is perhaps no branch of agriculture, with the exception of poultry keeping, that requires such constant and close study of detail and such wise application of scientific principles, together with the aid of close buying and selling to assure a reasonable profit as dairying.

In these times of exacting market requirements for dairy products, of high cost of labor, high price of cows, and of concentrated feeds which one is forced to buy, there is little inducement to engage in dairying as a business or to stay in it if one is already equipped for it.

This to the successful dairyman will undoubtedly sound pessimistic, but I am sure these statements will strike a responsive chord in the man who is working under average conditions.

There are a number of sides to the dairy question and while I have been assigned the one on feeding, there is one other that

has such an important bearing upon it that it will be well to consider it briefly before proceeding to my assigned topic.

The quality of the cow that the dairyman is feeding is of fully as much importance or possibly of even more importance than the question of feeding itself.

There is considerable data on record showing the difference, in the ability to produce at a profit, between different cows in the same herd, receiving the same care and the same kind of feed.

One of the most striking comparisons of good and poor cows is found in the five years record of the Connecticut Station herd.

Table 1. Comparison of the five most profitable and the five least profitable cows in the Storrs Experiment Station Herd for five years.

Year.	Cost of Food.	Yield of Fat in Lb.	Profit.
1899			
Five most profitable cows,	\$56.54	304.2	\$26.91
Five least profitable cows,	52.02	188.6	4.09
Difference,	\$4.52	115.6	\$31.00
1900			
Five most profitable cows,	\$60.30	377.4	\$43.27
Five least profitable cows,	45.38	164.4	7.75
Difference,	\$14.92	213.0	\$51.02
1901			
Five most profitable cows,	\$53.24	375.3	\$44.25
Five least profitable cows,	43.38	217.2	15.68
Difference,	\$9.86	158.1	\$28.57
1902			
Five most profitable cows,	\$59.52	376.2	\$43.71
Five least profitable cows,	51.45	236.6	13.71
Difference,	\$8.07	139.6	\$30.00
1903			
Five most profitable cows,	\$59.46	365.5	\$40.23
Five least profitable cows,	56.11	268.9	17.67
Difference,	\$3.35	96.6	\$22.56

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Another equally interesting comparison has been made at the Illinois Experiment Station after a careful study of twenty-four herds.

Table 2. Production of average best and poorest cow in twenty-four Illinois herds:

Herd.	No. Cows in Herd.	Pounds Milk.			Pounds Butter Fat.		
		Average.	Best.	Poorest.	Average.	Best.	Poorest.
1	11	5753	6099	4391	262	315	171
2	8	7376	8739	4928	268	333	193
3	5	8057	9454	6719	276	324	221
4	11	6220	7445	4091	242	359	157
6	20	7873	9067	5796	285	399	212
7	10	4525	5507	3412	170	264	129
8	10	4486	6647	2691	193	263	97
10	13	5431	7291	3847	227	315	168
11	9	5969	6531	5552	205	247	168
12	13	4504	6429	2090	175	248	101
15	12	5128	6289	3491	207	299	135
16	9	4608	5293	3752	184	238	150
17	7	4355	6115	3710	173	203	124
19	19	5410	6413	4530	243	293	158
20	15	6106	7530	2980	235	296	136
21	15	5971	8882	4025	243	333	143
23	25	3314	4337	1846	142	216	78
24	9	5921	6911	3478	350	477	161
	221	5616	6994	3962	226	301	150

Another comparison of the same kind is taken from a report of the Dairy Division at Washington.

Table 3. Results of twelve months' record for 719 cows in the Southern States:

ITEMS.	Average of 719 Cows.	Best Cows.	Poorest Cows.	Average of Best 10 Cows.	Average of Poorest 10 Cows.	Average of Best 30 Cows.	Average of Poorest 30 Cows.
Milk produced, lbs.,	4299.40	8325.50	1125.00	8681.90	1577.60	7326.00	2099.60
Butter fat produced, lbs. . .	216.84	538.79	64.12	459.00	77.21	391.75	100.70
Value of butter fat at 28c lb.	\$60.71	\$150.86	\$17.95	\$128.52	\$21.62	\$109.69	\$28.20
Value of skim milk at 20c hd. weight,	8.17	15.57	2.12	16.45	3.00	13.87	4.00
Total value of products . . .	68.88	166.43	20.07	144.97	24.62	123.56	32.20
Cost of feed per cow,	36.27	72.03	23.80	65.73	24.63	54.83	27.36
Profit per cow,	32.61	94.40	3.73	79.24	0.01	68.73	4.84
Cost of producing 1 lb. butter fat, in cents,	16.70	13.40	37.10	14.30	31.90	14.00	27.20
Returns for each \$1 invested in feed,	1.90	\$2.31	\$0.84	\$2.20	\$1.00	\$2.25	\$1.18
Profit on each \$1 invested in feed,	0.90	1.31	0.16	1.20	0.00	1.25	0.18

Differences equally as great for a single year are to be found in our College herd. A most striking example being the case of two registered Guernseys who are half sisters, they were reared in the same herd presumably under similar conditions. One of them, A, has a record of 5,028 pounds of milk and 229 pounds of fat. The other cow, B, has produced 8,832 pounds of milk and 477 pounds of fat.

Similar instances may be multiplied indefinitely. They all go to show that one of the important reasons why we do not get better returns from our dairies is that it takes about all the profit the best half of the herd can make to support the poorer half.

According to the results obtained by Eckles, the causes of differences in productive capacity of individual cows is one of abil-

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ity to consume and utilize feed over and above that required for maintenance. As proof of the statement he cites the results obtained with two Jersey cows.

Table 4. Showing portion of ration available for milk production:

COW NO. 27—IN POUNDS.

	Grain.	Hay.	Silage.	Grain Feed.
Consumed during year in milk,	3424.0	2904.0	8778.0	4325.0
Maintenance for year,	1200.8	1204.5	4818.0	
Available for milk production,	2223.2	1699.5	3960.0	4325.0

COW NO. 62—IN POUNDS.

	Grain.	Hay.	Silage.	Grain Feed.
Consumed during year in milk,	1907.0	1698.0	5088.0	2102.0
Maintenance for year,	1065.8	1065.8	4292.4	
Available for milk production,	841.2	632.2	795.6	2102.0

NO. 62.

Ration of Maintenance.	Used for Milk Production.
55.8 per cent of ration.	44.2 per cent. of ration.

Our problem then is somewhat similar to the famous recipe for cooking a rabbit: first catch your rabbit. Before we can expect to feed cows profitably it is necessary that we have profitable cows to feed. Your speaker's experience is that it is much easier to feed a good cow at a profit, than it is to get a cow to feed.

It is not an easy matter to select good cows, and, although much time is spent in our Agricultural Colleges in teaching students how to choose cows that will produce at a profit, the most satisfactory way is to weigh the milk of each cow in the

herd and in this way know exactly what a cow is returning from a given amount of feed.

This is a simple matter and requires but a little time, time that is never missed when once the milker gets into the swing of the work. If a dairyman is unwilling to do this himself its importance is so great that he is justified in becoming a member of a cow testing association, and employing some one at a small expense per cow to keep a record of the individual cows of his herd for him.

In a paper of this kind it is difficult to add anything new to the vast amount of literature there is bearing on the subject of feeding. The theory and practice of successful feeding are a little at variance. We have a number of feeding standards, some of which have been worked out from a compilation of the work of a large number of supposedly successful dairymen, others are based upon the theoretical maintenance requirements of a cow in milk and the energy contained in a given foodstuff. I have been told by those familiar with the matter that both of these standards are utterly ignored by herdsmen who secure large records with pure bred cattle, and we all know that a cow with a large record usually makes a large profit.

In the feeding of such animals, the question is always one of getting them to eat as much as possible. Not much attention is paid to the composition of the ration not even to question whether it is balanced or not.

In some of the largest dairies with which I am familiar the problem is always to get the cows to eat large amounts of feed and to this end a greater variety is fed than is common on most farms.

In my own feeding work which is carried on with registered cows, we aim to give all a cow will eat without getting fat. When one is found that will not eat much without getting fat, we find some way of getting rid of her. I have mentioned the matter of liberal feeding for the purpose of emphasizing the fact that for profitable feeding we must not only have good cows but we must also feed with a liberality that would surprise some of us. By this I do not mean that we should be wasteful or extravagant but that we should give about a pound of grain for every

three pounds of milk produced. Or feed all a cow will eat without perceptibly getting fat or increasing in weight.

There are, however, a few fundamental principles underlying all dairy feeding which should be observed by every one who seeks to obtain the largest returns from his cows at a reasonable cost.

In order of their importance these may be mentioned as follows: A due regard on the part of the feeder of the proportion of the protein to the carbohydrates in the ration. In our farm grown feeds with a few exceptions, the desired amount of protein is lacking and must be supplemented by purchased feeds. The quantity of these protein bearing feeds that needs to be bought and fed is largely a question of policy on the part of the feeder. If he gives the maximum amount of protein and feeds through the year, he will, of course, have to purchase more than if he should feed the minimum allowance and should not feed while the cows were on pasture. Our authorities differ somewhat on the protein requirement of milking cows. It is safe to assume, however, that for a 1,000 pound cow giving 25 lbs. of milk per day testing 5% fat, about 2 pounds of digestible protein should be furnished. Whether this shall be supplied in bran, cotton-seed gluten or some other protein carrier will depend upon the farm grown feeds with which it is to be fed and upon the relative price at which different feeds can be bought.

If we were to accept as any kind of a guide the work of those feeders who are making large records we shall not confine our source of purchased protein to any one feed but get as many as we conveniently can. In this way there will be a tendency to make the ration more palatable and in consequence it will produce better results.

A certain amount of succulence is almost necessary for success in feeding for milk production. This was not formerly of such great importance when the cows produced nearly all of their milk while at pasture. Now, however, with so much attention paid to winter milk production some form of succulence, approaching grass in its character, is essential for the best results. While this may be supplied in form of beet pulp or roots, corn silage is undoubtedly the most satisfactory form of a pasture substitute during the winter months or even in the summer time

when pasture is scarce or perchance lacking altogether. The silo, then, is becoming an essential part of the dairy farm equipment. The more permanent it is in construction, the less its upkeep will be and the more satisfactory will it keep its contents.

It may be filled with corn in the fall for winter feeding and with clover in the early summer to supplement the pastures during dog days. As an aid in solving the feeding problem the silo is most useful and no dairyman with 10 cows under ordinary conditions can afford to be without one.

Palatability. The palatability of a ration is of the utmost importance. It is difficult to measure, but its value is recognized by every one who is trying to make satisfactory milk and butter yields. Unless we take cognizance of this intangible something we call palatability we cannot hope for the best results in our feeding operations. If we do recognize its influence in the profits of the cow, we shall take pains to cut hay and fodder early, or before the maximum amount of woody fiber has developed. We shall also see that the hay that is to be fed during the winter is cured with the least possible exposure to sun and rain and, further, we shall see that the daily ration is served in such a manner as to tempt the appetite as much as possible and in this way stimulate the powers of digestion. In this connection it may be said that many good feeders make a judicious use of salt, ground bone or floats in seasoning the food for cattle.

Anything within reason that can be done to make the ration attractive and palatable to the individual cow is usually well worth the time and effort involved.

The Cost of the Ration. Paradoxical as it may seem the cost of the ration is not the most important item in feeding dairy cows. How much may be spent in providing feed for a given animal will depend entirely upon the return she makes for it. Some men are cheap at \$5,000 per year; others are dear at \$300. It will pay to put \$150 worth of feed into some cows, while others will not pay for \$50 worth of the same kind. In the final analysis, it comes down to the individuality of the cow that is to be fed.

However, in the raising of farm grown crops for the dairy and in the purchase of foods to supplement these, there is an oppor-

tunity for the dairyman to exercise all the business acumen he possesses. For instance, it is much more economical to grow silage than roots for winter feeding, and for the same reason it will pay better to grow alfalfa than timothy hay. If it is not feasible to produce this crop an acre of soy beans will produce more milk than an equal acre devoted to mixer or non-leguminous hay.

For a number of years, the Delaware College has depended entirely upon corn silage and soy bean hay for its roughage. As it is not the practice to pasture any of the milking cows, and soy bean hay is fed most of the time during the year. Of course, if alfalfa could be substituted for the soy bean hay, it would have the advantage of making larger yields, and of being seeded once in four or five years. The chief object to be kept in mind in this connection is the home production of some leguminous hay of which maximum crops can be regularly grown at the minimum expense, together with sufficient corn silage for barn feeding. We know that these feeds are relished by practically all cattle and that they can be fed with impunity.

Purchasing concentrated feeds to supplement that grown on the farm is rather difficult for a number of reasons, some of them are unquestionably rich in digestible protein, but are not palatable. Others which do not contain the elements desired in purchased feeds, may be palatable by being sweetened with molasses or sugar. Often times the price of bran, one of the old stand bys, prohibits its use. When we are tempted to buy mixed feeds, we hesitate for fear that they contain sweepings or weed seeds or that we are paying a high price for the mixing that may be done at home at less expense. All of this may or may not be true. As prejudicent as I have been against mixed feeds, I must admit that there are some that seem to give better results than feeds that are usually mixed at home. For the past eighteen months we have been using mixed feed with the most satisfactory results, results that we did not seem able to obtain when we mixed our own dairy ration. Perhaps our satisfactory milk yields may be attributed to the fact that the mixed feed in question contains considerable beet pulp which seems to produce milk far in excess of what its analysis would warrant one to expect. It is no doubt absolutely necessary to feed a mixed

grain ration to obtain the most satisfactory results, and experience has proven that at least some of the mixtures now on the market are satisfactory. It is also probable that some of the best of these mixtures are better and hence more satisfactory than the combination that the majority of dairymen are now using.

In spite of all that has been said or written on the question of dairy feeding and notwithstanding the standards that has been taught to us for the past generation, the man who feeds the cow is after all the deciding factor between profit and loss. There is more to profitable feeding than a balanced ration and some one to supply the cow with so many pounds per day. "The master's eye fattens his cattle," is an adage that can be applied with adaption to the feeding of dairy cattle that are kept for milk production and not to fatten. The skilled herdsman is as essential to profitable feeding as any other factor in successful dairying. His quick perceptive mind notes the condition of the animals under his care and each individual animal is held up to her maximum performance all the time, in contrast to the unskilled feeder, who would either overfeed or underfeed thus causing production and profits to vanish. No one can over estimate the value to a herd of an alert, intelligent and faithful cow man, who has the welfare of the cattle in his charge ever uppermost in his mind. Be he owner of the herd or an employe, he gets his pleasure from the individuals of the herd that respond to his efforts with good records of production. His study of their idiosyncrasies, and his inability to gratify their little whims and fancies is worth any amount of theoretical knowledge of feeding which lacks love for animals, and all it implies.

From what has been said, it will be seen that there are a number of different factors that are closely related in the successful feeding of dairy cattle. The first and in many respects most essential, is the man who does the actual feeding. He needs a most intimate and sympathetic knowledge of the temperament, likes and dislikes of his animals. By intuition he should appreciate the needs and wants of the individuals in the herd. Let us repeat: this information and the ability to use it is more essential in successful feeding than any amount of technical

knowledge without a close and appreciative understanding of the cow herself.

The second most important factor in successful feeding is the individual cow. Unless she has the qualities that are requisite to make her an economical agent for converting feed into milk, no amount of skillful feeding will make her profitable. The only way to determine whether a cow is profitable or not is to keep a record of the feed she consumes and the milk she produces. It is well known that approximately a third of our cows are being kept at a loss. Yet it is a most embarrassing fact that not one dairyman in fifty keeps a record of his cows or knows what it is costing to produce milk.

Third. While it is essential that due regard be paid to the supply of digestible protein, (which should be about two pounds per day for a cow producing 25 pounds of milk, testing 4% of fat). It is just as important that the ration be palatable to the individual cow. I feel that it is hardly possible to over estimate the importance of palatability in profitable dairy feeding.

Finally if these three factors are secured it will be found profitable to furnish the best cows with the best feeds in order to obtain the largest profits under the best and most satisfactory conditions.

A Member—I would like to ask Mr. Hayward at what stage he cuts his soy beans for hay?

Mr. Hayward—We cut our soybeans for hay just as the lower leaves are turning yellow, but before any of them has dropped off. Our aim is to get the beans matured as much as they will before the leaves drop.

Mr. Hankinson—What varieties do you use?

Mr. Hayward—We have found for our conditions the Peking and the Wilson are the best for hay, and for seed, possibly, in this latitude, the Itosan or Medium Yellow would do; but I should try the Peking and the Wilson at any rate, even here.

A Member—Do you know of any danger from feeding rye to a dairy cow?

Mr. Hayward—I have understood and know it to be a fact that you can feed a cow green rye—you mean green rye don't you?

The Member—No, grain?

Mr. Hayward—No, I don't think so if it is clean. Sometimes rye contains a certain amount of other matter which will have a damaging effect. But I have taken ground rye in experiments that I have carried on and have found that possibly it equals cornmeal in productive capacity.

The Member—Then green rye you advocate feeding?

Mr. Hayward—Not by feeding all she wanted to eat at the time, at first, but feeding in moderation, there is no question but what it is good.

The Member—How about pasturing rye?

Mr. Hayward—They will probably get too much and they will mow down the pasture too much; when it is very green it will make them scour.

The Member—What is the effect on the milk?

Mr. Hayward—I am told it has a bad effect. People notice it. That is true from any change from dry food to grass anyway.

A Member—It is the worst possible food you can give to a cow. I had one experience with that a long time ago and I don't want another. I wanted the telephone cut out of the house. Just as soon as I started on the rye.

Mr. Hayward—Yes, and I know of others have had the same trouble. I know the dairymen find trouble with the milk on that.

The Member—The trouble with us is that every person complains that the milk has a disagreeable taste, and we have determined that that is about the one thing you could not pasture.

Mr. Hayward—I have had the same experience, but in a lesser degree, with crimson clover in the Spring.

The Member—But that is not so bad as rye.

Vice-President Cox—Are there any other questions to ask of Mr. Hayward?

A Member—How would mangles do to take the place of beet pulp?

Mr. Hayward—I am not able to answer that question definitely. If a cow was very fond of mangles she would eat some day four bushels, but a Jersey cow won't eat them at all. Up in New York State where they have so many Holsteins making their large records, no feeder there thinks he can make a record without feeding a large amount of the little purple beets and

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the red ones, and they feed so many that the excreta that comes from the cow is red.

A Member—They cost too much.

Mr. Hayward—They cost too much. That is the point.

A Member—May I ask if you have ever tried Union Grains?

Mr. Hayward—Yes, we have a carload now in the barn.

The Member—How do they compare with the Larrow?

Mr. Hayward—They analyze a little better but when we begin to feed Union Grains we noticed the milk went off on our test and we went back to the Larrow feed again.

The Member—Did you feed succulent food, silage?

Mr. Hayward—Yes, I feed silage twice a day.

The Member—My experience has been the opposite. I don't know whether that is right.

Mr. Hayward—How is that?

The Member—It has been the opposite. As soon as I have begun feeding Union Grains the supply went up and after I quit feeding Union Grains then my supply went down.

Mr. Hayward—Have you fed Larrow feed?

The Member—Yes.

A Member—Does not Larrow feed contain quite a good deal of cotton seed?

Mr. Hayward—Some cotton seed and some gluten.

The Member—I did not feed it myself, but a neighbor found when he fed it that it interfered with the corn.

Mr. Hayward—I never found that it interfered with the corn fodder at all. I have never found any trouble in feeding it although some people have as I hear. I know a man in Baltimore has about a hundred and fifty cows who does not feed any corn meal at all.

A Member—They say that grain rye will dry up a cow, how about rye hay?

Mr. Hayward—I don't know. I don't think much of rye hay. I have never fed a whole lot of it.

A Member—I had pretty good success on rye hay?

Mr. Hayward—I would sooner have soybean hay.

A Member—When you feed meal do you feed it alone or with other feeds?

Mr. Hayward—I feed it alone.

A Member—Why don't you feed the cotton seed meal alone?

Mr. Hayward—Because the cotton seed is more constipating.

The Member—Is that the only reason?

Mr. Hayward—That is the only reason.

A Member—Speaking of silage, don't you have trouble keeping it in condition to give to the cow?

Mr. Hayward—No, we have not fed silage in the last year in August and July.

A Member—It is very apt to spoil.

Mr. Hayward—We don't have much waste. In Pennsylvania they feed it all year. We have the silos and take off a good big layer every day. And they do it all the year.

A Member—Do you recommend growing clover for the silo?

Mr. Hayward—I would not hesitate to put clover in the silo. The only drawback is it smells like everything when it comes out, but it is very palatable and a good milk producer. I should hesitate to put any other legume like beans alone for example, or cowpeas alone or even vetch alone.

A Member—It will make the milk taste badly, that bad smell you speak of?

Mr. Hayward—It don't seem to, we have fed it right along.

Vice-President Cox—A vote of thanks to Prof. Hayward is in order.

A Member—I move that a vote of thanks be extended to Prof. Hayward.

(This motion was duly seconded, and on a vote, carried.)

Vice-President Cox—Just at this time I want to enjoy the pleasure of introducing to the State Board of Agriculture its newly-elected President, who was not present at the time the committee made their report. I want to present to you our re-elected President, Hon. Joseph S. Frelinghuysen. (Applause).

President Frelinghuysen—Gentlemen, after taking your time for an hour and ten minutes yesterday I won't take long in thanking you for this extended honor. It is a great honor to be re-elected President. I had hoped that the Committee would find someone else who would take up the labors of the State Board of Agriculture, and relieve me of the work. The time that I have devoted to it has been somewhat limited. I am very busy, and in addition to my numerous activities, to be president

of a great organization like this, it requires very much time, and should have more time. I feel sometimes that perhaps I am not doing my entire duty to you, and to the State.

However, as the Committee has seen fit to re-elect me, I shall go on with the work with the assistance of the able and energetic men who compose the Executive Committee, and who have worked so faithfully for your interests during the past year.

The President is the smallest part of the great organization of this State, and yet he is supposed to act in an advisory capacity and to direct and more or less to counsel. I won't take any more time, except to thank you for your confidence. There is quite a good deal of routine business to be taken up and I will run through it rapidly. (Applause).

(President Frelinghuysen then takes the Chair).

President Frelinghuysen—The Secretary has a resolution which has been presented.

(Secretary Dye then reads the resolution regarding the need of a Normal School in the southern part of the State—see report of Committee on Resolutions).

President Frelinghuysen—The President announces the appointment of the following committees:

Committee on Transportation and Freight Rates—E. R. Collins, Walter H. Taverner, J. T. Allinson.

Special Committee on Exhibition by the State Board of Agriculture, at San Francisco—Theodore Brown, Hon. E. C. Hutchinson, Edgar G. Weart.

The Committee for the same purpose of the Horticultural Society—James C. Hendrickson, C. F. Stanger. William H. Reed.

The Committee of the Grange on the same subject—Hon. G. W. F. Gaunt, A. G. VanNest, Allen D. Ackley.

In order to facilitate the work of the Board, not to usurp the powers of the Resolutions Committee, I am going to appoint a committee of five to consider and report to the Executive Committee of the State Board on the following subjects:

1st. Co-operative Credit Association—J. H. Darnell, of Burlington; D. H. Jones, of Monmouth; William R. Hackett, of Salem; Thomas M. Roe, of Sussex; Ralph Schellinger, of Cape May.

A committee of five to consider the question of the establish-

ment of a Farmers' Bureau in the office of the State Board of Agriculture—Theodore Brown, of Gloucester; Fred Lippincott, of Burlington; Arthur Lozier, of Bergen; William Hamilton, of Somerset; Mr. Hankinson, of Mercer.

Is there any other business to come before the Board at this morning session? If not the meeting will stand adjourned until two o'clock this afternoon.

AFTERNOON SESSION.

The meeting was called to order by Vice-President Cox.

Vice-President Cox—The Board will be in order. The Secretary has a report to read.

Secretary Dye—Mr. Chairman, the Auditing Committee have handed in their report as follows:

"We, the Auditing Committee, have duly examined the books and vouchers of A. J. Rider, Treasurer of the State Board of Agriculture, and find the same correct; he having received eleven thousand and four dollars and fifty-eight cents (\$11,004-.58) and the checks and bank books show that he has disbursed the same amount in the various departments.

(Signed) George B. Randolph,
Theodore Brown,
George E. DeCamp,
Committee.

The report was accepted and placed on file.

Vice-President Cox—The Secretary has a resolution which has been handed to him, which he will read.

Secretary Dye—

Whereas, Most of the Counties in the State are now desirous of establishing Farm Bureaus under the County Demonstration Law, therefore,

Be It Resolved, That the State Board of Agriculture urge on the legislature the need of providing funds for demonstration work."

Vice-President Cox—If there is no objection this resolution will be referred to the Committee on Resolutions. Hearing none, it will take that course.

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Is the Committee on Resolutions now ready to make its report?

Mr. Allison—We are ready to make a partial report.

Vice-President Cox—We will receive a partial report of the Committee now.

Mr. Allinson—

Whereas, It is conceded by all that one of the great needs of the State is a Normal School in South Jersey, for the training of teachers for the country schools, and,

Whereas, several localities are asking for this school, and this provision threatens to prevent any appropriation by the legislature for this purpose, therefore,

Be It Resolved, That the specification of location be eliminated, and that the selection of the same be left to the judgment of the State Board of Education.

Your Committee has approved of this resolution.

Vice-President Cox—You have heard the report of the Committee on this resolution, which is favorable, what is your pleasure?

A Member—I move that the report be concurred in and the resolution adopted.

The motion was duly seconded, and, on a vote, carried.

Mr. Allinson—The Committee also has the following resolution from the Burlington County Pomona Grange:

Resolved, That it be the opinion and belief of the members of the Burlington County Pomona Grange in meeting assembled, that the Automobile Reciprocity Act should be repealed, as it is not reciprocity in any sense of the word.

At least twenty-five automobiles come into the State, where one goes out.

Our expensively built stone roads are wearing out and are in bad condition from the constant use by automobiles, and we are deprived of the revenue we should receive from the non-residents of our State, who are constantly using our roads, to keep them in repair. Therefore, we ask for the repeal of the same.

Your Committee also report that resolution favorably.

Vice-President Cox—The report is favorable on this resolu-

tion. Are you ready to vote upon it? If not, remarks are in order.

Mr. Parker (of N. J. Holstein Ass'n.)—Mr. Chairman: I think such a resolution as that, passed by this Agricultural Association, will tend to make a laughing stock of us before the rest of the community. The question of reciprocity for automobiles is a broad public question. Great states like Connecticut, New York, New Jersey and Pennsylvania, have all agreed that each shall bear the burden of the automobiles passing from one state to the other, and for the Agricultural Association of this State to offer such a resolution and say that the Act should be repealed, I say, I think is ridiculous.

Vice-President Cox—Are there any further remarks?

Mr. Brown—Mr. Chairman: While possibly this resolution may be overdrawn, I think it is in the right direction. The present reciprocity law, as this resolution says, is not reciprocity, and that there ought to be some means found to put a reasonable tax on foreign automobiles. We are not getting enough money to build our roads and keep them in repair, and something has got to be done. I think these foreign automobiles should bear their reasonable share of that expense.

Mr. Applegate—Mr. Chairman, I do not for the present know which side I am on. I am greatly in favor of reciprocity. The question in my mind is, what is reciprocity? The Commissioner of Automobiles said yesterday that we extracted from the automobile owners of this State over six hundred thousand dollars, and that only about seventy-five thousand dollars was paid in the Treasury of this State by owners of foreign motor cars. In other words, I would like to ask now, if the State would abolish the reciprocity act, how many automobile owners of the State of New Jersey will drive over into Pennsylvania and New York? What would the payment be? I am willing to pay my share. I have owned a car now for some three years and I don't think if I paid the license fees of Pennsylvania and New York, were I put to it, that it would amount to one-fourth of the excess of tax that is placed upon the property holders of this State to keep the roads in repair. In traveling from Camden to Atlantic City, or from Perth Amboy down the coast line in the vicinity of Long Branch and Sea Girt, etc., it is one continuous line, and

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that would be a fine illustration for anybody who wants to know the danger to the citizens of New Jersey and the way its roads are used by the high powered cars from the other states. They tear up our roads and run into our citizens.

I say that if that is reciprocity I do not want any of it. I do not believe in raising the word "Reciprocity" which sounds very well, but has not any meaning here at all. When we get only seventy-five thousand dollars and spend six hundred thousand dollars, and most of the destruction of our roads is caused by the foreign automobiles, I do not see it. I say that some other way of adjusting the word reciprocity is needed.

Now, sir, if our Automobile Commissioner suggested some better plan, that might be different; but until such time comes that the burden before us is better adjusted, I am in favor of the resolution and I hope it will prevail, on principles of abstract justice to my fellow farmers of the State of New Jersey. (Applause).

Mr. Lippincott (of Burlington)—Mr. Chairman, I think it quite evident that further remarks to the State Board are not needed to support this proposition, but, until we have something to suggest in place of our present law it seems to me that we are unwise to ask a repeal of the present legislation.

While I am not entirely in favor of reciprocity as we have had it, yet, until we have something better to offer, had we not better leave alone what we have got and not ask for something that we cannot get?

Mr. Morgan—I don't know as I represent the people of South Jersey who are building the roads in that part of the State, but in regard to the automobiles which come down to the seashore resorts, we all know that almost every machine that comes down from Pennsylvania and New York leaves behind it several dollars. We all know that the farmers in that community are supplying the vegetables for those fellows when they come down in there, and I for myself cannot see where the farmers of South Jersey, especially along those seashore resorts, are in any sense injured. It is true they do tear up the roads, but I do not think they tear up the roads anywhere near the amount they leave in the State every time they come, and you can see proof of that

almost any day in the Summer. It may be a matter for localized legislation, but I am not at all in favor of that resolution.

Mr. Lippincott—I move that the resolution lay on the table.

The motion was duly seconded, and on a vote, lost.

Vice-President Cox—In the judgment of the Chair, the motion is lost. Is there any further discussion on this question?

As many as favor the adoption of the report of the Committee which is in favor of the adoption of the resolution will please vote Aye.

On a vote, the motion was lost.

Mr. Allinson—A resolution offered by the Burlington County Pomona Grange:

“Resolved, That we condemn the creation of new offices and the increase of the salaries of many of the present incumbents of various offices, as the increase means an extra burden for the taxpayers of the State.”

Your Committee reports that favorably.

Vice-President Cox—The Committee reports favorably on this resolution. Are you ready to vote upon it?

A Member—I move that we concur in the report of the Committee and that the resolution be adopted.

This motion was duly seconded, and, on a vote, carried.

Mr. Allinson—Another resolution offered by the Burlington County Pomona Grange:

“Resolved, That we ask for the repeal or modification of the Widows’ Pension Act. Many applicants are asking for assistance who have friends or relatives, who would come to their relief if necessary, or whose children would never be allowed to become a charge on the County or State.”

Your Committee is very much opposed to that resolution.

Vice-President Cox—You have heard the report of the Committee, which is unfavorable to that resolution. What is your pleasure?

A Member—I move that the report be concurred in.

This motion was duly seconded, and, on a vote, lost.

Mr. Allinson—“Resolved, That the New Jersey State Board of Agriculture ask our representatives in Congress to oppose H. R. 9987 in the House of Representatives, as a viciously dishonest bill to limit the sale of farm products.”

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Your Committee recommend the discussion of that bill on the floor.

Vice-President Cox—Your Committee reports back this resolution for consideration by the Board. What is your pleasure?

A Member—Can you tell us what is in the bill?

Mr. Brown—Mr. Chairman, this bill provides that any farm product that has been kept in a temperature less than forty degrees shall be treated as unfit for food at the expiration of a certain time limit, without any regard to the facts in the case. I will just read you the limits:

Beef or the manufactures or products thereof, seven months;

Veal, or the manufactures or products thereof, two months;

Pork, or the manufactures or products thereof, four months;

Sheep or goats, or the manufactures or products thereof, four months;

Lambs or kids, or the manufactures or products thereof, three months;

Poultry and game, or the manufactures or products thereof, three months;

Fish, or the manufactures or products thereof, two months;

Eggs, or the manufactures or products thereof, three months;

What I claim is wrong about this bill is the supposition that any article is unfit for food at the expiration of a certain limited period without any regard to the facts in the case.

There is another bad point in this bill that bears somewhat on the co-operative selling associations in the State, and it is a question whether this bill interferes with the rights of the farmers combining to sell their products. I think that we ought to pass this resolution.

Mr. Lippincott (of Burlington)—I move that the resolution and bill be referred to the Executive Committee of the State Board.

This motion was duly seconded, and, on a vote, carried.

Mr. Allinson—"At the December, 1913, meeting of the Atlantic County Board of Agriculture and Egg Harbor Grange the following resolution was adopted:

"As by an act of the legislature it is unlawful to kill minks, weasels, skunks, opossum, etc., other than by trapping and as these animals are destructive to property, be it therefore,

"Resolved, That the State Board of Agriculture of New Jersey use its best efforts to have this act of the legislature protecting these animals repealed."

Your Committee reports that resolution favorably.

Vice-President Cox—The report of the Committee on this resolution is favorable. What is your pleasure?

A Member—I move that the report of the Committee be concurred in.

This motion was duly seconded, and, on a vote, carried.

Mr. Allinson—"Resolved, That it is the sense of the New Jersey State Board of Agriculture that the modern tendency toward bringing up the youth of this state in idleness and luxury is to be deplored.

"That habits of industry, unless formed in youth, are seldom acquired.

"That most of the useful and efficient statesmen and distinguished citizens of this State in past generations were trained to lives of industry by spending their early years in active participation in the work and duties of farm life.

"That wherever possible all children whether of poor or wealthy parentage should be given definite duties and responsibilities about the home or farms, preferably on the farm, because the open air life and healthy surroundings permit at a much earlier age the beginning of the duties of life, than would any other occupation.

"That in addition to the habits of industry so formed their bodies would be developed by manual labor to such an extent as would enable them to put to most useful and efficient service in later years the mental training obtained from their splendid educational opportunities."

Your committee also favor the adoption of that resolution.

Vice-President Cox—The Committee report favorably upon this resolution. What is the pleasure of the Board?

A Member—I move that the report of the Committee be concurred in.

This motion was duly seconded, and, on a vote, carried.

Mr. Allinson—"We, the members of the New Jersey State Board of Agriculture assembled in annual convention this twenty-ninth day of January, nineteen hundred fourteen, represent-

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ing and being interested in the poultry industry of New Jersey in which over ten million dollars are invested, are anxious that this industry should be fostered and supported to the utmost, and we do concur to the following:

"Whereas, The present equipment is not sufficient to meet the rapidly increasing demand for instruction in poultry husbandry at our State College.

"Whereas, Additional facilities are needed for scientific investigational work along the lines of breeding, feeding, hatching, rearing and marketing.

"Whereas, Owing to the great demand more funds are required for the furtherance of investigational work, to be used in carrying the results of the investigations to poultrymen of the State and especially co-operative experiments in the various sections;

"Whereas, Appreciating the work already accomplished by the Poultry Department along educational, investigational and extension lines with the equipment and funds available, and believing that this work should go on immediately along more extensive lines, Therefore be it

"Resolved, That we are in hearty accord with the request made by the Experiment Station for additional funds for maintenance and equipment to further the work as above outlined, and furthermore, Be it

"Resolved, That our Secretary be instructed to forward a copy of this resolution to each County Board of Agriculture with the request that they take immediate action upon the same and instruct their Senators and Assemblymen as to their action and the urgent need for these increases in poultry appropriations if the present high standard of work is to be maintained."

Your Committee are in favor of this resolution.

Vice-President Cox—The Committee report favorably on this resolution. What is the pleasure of the Board?

A Member—I move that the report be concurred in.

Mr. Parker—Mr. Chairman, I think, if it is open for discussion, that an amendment to that resolution might well be offered. There is no direct action to be taken by this Board of Agriculture. The thing is to be referred to the County Boards. Now, by any possibility, will that action get result in time to

be of any use for this session? This appropriation is being made now, and any action taken must be immediate. I think that should be amended so that the resolution should be sent directly to the Senate and Assembly and to the Governor, advising them as to the feeling of this Board of Agriculture on that subject, and should not be referred to the County Boards at all.

Vice-President Cox—It would naturally devolve upon the officials of the State Board. If it is approved by the members of the Board that would place upon the Executive Committee of the State Board the responsibility of obtaining such action if possible, as well as to enlist the co-operation of the County Boards as an additional safeguard. I think it is all right in that respect. The Chair would be glad to hear from any other members of the Board, however.

Mr. Lippincott (Burlington)—If this calls for any immediate action, Mr. Chairman, it had better be referred to the Granges of the Counties rather than to the County Boards. We would not get a report from the County Boards in time. I don't know that that is at all necessary. The Executive Committee, if it is referred to them for action, would be satisfactory.

Vice-President Cox—The Chair recognizes the fact that this last clause in the resolution referring it to the County Boards would be entirely inoperative, because it could not be made effective in time to accomplish its purpose with the legislature. But it does seem to me that it puts the responsibility on the Executive Committee of the State Board to take the matter up and press for an increased appropriation in this department. That is my understanding of this resolution, excluding entirely, as you might say, the last clause, which would be ineffective and inoperative. Still, I do not wish to be arbitrary in any way.

All those in favor of the adoption of the report which is favorable, will please vote Aye.

The motion was carried.

Mr. Allinson—"Whereas, A majority of the Counties of this State are now desirous of obtaining a Demonstrator under the County Demonstration Law, Therefore be it

Resolved, That the State Board of Agriculture urge on the

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legislature the need of appropriating funds for demonstration work."

Your Committee also reports favorably that resolution.

Vice-President Cox—The Committee report favorably this resolution. What is the pleasure of the Board?

Mr. Lipman—Mr. Chairman, it might be well to have Prof. Agee tell the gentlemen here about the requests which come to him for County Demonstration work.

Vice-President Cox—Prof. Agee will tell us.

Prof. Agee—Mr. Chairman, a majority of the Counties of our State are asking for the appointment of County Demonstrators. They are asking through petition to the State Superintendent. Many hundreds of the practical men in the various counties are signing their names to petitions asking for the immediate appointment in each county of a competent demonstrator. Now, the will of these men, their desire, cannot be met unless there is some proper appropriation of funds. We are asking for the amount of money that is named in the law providing for this work, fifteen thousand dollars, besides five thousand dollars in the supplementary for demonstration. It seems to me that if you gentlemen who are writing me, who are petitioning now literally by the thousands, want this work, which certainly is needed, the one thing to do is to see to it that the legislature gives us the money for this service. We cannot make this an effective force without more money. I would like to see a sufficient amount of money to enable the State to pay one-third of the expenses in each county. That probably is beyond us for the present, but something can be done.

I don't want to take your time. You are busy men. But I want to say that the County is to become the unit in extension work. There must be in every county some one man trained in science, a practical fellow, who will be representative of your experiment station carrying on demonstrations with the men who want it, rendering service to the practical farmers.

I would not have mentioned this, only as I say, hundreds of men in the majority of the counties are signing their names to petitions demanding the service and we are embarrassed with the fact that we do not have funds to meet your demands.

Give us the money and we will render the best service within our power.

Vice-President Cox—Are you ready to vote upon this question?

Mr. Hackett—Mr. Chairman, the Experiment Station sent Mr. John Voorhees to my place last year with eighteen samples of corn and it certainly was a good demonstration; Prof. Minkler had a talk on it and showed the farmers there how to increase the amount of corn raised per acre there, I think it was from sixty-six bushels to one hundred and twenty-six bushels per acre, taking seventy-two pounds for the bushel, and the farmers were well pleased with it. I would ask you to concur in the resolution.

Vice-President Cox—As many as are in favor of concurring in the report of the Committee on this resolution will please vote Aye.

The motion was carried.

Vice-President Cox—The Committee has nothing further to report?

Prof. Minkler—Mr. Chairman, I would offer the following resolution:

"Whereas, New Jersey offers special opportunities for pork production, and,

"Whereas, Hog Cholera at the present time threatens to greatly thwart the industry; Be It

"Resolved, That we favor such legislation as will enable the quarantine of affected herds and further provide serum for treatment as a preventative measure."

Vice-President Cox—You have heard the reading of this resolution. What is the pleasure of the Board?

A motion of its immediate adoption will be entertained.

Mr. Parker—I move its adoption.

This motion was duly seconded, and, on a vote, carried.

Senator Gaunt—Mr. Chairman, I do not like the position that we are in on this reciprocity deal. As you are aware, for years the agricultural organizations fought this measure bitterly and did everything that was possible to prevent this so-called reciprocity—it is only so-called—being placed on the books. I agree thoroughly with my friend Fred. Lippincott from Burlington

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County, that it is almost foolish for us to think about having it repealed, but I do feel that the action that we have taken places the representatives of the agricultural organizations in the legislature in a sort of embarrassing position. The first thing they will say to us will be, "Oh, you have been saying all the time that the Grange and the Agricultural organizations were opposed to reciprocity, but I see they have reversed themselves in the action they took at Trenton."

Well, they didn't. The thing was practically laid on the table, or was lost. But there, it seems to me, we are in a sort of an embarrassing position at the present time. I wish there might be some way in which that embarrassment could be relieved. The only way that I see out of it would be for a motion to reconsider. The thought was that if we did do something of this kind the matter could be referred to the Executive Committee or a special committee to confer with the Commissioner of Motor Vehicles, and perhaps the State Highway Department, and to see if it is not possible for us to work out some way in which we could have some sort of uniform license laws that would be fair to the motorist and the people of New Jersey.

At the present time we all understand what the situation is. These foreign cars come within our State with their high power and if they injure any citizen of the State, unless they are gotten hold of at once, and they get back into their own State, you would not be able to get any redress or get any damages or any justice. If they came from New York, as was pointed out, and got back, it would possibly take three years to get a case in Court in that State, and in that time there would be an awful state of affairs for the fellow who was attempting to get damages. I cite this as the condition that now exists.

The point that I want to make is, I feel that the matter ought to be taken up and put in a position whereby we can still be in a proper position before the legislature.

I mention this for your consideration, if you desire to do anything with it.

Mr. Parker—Mr. Chairman, while I recognize that the State of New Jersey is suffering a great deal from damage to the roads due to automobiles, I must confess that I am ashamed of the roads. I have for the last three or four years spent my Sum-

mers in Massachusetts, close to the Rhode Island line, and the traffic from Rhode Island to Massachusetts in all those high powered vehicles is enormous. In Massachusetts they have led the road building forces of the world in producing with not very good material the most magnificent roads to be found anywheres in this country, without expending a very large amount of money per mile; and our roads which were so splendid a few years ago, were built not for the automobile, but for the bicycle, and for such roads they were the best in the world; but, as soon as the automobile came our roads immediately fell down, and they have remained so ever since.

Massachusetts, Rhode Island, Connecticut, and New York have started in where we should have started three years ago and rebuilt and improved their good roads from one end to the other. It is not that the farmers object to the automobiles so much as it is that the farmers object to the roads. The automobiles leave ten times as much money in the State as it costs to keep the roads in repair, and I think it is not up to us to object to reciprocity. We should do everything we can to afford easy access to automobiles of other states to pass into our State and our cities and out of our cities, because we want to occasionally cross those other states which are in sympathy with the reciprocity scheme, and then when we can get our roads repaired all right and improved properly, we will have no further trouble with the automobile question.

Vice-President Cox—This is now simply a matter of tolerance. There is no question before the Board, and this discussion is allowed because I do not like to tell the members to sit down.

Mr. Lippincott (Burlington)—Mr. Chairman, I very much agree with Brother Gaunt in the fact that I would like to see something done to remedy it, but I am not in favor of the resolution that was presented. I think I realize somewhat the situation brought about by that resolution and if we could get together and suggest something to take its place, let us work on that line. But when we talk about repealing the present law, and offer nothing in its place it does not seem the thing to do. If Mr. Gaunt will put his remarks in the shape of a resolution, I should be very glad to support it.

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Vice-President Cox—As the Chair understands the situation, the motion to lay the resolution on the table was rejected, and the question then came on the adoption of the report of the committee which was favorable, and that was not concurred in. Now, there may possibly be a misunderstanding on the part of the members here present as to just the action of the Board upon the question and the Chair would entertain any reasonable motion to bring the matter again before the Board.

A Member—Mr. President, I rather think there was a misunderstanding. I do not understand that the resolution goes to the repeal of the automobile law, only on that subject matter of reciprocity.

Vice-President Cox—I think so.

Mr. Brown—I move that the whole matter be referred to a committee of five to take up with the Motor Vehicle Department and the State Road Department.

This motion was duly seconded.

Vice-President Cox—This motion is not strictly in order, because this report has been acted upon definitely by the Board. A motion to reconsider the vote upon which it was acted upon will be entertained. Then this motion will be strictly in order.

Mr. Darnell—I move that the vote be reconsidered.

This motion was duly seconded, and, on a vote, carried.

Vice-President Cox—Now the question is before the Board on the question of the adoption of the report of the Committee which is a favorable report upon the resolution which calls for the repeal of the automobile reciprocity act. What is the pleasure of the Board?

Mr. Brown—I move that the whole matter be referred to a committee of five to confer with the Motor Vehicle Department and the State Road Department to see if they cannot arrive at some understanding.

This motion was duly seconded, and, on a vote, carried.

Vice-President Cox—The committee will be announced later.

Secretary Dye—Mr. Chairman, I have a resolution from the Passaic County Board of Agriculture, which I will read:

“Resolved, That the New Jersey State Board of Agriculture hereby protests against the use of Amosite or a like material for the permanently improved roads, unless a suitable provision be

made for horse-drawn vehicles, upon which a horse can get a safe and sure footing.

Vice-President Cox—This resolution is presented for immediate adoption. What is the pleasure of the Board?

A Member—I move its adoption.

This motion was duly seconded.

Mr. Parker—As I understand that, that is a resolution offered by the Passaic Board, is it?

Vice-President Cox—Yes, sir; Passaic County Board presents it.

Mr. Parker—A resolution from Passaic County requiring the abstention from the use of asphalt in making these new roads?

Vice-President Cox—No, it condemns the new Amosite roads, these slippery roads that they find fault with up there on the hills.

Mr. Parker—The Amosite Road is not a slippery road, the asphalt road is. But they have not found yet anything which is better for a binder than some asphalt, and for this State Board of Agriculture to offer a resolution condemning the best material that they have found I think would be perfectly useless.

Vice-President Cox—Are there any further remarks?

Mr. Winters (Passaic)—Mr. Chairman, that resolution, as I understand it, calls for provision made for horse-drawn vehicles as well as the motor cycle vehicle. Take it upon our hilly roads, we have in our section a few miles built this last year that cost us something like twenty-three to twenty-four thousand dollars a mile to build, and our horses cannot go on it. We have a factory there where they draw in the dead animals, and we had quite a few of them go in there the last two weeks from broken limbs. Now, we realize fully that the motor-drawn vehicle is coming into use more and more every day, but we also recognize that there are many people that have to use horses as well as the machines, and we cannot get out in frosty mornings or in moderate weather on those roads. I went out into one part of that road, and there was what they call the "hot mix" and the other was the "cold rolled road" and as soon as my horse struck that "hot mix," it was dry, and I had not gone the length of this room before he was down on his side.

That is the position that we are in when we strike these

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streets and roads that are built of that material, in the city of Paterson, especially on a hill or steep grade.

We can build a road thirty foot wide, part Amosite and part Macadam, for the same amount of money that we can a twenty foot Amosite road, and it seems to me as men of the agricultural world that have got to have the horses to get onto the land and onto roads, where the motor cycle cannot get, that we should have a recognized place to go. We were there before the motor cycle, and if we are to build the roads and help to keep them in order, we don't wish to be put off of them.

Senator Gaunt—Mr. Chairman, how does that resolution read?

Vice-President Cox—"Resolved that the New Jersey State Board of Agriculture hereby protests against the use of Amosite or a like material for the permanently improved roads, unless a suitable provision be made for horse-drawn vehicles, upon which a horse can get a safe and sure footing."

Senator Gaunt—Mr. Chairman, I recognize that what the Brother has said is true of those hilly sections, but when it comes to our level country, we want all the Amosite that we can get, and we don't want to be put in a position where we cannot have Amosite built roads. There should be some differentiation in the matter in the judgment of the Road Department, to the various sections, but it would not do for us to place ourselves in point of fact on record in favor of not having Amosite used in the construction of roads, because we want all the Amosite we can get in South Jersey on our level roads.

Mr. Winters—That is why the other provision is incorporated.

Mr. Crane—Mr. Chairman, in Essex County there is one Amosite road, and there is a great deal of objection to it, on the hills in Bloomfield avenue, and it is fairly dangerous, and people complain of it a great deal and ask what they can do to get over the road in safety. I think the danger to the horses should be taken into consideration in building of these roads.

Vice-President Cox—It is the judgment of the Chair, if I may be indulged, that this is a matter that should rest entirely with the Boards of Freeholders of the various sections of the State, for the very simple reason that conditions in one section of the state do not correspond with the conditions that exist in other sections of the State. There is no question in the mind of any-

body what in the Northern Section of the State, on the hard grades, it is dangerous, these slippery roads are dangerous to horses, but whether this Board should take up this matter when so large a part of our State approves of this particular one thing, seems to me a questionable thing for us to do. I do not wish, however, to prejudice the members here in this matter. The question is before you for your adoption or rejection.

Mr. Winters—Mr. Chairman, I would ask, how are we, the farming community, that have got to use these roads for drawing these loads over, how are we going to influence or gain recognition from the freeholders when the freeholders are elected at large and they are elected from the City? If they were elected from the districts then the agricultural element would stand some show of recognition, but as in the northern part of the State our freeholders all come from the city we have very little to do only to pay our taxes. (Applause and cries of "That's right.")

Vice-President Cox—That may be purely the result of the Commission Act in the State.

Mr. Day (Passaic)—I would say in behalf of the Passaic County Board, that we do not wish to interfere with the Southern part of the State or any other part of the State where they wish this kind of roads; but where we cannot get out with our teams without danger, there we do not want to put our good animals, such as a horse, onto such roads where they are in danger.

Vice-President Cox—I am in full sympathy with you on that.

Mr. Day—I don't want Senator Gaunt to think we want to dictate what roads he shall have in South Jersey.

Secretary Dye—Mr. Chairman, I don't see how the adoption of this resolution by this Board is going to help the situation up in Passaic County. You have heard what Senator Gaunt has said, in South Jersey they want this material, and there may be other sections in the Northern part of the State where they want it. I do not see why we should pass a resolution which forbids its use. The Road Commissioner will be here very soon and we will put the matter up to him.

Mr. Kurtz—Can the State in any way control the action of

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the Boards of Freeholders in putting in Amosite or any other kind in their county?

Vice-President Cox—Within certain limits, yes.

Mr. Kurtz—If the State has no absolute control over that I don't see how this Board can take any action. I think that is purely a local matter. We want all the good, hard roads in our section that we can possibly get. We have both hills and level ground in the City of Plainfield, and where they have bad roads they sand them mostly. I do not see how it is possible in some cases to increase the width to thirty feet because in some cases the property owners will contest that. I think we had better leave good enough alone. We have a man at the head of this business who understands his work, Col. Stevens, and I think we can leave it to him.

Mr. Day—We do not wish in any way to interfere or impede the Good Roads Movement, but we have in prospect now a piece of road nine miles long, and we understand they have already decided upon putting down this kind of road, and it only lacks the endorsement of the Town Committee through which this nine miles goes, and in this nine miles there is a rise of over sixty feet in altitude, with ups and downs, and some very pronounced grades through which, if this pavement goes down, it will be impossible for horses to travel unless there is definite provision made for horse-drawn vehicles either on the side or in the centre; and the chief object of introducing that resolution was to bring the pressure to bear upon Col. Stevens or the Road Commission to consider the representations of the man who has to use horses. It is not that we want to disregard the rights of the man who is able to afford and use a machine, but it is that we do want the rights of those who cannot afford it or do not, and who have to use horses, and the horses ought to have some consideration.

Even on the score of charity, or on the score that this is an organization where we claim to have consideration for the treatment of dumb animals we ought to be led to consider more carefully the rights of those dumb animals and the duty that we owe in caring for them, and give them a place where they can do their work properly and in safety.

Vice-President Cox—I might suggest to our friends from Passaic

that an appeal to the citizens that are directly interested and directly affected by the action of the State Road Department would be more effective, and they had better try and influence their Board of Freeholders and their local authorities rather than to attempt to get the consideration and support of the State Board of Agriculture which is so much divided upon this question.

Mr. Brown—Mr. Chairman, I move that this resolution be referred to the State Road Department.

This motion was duly seconded, and, on a vote, carried.

Vice-President Cox—We will now hear the report of the Commission on Tuberculosis.

Secretary Dye then read the report of the Commission on Tuberculosis as follows:

Report of Commission on Tuberculosis in Animals.

The law constituting the Commission on Tuberculosis among Cattle indicates the duties of the Commission and the method to be pursued in its enforcement. It provides for the inspection of dairy animals in the home-herds of the state, and the supervision and control of the importations of dairy stock, in order to prevent the introduction of tubercular cases into the dairy herds of this state, from other states. For the enforcement of the first requirement of the law, the Commission does not have plenary power. It can inspect herds only when requested to do so by the State Board of Health, or by the owner who has reason to believe there are suspicious cases among his cows. All applications under this section receive immediate attention. The number of such applications during the year past, the number of animals condemned, and the sums paid the owners, are as follows:

TABLE I.

Number of applications received,	227
Number of animals condemned,	424
Amount paid owners,	\$17,489

The Commission considers this law very favorable to owners of dairy animals and would suggest the wisdom of taking advantage of its provisions, whether producing milk for the family only, or for commercial purposes, and this for the double purpose of main-

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taining our dairies with milk producers above suspicion of disease, and for the larger purpose of ridding our state of all tubercular dairy animals. This is now the most important step in connection with the rigid enforcement of the importation law. The two working together would soon accomplish the desired result.

IMPORTATION LAW.

The law relating to the importation of dairy animals from other states into New Jersey touches the interests of at least seven different parties. First is the producer of the animal in the state from which they come. He expects a profit on his work as a producer, next, the cattle dealer steps in for his share, while the veterinarian who tests the animals has his price or compensation. Then the transportation company comes in as a necessary agency to carry the cows to their destination. On arrival into New Jersey the dealer finds the state inspector on the job to see that the animals are correct according to the records, and to detect fraud if such has been practised. Next the New Jersey farmer with pocket book open stands ready to take the stock at such price as he can make with the dealer, and finally the consumers of milk for whom all this business is maintained taxes the old cow for the remainder of her life for her product of milk, and stands ready to consume her flesh when her milk-giving days are ended.

During the year past 16,388 cows passed through the gates from other states into New Jersey, and were examined and certified to by our inspectors. At the average rate of \$75 per head paid for those animals (it is probably higher), the large sum of \$1,229,100 is being paid out for cows from other states to supply our dairies. The same condition obtained last year when 16,085 head were imported. This vast sum of approximately one and one-half million dollars must be taken from other resources of the farms of milk producers to purchase cows for the milk supply. Is there no other way that will be more profitable? Suppose we raise sufficient stock for our annual needs. Can we raise a calf to two years of age for \$40 per head? If we can, there would be a saving on the number indicated of \$655,520.

It will be seen from the foregoing statement that the Commission is to guard this state against the admission of dairy

animals from others affected with tuberculosis, or if any dairy stock is admitted without a previous tuberculin test, such animals are to be held in quarantine until they are tested, and all members giving evidence of tuberculosis are destroyed. Of this class, 6,666 animals were imported, and after being tested 258 head were condemned and slaughtered. The inspectors of the Commission are guarding this matter with great care, and it is not possible to give any better service so far as transportation companies are concerned under the present law. Cattle tested before entering the state are accompanied with the record of the test made, when and by whom. Both the cattle and the records are carefully scrutinized and if any irregularities are discovered, such cattle are held until the inspector clears up the case, even by a retest, if that is thought to be necessary.

The number of dairy animals imported that were tested before entering this state is 9,722.

The amount received from shippers of imported cattle for testing same is \$4,979.50.

The amount received for meat and hides sold, slaughtered under inspection is \$3,976.74.

A total of \$8,956.24 which sum was paid over to the State Treasurer.

President Frelinghuysen—If there is no objection the report of the Commission on Tuberculosis will be received and become a part of the record. Hearing none, that will be the order.

Report of State Board of Health on Various Animal Diseases

New Jersey State Board of Agriculture, Mr. Franklin Dye, Secretary,
Trenton, N. J.

Gentlemen:—The report which follows is for the year ending October 31, 1913. Although no extensive epidemics among animals have occurred, the variety of diseases reported has been greater than in any previous year, including for the first time cases of Texas fever and also the mysterious deaths of a number of young cattle pastured in fields belonging to one of the State institutions, which resulted in the discovery in the State Laboratory that the deaths were due to poisoning by the eating of one of the insecticides used for the spraying of trees.

As the space for this report is limited, no tables showing names of owners and localities are given, and only a brief statement is made as to each of the diseases which came under the supervision of the Board.

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POISONING OF ANIMALS BY LEAD AND ARSENIC.

Although this subject does not come directly under the heading of Contagious Diseases of Animals, an instance of accidental poisoning of animals occurred in this State during the past year which may well serve as a warning to owners of dairy cattle against the grazing of cattle in orchards where the trees have been sprayed with fungicide, or the throwing into fields in which cattle are pastured of the empty cans which may have contained poisonous materials.

On May 20th the Superintendent of the New Jersey State Home for Boys in Jamesburg went to a pasture in which some yearling calves were grazing, the Superintendent having received word that a number of them were showing signs of sickness and one had died. On arrival at the pasture it was found that three animals had died. Following this other animals sickened and in all sixteen yearling cattle died.

On the 21st day of May specimens of stomach and other parts of an animals which had died were forwarded to the State Chemical Laboratory for examination. The chemical analysis disclosed the presence of lead and arsenic. It would appear, therefore, that the death of the animal was caused by lead and arsenic poisoning, and it may be presumed that the other animals had partaken of the same poisonous material. Lead and arsenic are used to some extent as fungicides and undoubtedly the animals in some way had access either to the trees upon which the fungicide had been used, or to partly empty cans or containers in which the fungicide had been placed. Two cases of forage poisoning, resulting in the death of the animals, were reported. These cases occurred near Dover, Morris County.

TEXAS FEVER.

It is seldom that we are called upon to record any cases of Texas fever occurring in cattle in the Northern States, as it is well known the disease is as a rule stationary in the southern part of the United States. The carrier of the disease germ is a cattle tick. These ticks fasten themselves upon the soft part of the skin of cattle and burrow their heads into it. The ticks lay eggs which hatch under ordinary warm conditions in about two or three weeks. These young ticks being located upon the grass in the fields are taken up by the cattle in grazing, and crawl up the limbs until they reach the soft skin inside of the thighs and on other parts of the body where they burrow their heads into the skin and grow rapidly. Within two or three weeks the animal becomes sick. After the ticks reach full size they lay eggs, then loosen their hold and fall to the ground. The reason why the disease does not develop in the Northern States is due to the fact that the ticks have very slight resistance to cold weather, and also that the tick-bearing cattle cannot affect others late in the fall or in the winter. This description is given, as it may be of interest to owners and purchasers of cattle coming from the South.

In the latter part of May Dr. Whitfield Gray, D.V.S., of Newton, reported that he had been called to examine some cattle which were shipped to a farm in Warren County, New Jersey, from the cattle fever district of North Carolina. Upon examination he discovered that the cattle were infected with the cattle ticks which produce Texas fever. Proper action was immediately taken to prevent the spread of the disease. The Bureau of Animal Industry was at once notified of the facts in the case and was requested to investigate the locality from which the animals were shipped into New Jersey as the permission for

shipment had been granted by the local authorities upon the basis that the locality was free from Texas fever. The cattle upon their arrival were not released from the car and each animal was thoroughly treated for the eradication of the parasite. All the materials in the car and movable parts, such as hay, blankets, etc., were destroyed by burning. The prompt action which was instituted in this case resulted in preventing a spread of the disease.

On July 10th we were informed by the National Bureau of Animal Industry that cattle had been forwarded from Kissimmee, Florida, to Fanwood, New Jersey, for immediate slaughter. As Fanwood was not one of the stations which is recognized as a place for the slaughter of cattle quarantined on account of Texas fever, the Bureau informed us at once so that we might trace the cattle and see that they were slaughtered. An investigation was started by this Board, and it was learned that the cattle were unloaded at Fanwood on July 10th. They were traced to North Plainfield Township, Somerset County, and as soon as located they were slaughtered under the supervision of a representative of the State Board of Health, and the premises upon which the cattle were located were thoroughly disinfected.

An investigation of this case led to a more thorough understanding between the State and Federal authorities in regard to the handling of such cases in the future, and whenever animals are shipped from districts in the South infected with Texas fever we will receive a notification so that the animals will be immediately slaughtered.

In September of the present year report was received that certain animals which had been shipped from farms in the South had been taken from the trains on the Lehigh Valley Railroad at Metuchen and placed in fields adjacent to the railroad tracks. A representative of this Department immediately visited the premises and afterwards supervised the thorough disinfection of the premises.

We believe that although from time to time cases of cattle infected with Texas fever may be imported into our State with the present knowledge of the methods of handling the disease and the disinfection of the premises, we will be able to prevent any extension of the disease beyond the infected animals.

BLACK LEG.

In June, 1913, Dr. Gray, of Newton, examined some young stock on his farm in Sussex County and reported the existence of Black Leg. Two animals had succumbed to the disease. The remaining animals of the herd were vaccinated with Black Leg Vaccine and no further fatalities occurred.

This disease appears from time to time in Sussex County and the prompt vaccination of exposed animals has resulted in direct saving to farmers. We constantly urge upon cattle owners the necessity of promptly reporting suspicious cases so that an early diagnosis can be made and the preventive remedy applied.

In November, 1912, report was received at the office stating that there had been some suspicious deaths of cows upon the premises of Mr. Lemmerman, of Irvington, Essex County. Dr. Harrison, D.V.S., of Bloomfield, was requested to at once make examination of the animals and make a report as to the nature of the disease. Post mortem examination was made of one of the animals that died and a diagnosis of anthrax made at that time was later on verified by a bacteriological examination of parts of the animal sent to the Laboratory.

In making this investigation Dr. Harrison ascertained that there were ninety-five cattle upon the premises. The farm upon which the cattle were kept comprised about thirty-five acres, most of which was low ground, and on many places

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the surface water was standing. Two cows had died with similar symptoms previous to the matter being brought to the attention of the State Board of Health. A small stream flows through the premises which empties into the west branch of the Elizabeth River. A pasture adjoins the Lemmerman pasture on the north, and during the wet weather a drainage was received from this neighboring pasture. On the west of the Lemmerman place is the Hutmacher farm, and the fence between this pasture and Lemmerman's farm was broken down. The west branch of the Elizabeth River flows through Hutmacher's place.

There were forty-three cattle kept in a dairy barn. It was ascertained that five animals had died during the summer and that Dr. Budd, of Orange, in making a post mortem examination of these animals contracted anthrax and lost his life as a result of the infection.

A tannery on the Hutmacher property is located within one hundred feet of his dairy barn. Hides used for tanning purposes are secured from South America and Mexico in carloads. The drainage from this tannery reaches the west branch of the Elizabeth River.

Adjoining Hutmacher's farm is what is known as the "Long Farm." The history shows that he lost two cattle under apparently similar conditions. He said that his cattle broke through the fence and visited the Hutmacher property. Mr. Bennett also gave information to the effect that during the early fall he lost an animal under similar conditions to those shown by cattle which had recently died on other farms. No connection, however, was traced between his premises and the infected premises.

As a result of this investigation the pasture fields belonging to Nolde, Lemmerman, Hutmacher and Long were ordered closed. All the stables in which these cases had occurred were thoroughly disinfected, and in the Lemmerman case the location of the barnyard was changed from the low ground to higher ground on the west side of his farm. An order was also issued that no cattle from these premises should be sold for slaughter. For the protection of the meadow it was directed that a cesspool should be constructed for the purpose of keeping the tannery waste from getting on to the meadow or into the stream and thus infect other meadows.

HOG CHOLERA.

During the year a large number of losses of animals has resulted from this disease. The localities infected were Sussex, Morris, Mercer, Burlington, Somerset and Ocean Counties.

It is our custom when called upon to deal with this disease to have a veterinarian representing the Board visit the infected farms and advise the owners as to preventive inoculation and also to direct the separation of well animals from those that are sick, and the disinfection of the premises.

The subject of the prevention of this disease is one which should be taken up by the farmers in the various localities for the purpose of educating owners of hogs to the necessity of the use of inoculation for preventing this disease, and also to teach them to make more careful inquiry in reference to the places from which hogs are purchased.

GLANDERS.

This disease continues to cause loss of horses throughout the State. Essex, Hudson and Bergen Counties are those in which most cases were reported. The

proximity of these counties to the City of New York and the bringing of infected animals from other States account for the increased number of cases. Until there is some form of rigid and systematic examination of all animals in the various counties of the state, it will be impossible to rid ourselves of this disease. So long as unscrupulous dealers will sell diseased animals and farmers continue to purchase from them, the loss will continue.

The total number of cases reported during the year was two hundred and thirty. Of this number ten occurred in Bergen County, one hundred and ninety in Essex County and sixteen in Hudson County. In no other county were there over three cases.

The practice of the Board when a case of glanders is reported is to send a veterinarian to make an examination and if necessary to quarantine the premises upon which the animal is located, and to supervise the disinfection of the premises.

In most cases a quarantine is unnecessary, as the owner will be very glad to get rid of animals which may infect others on the premises. Eight of the two hundred and thirty cases reported died and two hundred and ten animals were destroyed. Two hundred and two premises were disinfected under the supervision of the State Board of Health.

The following table shows in detail the counties in which cases occurred:

Occurrences of Glanders in the State of New Jersey for the year ending October 31, 1913:

The following table shows in detail the counties in which cases occurred:

Counties.	No. of Cases.
Bergen,	10
Camden,	1
Cumberland,	1
Essex,	190
Hudson,	16
Middlesex,	2
Mercer,	2
Monmouth,	2
Morris,	1
Passaic,	3
Somerset,	1
Union,	1
Total,	230
Number of animals destroyed,	210
Number of animals died,	3
Number of premises disinfected,	202

Very respectfully,

J. C. PRICE,
Secretary.

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I notice that Col. Stevens has entered the room and I know the Board is anxious to hear from him. He will talk to you on the "Present Status of Road Improvement by State Aid in New Jersey and its Requirements." Col. Stevens. (Applause).

Col. Stevens—The improved road system of New Jersey has grown to its present dimensions without any definite design or plan for its ultimate completion, also without any clear idea of its cost when completed. Not only is this true but it is also beyond question that the probable traffic on our roads was greatly underestimated, when the designs were made if any definite estimates were ever made at that time.

The commercial importance of our roads is only just beginning to be realized. The real value of any improvement is best measured, not by its cost, but by the work it does, by the return it yields. Our roads are the most heavily taxed, by motor vehicle travel at least, of any in the world. Our motor vehicle registration divided by our road mileage yields a quotient of about 3.3. This does not allow for the unregistered foreign traffic. In France the classic country of roads, the same quotient is 0.3; 1-11 of the total of New Jersey. In France they have nothing like our foreign traffic and some 90% of their whole road system is improved, of ours about 30%. That 30%, of course, cares for most of the motor vehicle traffic which in France is distributed over the 90%.

Our problem therefore is a hard one. Add to all these facts that in France labor is paid from 40% to 50% of the rates prevailing here and that their climate is, with the exception of a very few small districts much less unfavorable than ours and you have some idea of our difficulties.

The system of maintenance prevailing in France is certainly very well conceived and thoroughly worked out, and works well except for their very heavily travelled roads, but that it will give economical results under New Jersey traffic conditions and at New Jersey wages, is by no means proved. France today is considering the borrowing of fifty million dollars, to put between 2 and 3% of their improved roads in a condition to stand the motor traffic that has destroyed the macadam surface.

Tar in England is used with great success as a cement for

road surfaces and as a dust layer, but English tar differs from our tar, the English process of extraction is one of a lower heat and a lower rate of production than ours; while the English traffic is denser than the French, probably 2 to 1, it is still less than ours.

So that we cannot very well tie up to either English or French conditions.

In any engineering work and in fact in any task it is wise to size up your problem before attempting to decide on the best solution. We have in this State an amount on unimproved roads not exactly known, I want to impress that on you thoroughly. Nobody knows exactly the road mileage of the State, but approximating somewheres near to 15,000 miles, probably a little in excess of that. How much of this total might well be left unimproved cannot be stated with accuracy, there are a good many roads through the wooded country in the southern part of the State which will probably not pay to improve; it certainly would not pay to improve them at present and will probably not pay to improve them for a great many years. The amount to be improved will probably not be less than 7,500 miles and the cost at our present average prices will be in the neighborhood of \$60,000,000. This amount if wisely and well put into our roads would prove a paying investment but it will take us a long while to get it together; at our present rate of investment some 50 or 60 years, and meanwhile these roads are sadly needed in the business of the State, and especially in the business which you gentlemen represent.

The result can be expedited by an issue of bonds, but this policy is not one that should be entered upon without serious and careful consideration of the ways and means. We must take care not only of the interest and the sinking fund charges on the bonds but we must care for the roads, we must keep them in shape and we must make provision for the depreciation of such pavements as have only a limited life.

Referring to the question of bonds, it is well to remember this, that taking the problem of issuing a million dollars in bonds a year for ten years you would provide, at the rate of \$10,000, for the construction of a thousand miles of road. Estimating that the bonds are paid off in thirty years after their date of

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sale, the total period will extend over the ten years of issue and 30 years redemption in all 40 years, and the average yearly charge, estimating about five hundred dollars a mile for repairs will be somewhere in the neighborhood of \$850,000, a year. If that amount \$850,000 a year be provided in some other way than by the issue of bonds, you can build a thousand miles of road in a little over 17 years. In other words it will take you 7 years longer to get your road system. If then you stop building and merely keep those roads in repair until the end of the 40 year period you will have saved something like 8 or 9 millions of the amount disbursed under a bond issue; on the other side that 8 or 9 millions represents the use of the whole system for a longer time. Again, expending the same total amount of money that you would under the bond issue plan you could build about 1,500 miles of road. But of course at the end of the 40 year period your yearly charge would be higher than it would be in the case of the bond issue, for you would have 500 miles more of road to keep up.

This problem is with us, the problem of how we can build these roads, and it must be solved in the light of the policy adopted for raising money necessary for roads. The charge necessary for roads is an annual charge. We may defer it by issuing a series of bonds but those bonds have ultimately got to be paid off by a sinking fund charge which is a yearly charge against the taxpayer. It is well to open one's eyes and clearly understand that as far as the taxpayer is concerned the charge for roads is an annual charge. This charge can be raised in two ways:

1. By taxation in some form or other, and
2. From the traffic that is using the roads.

Taxation is today providing a certain part. I am going now to make a distinction between the direct and the indirect tax. Under our present system of taxation in New Jersey the State is run by taxes, that, so far as the ordinary taxpayer is concerned, are indirect; they are taxes on the railroads and taxes on corporations and taxes of a similar character. But it is well to remember that after all the ordinary taxpayer pays back to the railroad this tax in the shape of increased freight bills or otherwise. The community at large is no better off from the fact

that State funds are being raised by railroad taxes; it is merely a question of convenience. Now I am not going to argue on the wisdom of that system of taxation. I am not advocating it or defending it, I am merely pointing out to you, that the people of the State of New Jersey are practically paying that tax bill.

In the past and today we have raised and are raising the moneys used in new work in the improvement of roads by taxation, direct as to 60%, that is to say the county's share, or locality share, indirect as to 40%, the State's share. This is fair in some cases. Mind you now you must differentiate here; that 40% comes from the State at large, from the whole people of the State, whereas the 60% comes from the locality. As I have said, this is fair in some cases. When, however, the traffic, originating from without the community that is paying 60% for the improvement and bound to some point also without its boundaries, when that traffic, I say, exceeds 60% of the total traffic, inequity begins. In other words then, the local use of the road, the local benefit conferred by the road is not 60% of its cost and we have an inequitable distribution.

When, as is usually true in such cases, that is when the through traffic exceeds 60% of the total, the upkeep charges are heavy, this inequity becomes aggravated, for the share the State can take in such charges rarely equals 40%.

In other words the fund at the disposal of the Department of Public Roads will not on the average pay 40% of the charge of keeping up the improved roads of this State. No one knows exactly what that is. The figures are never compiled. We are getting all that we can together and I am perfectly safe in that statement that the State share does not exceed 40%.

This share is the only part of the total charge for the road borne by the traffic which the road carries, because, mind you, this money comes out of the motor vehicle fund.

For a modern bituminous concrete road and neglecting the value of the land which it occupies, which has been furnished by the community (because they must furnish the right of way) the total charges to be paid by the community thereon, based on the cost of \$12,000 a mile, are roughly: (Now mind you when I say bituminous concrete I am talking of a heavy traffic road of the character which is popularly called Amiesite. Bitu-

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minous concrete roads are a class of pavements of which Amiesite is one, but throughout the State somehow or other they have all come to be called Amosite). Based on the cost of \$12,000, a mile, this cost is roughly as follows:

Interest 4%	\$480.00
Depreciation, 5%, that allows 20 years for the life of Amosite	600.00
Repairs, say	250.00
<hr/>	
A total of	\$1,330.00

Some of this may be paid in the coupons on county bonds or in some other way, but it is coming out of the taxpayer in some way or other except such share as you get from the motor vehicle fund. The people at large pay in taxation, direct or indirect, all of the first item \$480, probably two-thirds of the second item, about \$400, and say, six-tenths of the last, or in all, say, \$1,030.00, or 78%; and the traffic pays the balance, 22%. When I say traffic I mean motor vehicle traffic. The reasons underlying the policy followed in distributing the charge between the taxation and traffic are worthy of serious study and careful thought. It is not my object to enter into them at this time. They are not properly a road problem but a financial one. I may add, however, that to my mind a fair balance of benefits received should lead us to putting a larger share of this cost on the traffic.

Now I will give you one reason that leads me to that belief. Considering what is given by the State of New Jersey in return for license fees on motor vehicles that fee is by far the lowest charge in this country. The State of Delaware with a very inadequate system of improved roads charge a straight fee of \$5 for every automobile. Other states on account of a difference in classification may seem to approach fairly closely to the State of New Jersey. But Massachusetts, New York, Connecticut, Rhode Island and Vermont, and Pennsylvania, too, all charge materially in excess of the average price for New Jersey. I think we may say in New Jersey that the average of our classification will give a charge of somewhere between 30 and 40 cents a horse-power, this can not be closely determined on ac-

count of the very wide limits of our classes. If our system of good roads in New Jersey does not save for men who use them in an automobile at least the price of one shoe a year we had better go out of the road building business. I think it is incontestable that the saving of one shoe is a very, very, small statement. You have not only the saving of the actual shoes themselves. You have the wear and tear on the structure and the frame work of the car, you have a better gasoline record, for you expend more gasoline going over a bad road. All those who have automobiles and have to pay the bills know that these items amount to something. The price of a shoe does not exactly vary, there is no rule exactly connecting this price with the horse-power of the car. At the same time taking the average car and the average cost of shoes one dollar a horse-power fairly well represents the price of one shoe. This is not quite true in the Ford, for instance, and is not quite true in other cars, but taking the average of cars by and large that is about the proportion. In other words the motor vehicle traffic as an average is paying about 40% of that it ought to pay.

Now I have submitted these facts to you gentlemen and I want simply to say that in doing this I want to lay before you some of the difficulties and some of the problems with which we have to contend.

The solution of those problems largely depend upon the policy adopted. The policy adopted by the State of New Jersey is going to be that which appeals as a fair and right one to the majority of the people. The legislature, the Governor, none of us are going to set ourselves up against a clearly expressed and thoroughly considered judgment by the majority of the people of New Jersey as to what is right and fair in a case like this. It is to lay these facts before you, to enable you to form a conclusion on the subject that I have come here today.

I hope I have been able to throw a little light on the subject and I hope that you will excuse me for a very poorly prepared presentation and believe that it has been due to the discharge of duties which have heaped up on me at the present time until I am hardly able to get through with my day's work. (Applause.)

Mr. Winters—Mr. President, the Commissioner says that the saving of one shoe is quite an item in favor of the road?

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Col. Stevens—I am asked to say whether an Amiesite road can be made safe for horses, is that the question?

President Frelinghuysen—That is the question the members are interested in.

Com. Stevens—My own observation is that an Amiesite road, or any bituminous concrete road (Amiesite is not the worst, the hot mix are more dangerous for horses than Amiesite) are dangerous for horses, over grades of about three per cent. below that they are not dangerous. Most horses will get accustomed to them after a while, for green horses I think they will always be more or less slippery. I feel, however, that on any road in which Amiesite is going to be used or which in the future may develop such a traffic as will necessitate the use of some such material, should be made wide enough to allow of shoulders, especially designed for horse traffic, that is to say, for either gravel or old-fashioned macadam. At present that seems to be the only solution. The concrete roads do not appear to be as slippery as the Amiesite, but they are a hard, smooth surface and will get coated with ice and will get dangerous for horses. If they are as they should be in my opinion, coated with tar or some other material, they are not as bad as the bituminous concretes, the Amiesite class; they are still by no means a perfect surface for horses, and in saying this I am speaking of horses under draft conditions, drawing heavy loads. All of those roads are entirely too stiff and non-resilient for pleasure driving with horses; no man wants to ride a horse on an Amiesite road for fun unless his ideas of fun are very different from mine.

Mr. Parker—May I ask, I understood you to say that there were seventy-five hundred miles of roads yet to be built in the State, or does that include the rebuilding of roads which are now going to pieces?

Com. Stevens—That does not include the rebuilding of anything. That is new roads; the total figures of improved roads give a mileage of somewhere about twenty-five hundred, between twenty-two and twenty-five hundred—every year we get different returns from the counties as to the mileage of the roads built without State aid. There have been improved in addition to that about two thousand miles of local roads, some of them very slightly, and this number added to the roads improved by

the counties by State aid and without it make a total number of miles of road improved about forty-five to forty-six hundred.

There are about fifteen thousand miles in the State of all sorts, outside of the city streets, leaving an unimproved total of somewhere in the neighborhood of ten thousand miles, ten thousand miles to ten thousand five hundred miles.

I estimate roughly that about one-sixth of the total mileage will not now nor in the immediate future repay improving. That is a guess of mine, that one-sixth.

Mr. Parker—About what is the mileage then of what we a few years ago considered good roads which are now required to be rebuilt practically to take care of the automobile traffic which are all frazzling out and going to pieces under the automobile traffic? Without considering any roads which have got to be built. Would that amount to four thousand miles?

Com. Stevens—Oh, no, the total improved mileage of the sort you are considering probably does not exceed somewhere between twenty-five hundred to three thousand miles. Of this I presume some eight hundred miles would have to be rebuilt or re-surfaced some way or other.

Mr. Winters—What do you call improved roads? Only those improved under the McAllister act?

Com. Stevens—The definition of the act if you remember is, a road that is smooth, firm and convenient for traffic, etc. We are trying to get in a return of all those roads. I include all such as improved roads, no matter under what law they have been improved. Less than two thousand miles have been improved by State aid, and the total I am giving you now is about between forty-five and forty-six hundred miles improved.

A Member—It will take us something like eighteen years then at that rate to improve what we have got?

Com. Stevens—No, figure it the other way. We are spending about a million dollars a year. The State is spending about \$400,000, which represents forty per cent. of the cost, the best estimate I can make, if we go on at the present rate, which includes the gravel roads of South Jersey, spending about \$1,000,000 in all a year we would get through in about sixty years. Now, during that sixty years we will have to rebuild some roads already improved, and the State will probably be able to make

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bigger appropriations as the time progresses and the road prices will also rise, so it is pretty hard to say where we are coming out. But taking conditions in the State as they are with roads at a fair average cost, it will take us about sixty years.

Mr. Winters—You spoke about saving one shoe on a machine a year by having improved roads. If those roads are improved entirely for the machine, how about the legs of the horses for the year?

Com. Stevens—Well, you must remember them.

I don't want you to think for one moment that I am losing sight of the horse difficulty in this subject. In the first place, I am very fond of horses myself, and in the second place, it is a subject that is being constantly brought to my attention. There is this difference, the horse is not being licensed, and is not paying a tax in the way of a license for the maintenance of the roads, whereas the automobile is; my contention is that the saving to the automobile independent of anything else, of one tire a year from the use of the road, is fully worth the tax of one dollar per horse power to the automobile.

Mr. Winters—In Paterson and in our county, we cannot work under the McAllister act as we can work a great deal cheaper without it. We have tried the McAllister act in our county but find that we cannot work as cheaply under State aid at all. It has been proved to be cheaper to work by ourselves rather than to work under the State act. Has that proved so in other counties?

Com. Stevens—No, and you cannot say you have proved it.

Mr. Winters—The Freeholders say so.

Com. Stevens—You have not finished with the roads yet. Wait ten years from now then you will see.

Mr. Winters—See how they wear, you mean?

Com. Stevens—Yes. You can build roads cheaper than the State is requiring them to be built. There is no question about that. But this particular fact that we are talking about just now, about the roads going out of repair and needing reconstruction has been owing largely to the method of building. Now, when you build the roads and try to build them too cheaply, you are going to build them improperly, they will be improperly graded, improperly drained, and you are going to pay the bill in the end.

Mr. Winters—We think we would rather do it than have the State do it. We like home rule, we like to make our own mistakes and to know who made them, rather than have the State make them, and we can get at them better in that way.

Com. Stevens—All right. Other communities I find would like to have the State money, and if some communities let up on us we will have a little more to give to the other fellows who want it.

A Member—I move that a vote of thanks be extended to Col. Stevens for his address before the Board.

This motion was duly seconded, and, on a vote, carried.

After the report of the Commission on Tuberculosis in Animals the President and Vice-President were compelled to leave for train. The Secretary was called to the chair and introduced Prof. E. O. Fippin who spoke on "Drainage and Soil Improvement." The address was illustrated with stereopticon slides. It has been revised by Prof. Fippin, eliminating the reference to the slides and is as follows:

Drainage in realation to Soil Improvement.

E. O. Fippin, Professor of Soil Technology, Cornell University.

Before the New Jersey State Board of Agriculture,

Trenton, N. J., January 30, 1914.

The successful farmer of the future will be pre-eminently a business man. He will view his business as a manufacturing establishment where he uses raw materials, machinery and labor, together with other forms of capital as a means of production. Further, he will aim to combine these means of production to secure the best product with the greatest economy, and, therefore, at the greatest profit.

The Functions of the Soil. The chief, fundamental resource of the farmer is the soil. It is true that he also deals with the climate, with seeds, and with stock, but the soil is subject to more variation and variations that are largely under the control of the farmer than any of these other natural resources. The

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soil is the home of the plant, and upon the production of the plant is based the farmer's business. Those plants may be either sold directly, or they may be fed to live-stock, and the products thereof placed on the market. The successful production of plants depends on successfully meeting their needs for maximum growth. They must be fed, watered and housed; they must have proper ventilation and be warm, and their home must be sanitary. To fulfill these conditions, the soil must usually be three feet in depth and should be in good functioning condition, so that the roots of plants can distribute themselves and live for twelve months of the year. It is not alone important that the roots of our primary crops should be able to live in the soil, for we must remember that the soil is teeming with microscopic forms of plants which also contribute to the fertility of the soil and should be able to live and function in the soil continuously throughout the year. Long saturation or flooding of that three foot root zone at any time of the year seriously interferes with its proper operation. It is the function of drainage to avoid that condition in order that the soil may be kept continuously in a state favorable for the operation of these organisms. It has been learned by experience that such a root-zone is essential if the ordinary requirements of plants, for moisture, food, etc., are to be met. In this formless mass which we call the soil, and have frequently regarded so lightly, there occurs exceedingly complicated physical, chemical and biological processes. The large possibilities of the soil for supporting plant growth may be subject to great deterioration when the soil is poorly managed.

My purpose this afternoon is to discuss briefly the relationship of drainage to the management of the soil. The purpose of drainage is to avoid undue saturation at any season of the year. Just here emphasis should be placed upon the fact that the soil may be wet and in need of drainage, although water does not stand continuously on the surface even though tamarack, sweet-flag, and the song of the frog may be absent. The need for under drainage exists whenever a soil three feet deep holds water for more than three days continuously at any time during the year after a normal rainfall. It is further manifest by the tendency to a puddled condition of the soil, and in the subsoil

of a mottled and uneven color, often by a gray, leached-out band in the lower part.

Effects of Drainage on the Soil. The importance of under-drainage is best understood after a review of the effects drainage may have upon the soil. At least ten of these may be enumerated: (1) Drainage reduces puddling and promotes the formation of that granular condition of the soil which is essential to good tilth, and the development of that favorable physical conditions of the soil for plant growth. It is impossible to keep the soil in good physical condition if its drainage is markedly defective.

(2) It determines the ventilation of the soil by removing the water from the large spaces and makes a place for the admission of air.

(3) By improving ventilation, drainage promotes deeper root penetration. One of the best indications of the lack of drainage is the tendency for plant roots to develop shallow. This makes it impossible for plants to adequately use either the plant-food the soil may contain or its content of moisture.

(4) Drainage by improving the tilth of the soil, increases the proportion of available water contained within the root zone.

(5) By removing the excess soil water, the average temperature of the soil is increased. The variation in temperature of soils of different texture is not due to their inherent properties but to the naturally different amounts of water which they retain. This water has much higher specific heat than soil material—approximately four to one by weight—and it therefore follows that the more water a soil contains the slower will it change in temperature. An even greater effect upon temperature is due to the fact that the larger the amount of water present in the soil, the more rapid is evaporation. This is especially a cooling process. It is a simple mathematical problem to determine that if the excess water in a soil were removed entirely by evaporation it would use sufficient heat to change the temperature of the remaining wet mass of soil by more than 300 degrees. A result of this effect is that the soil having the most

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water would be slowest to warm up in the spring to get it in condition favorable for planting crops. Thereby the season for growth is shortened.

(6) As a result of the better moisture relation, better temperature, better ventilation, and deeper root penetration, the availability of the mineral constituents of the soil is greatly increased. In many cases as a result of the naturally large stock of plant-food elements in the soil the use of chemicals is not necessary on land that is well drained.

(7) Microscopic organisms are well known to be an important factor in the fertility of the soil, especially in relation to the decay of organic matter, farm manure and crop residues, and in the gathering of nitrogen from the atmosphere and its transformation into forms that the higher plants can use. Most of these organisms require reasonable ventilation, and a fairly warm temperature, conditions only afforded in a soil that is well drained. Therefore, drainage promotes their activity. In the same connection, drainage favors the sanitary condition of the soil, which is now coming to be recognized as an important factor in fertility.

(8) Drainage reduces heaving, especially in the more northerly regions where the chief difficulty in growing winter crops is winter-killing; that is to say, the roots are pulled out of the ground as a result of frequent freezing and thawing of the excess moisture in the soil. Heaving results from the expansion of the water as it crystallizes. When the soil is saturated, this expansion can only be expressed at the surface, but when the soil is drained so that numerous small air spaces are developed throughout its mass, this expansion is absorbed by those spaces and is not manifest at the surface. Because of this normally good drainage sandy and gravelly soils usually do not heave seriously. Drainage is the relief and practically the only remedy for heaving.

(9) Drainage increases the efficiency of the farm equipment. As a business manager the farmer desires to accomplish his work with the least equipment and at the least cost. By giving him a longer season, by permitting him to get on the land sooner

after rain, and by reducing the amount of labor necessary to get the soil into condition for planting or for cultivation, drainage effects a considerable decrease in the cost of crop production.

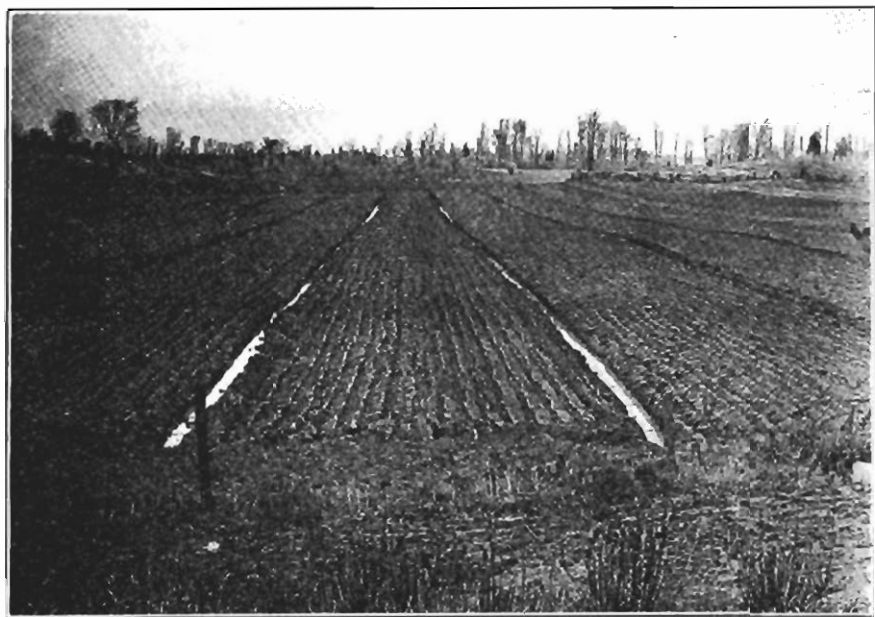
(10) Drainage is an efficient means to reduce injury to land by washing. This is particularly important on the sandy soils of New Jersey.

A careful study of the ten effects of drainage enumerated will indicate to thoughtful minds that reasonable drainage stands at the foundation of efficient soil management.

Perhaps almost anyone will agree that reasonable drainage is necessary for successful soil management, but just what constitutes reasonable drainage there is much difference of opinion. A study of our land in the light of the effects pointed out above will often change one's opinion as to what constitutes reasonable drainage. In New York State, with which I am especially acquainted, I find that at least one-third of our area now in improved land is in need of systematic drainage for its best utilization, and another third needs considerable drainage. This is evident in the uneven development of our orchards, the use of frequent dead furrows for surface drainage purposes, in heaving of our winter crops, the spotted condition of our meadows, and in the compact and often uneven character of the subsoil. New Jersey has a considerable area of land of the same character as much of New York State land. Especially is this true on its northern boundary. A third of the state is made up of heavy soils, often with a compact subsoil and of a stony nature, exactly like our Hudson valley land. These are generally recognized as in need of rather systematic drainage for best results. The lower two-thirds of your state is of a distinctly different formation. The coastal plain is primarily a succession of loam, gravelly loam and clay. In many places where the sand and gravel makes contact with the clay substrata, springy areas and wet conditions are developed, so that I feel assured that a considerable part of New Jersey would be markedly benefited by land drainage. This is confirmed by observation along your main lines of railroad, and I urge you to study your soil conditions carefully.



An illustration of defective drainage of clay land and its effect upon the corn crop.



Clay land plowed in two-rod lands with dead furrows used as drainage ditches. A common practice on clay land, which

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Means of Drainage. Any method which affords means for the ready flow of water through the soil is an effective means of drainage. Open surface ditches are frequently used. Their limited depth, their poor grading, their obstruction to the surface, their cost of maintenance, combine to make them usually expensive as well as ineffective means of drainage. In the earlier days, poles, brush and stones were used for drainage purposes. As long as the channel was kept open, they were efficient. The present difficulty is the lack of material and the cost of construction, as well as their usually short life. The use of wood is now generally out of the question unless there is some special condition. The use of stone drains is impracticable because of the labor involved.

Modern drainage generally means tile drainage, and consist of short lengths of clay or cement pipe placed in the ground on an accurate grade to quickly remove the water from the subsoil. The lines are of greater or less length and are combined into systems depending on the nature of the slope of the surface. On land that is uniformly wet, whether it is flat or whether it has a good slope, the tile are usually arranged in parallel lines, depending on the nature of the soil. On clay and loam soils, for general farming purposes, an interval of from forty to sixty feet is usually sufficient. On the same soil for more intensive farming a smaller interval may be advisable. On gravelly and sandy soils that are fairly porous, an interval of from 60 to 120 feet may be advisable, depending upon local conditions. Frequently, the need for drainage is irregular. A single line may be sufficient, placed either in the hollows or across the slope in such a way as to intercept the flow of water. Lateral drains may enter the main outlet drain, either at right angles or at an acute angle. The latter arrangement may frequently be termed the "herring-bone" system. Always the union should be at an acute angle so that the flow of water from the lateral may not obstruct the flow in the main drain and thereby cause the accumulation of sediment. In draining springs the tile should be carried to them by the most direct route, passing directly through the center of the wet area. It is often advisable to arrange short laterals in the form of a funnel if the water as it usually does not merge at a single point.

Drain Tile, Quality and Shape. The length of tile is usually made one foot. This is preferable to greater lengths because water enters the tile through the joints and the more frequent these joints the more ready is the admission of water. Consequently, the porosity of the walls of the tile is not a factor in drainage. Tile are made of two kinds of material. These are burned clay and cement. Clay tile are most generally used and are most satisfactory. They are of two grades: first, the vitrified and glazed tile which have approximately impervious walls. Second, there are the porous or brick tile which do not permit the flow of water but which absorb a considerable portion capillaryly. Of these two grades, the glazed and vitrified tile are much preferred, especially where tile is near enough to the surface to be subject to freezing. It has been found that the walls of tile may take up from two to as much as twenty-five per cent. of water. When it exceeds five to eight per cent. it forms a serious defect, for when this water freezes it shatters the walls of the tile and may permit them to crumble, thereby permitting the admission of sediment into the channel. If there is no advantage either in efficiency or cost in the soft tile, there is no reason for their use. Inquiries are frequently made concerning the practicability of making cement tile. As to quality they can be made better than the poorest clay tile, but not as good as the best vitrified tile. They have not been much used and, therefore, their efficiency has not been thoroughly tested. Where a farmer has the materials at hand, together with a place for manufacture and surplus labor, it may be worth while to consider making tile at home, especially if railroad connections are defective.

As to shapes, round and hexagonal tile are preferred. Horse-shoe and sole tile are not recommended, especially the former. They are lacking in durability and they are much more likely to become stopped with sediment than are round tile. In burning tile usually shrinks unevenly so that the ends are not square, and it is usually necessary to turn the tile to get a good joint at the top which turning is not permitted by the sole or horse-shoe shape, as is the case with the round or hexagonal shape. Tile should always be sound so as to give a sharp ring when struck with a piece of iron.

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Protection of Joints. As has been noted, water enters at the joints between the tile and it should enter from the lower part of the joint. In soils which take on quicksand properties, especial attention should be given to protect the joints against the admission of fine sediment. This is best accomplished by obliging the water to enter from below by covering the upper half to two-thirds of the joint with some sort of a cap. Various materials may be used, among which may be enumerated burlap, tar paper, a capping of clay, or some filtering material around the joint such as fine gravel and coarse sand, cinders or straw. If nothing better is available, it is helpful to cover the upper part of the joint with sod and surface soil, this being more granular and less likely to be subject to washing. This tendency to wash is most pronounced the first two or three years after the tile have been laid. Later the soil becomes adjusted so that the water finds its way to the joint in small trickles without serious injury. In soils of a very heavy nature, such as clays and hardpan, it may be desirable to separate the tile slightly, up to an eighth of an inch, in which case the upper part of the joint would be protected as just indicated. Collars at the joint are generally unnecessary and usually an inconvenience. Where the bottom is especially soft boards may be used on which to lay the tile. It is especially important in quicksand of a springy nature to insure a good bed for the tile. If the condition is especially bad it may be necessary to dig the ditch somewhat deeper than is required for the tile and fill in with cinders or gravel as a filtering medium.

Depth and Arrangement. The depth and arrangement of drains must be determined by the nature of the soil. The usual depth is from two to three feet. In light soils it may be deeper than in clay. For New Jersey conditions, probably from two and a half to three feet will be the average. The arrangement of the drains must be determined by the slope of the surface, and the nature of the wet spots or areas. It should be the aim to have as few outlets as possible. Unless the slope is more than ten feet to the hundred, it is best to arrange the drains directly up and down the slope. Where the slope is greater they may be arranged across the slope at a moderate angle. It

is not always true that drains should cover a wider area in proportion to increase in depth. This principle will hold best in sandy land but it tends to fail in clay land.

Grade. Water will flow in tile having a very small grade even as little as a half inch to the hundred feet. The smaller the grade the greater the care required in construction. Where the grade is less than two or three feet to the hundred, an instrument is usually necessary to determine its distribution. Especially is this true when it is less than a foot to the hundred. When in doubt use an instrument. A grade of six to eight inches is much to be desired. The aim should be to have an uniform grade from one end to the other of the ditch. Where the grade changes from a large fall to a small one, there is a tendency for the accumulation of sediment. In soil of a quicksand nature, it may be best to place a silt well in the course of the ditch where this change in grade occurs. This consists of a well, the bottom of which extends below the line of tile by two or three feet. Water is taken in at one side and taken out at the other at a somewhat lower level, the coarser sediment accumulating at the bottom of the well where it can be removed from time to time. In this way several laterals may be connected to one outlet drain at the same point.

Size of Tile. The size of tile must necessarily be related to the volume of water to be handled and the grade. The capacity of tile is determined by two things, first, the diameter and, second, the grade. In a general way the capacity of a tile varies as the square of the diameter. It also varies directly as the grade. By doubling the grade, the carrying capacity of a given size is increased about one-third. The size of tile required is also determined by the area drained, in the case of main ditches. For laterals I would not recommend tile smaller than three inch. On flat grade in sandy soil four inch tile is preferred. In mains and submains, I would increase the size of tile according to the volume of water handled, taking into account not only of the immediate surface but also of the seepage area due to springs and other underground flow. Main drains two feet or more in diameter are now frequently placed in many of the middle west-

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ern states. Drainage is a permanent improvement when account is taken of the saving in surface and the increased efficiency at which the land can be tilled, and the large initial cost of such big tile is of less consequence.

Outlet. Since outlets may be neglected, it is generally advisable to have as few of them as possible. For this reason laterals are combined into a system with the main drain, so that the large area may have but a single outlet. Unless the drain has a fall, it would be advisable that the water have a free drop at the end of the tile to avoid drowning or submersion. In addition, it is especially important that the last rod of tile be of vitrified quality. It is also generally advisable to lay up an abutment to prevent the caving down of the bank. Finally, the tile should be protected from the admission of rodents by wires across the ends.

Digging Trenches. In the past ditches have generally been dug by hand, but it is now very difficult to get the work satisfactorily done by that method. Consequently, machines of various sizes are coming into use. The simplest of these is an ordinary plow or subsoil plow, which is designed to loosen up the earth so that it can readily be thrown out with a round-pointed shovel. This supplants human muscle power or pick and shovel, by horse power and is a material saving in the cost of construction.

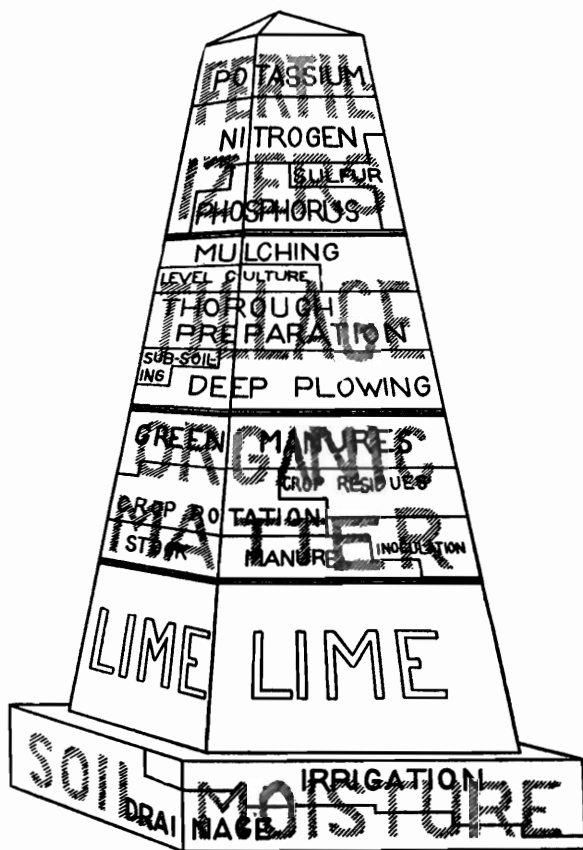
Next above the small plow is the large ditching plow of which the Cyclone is a type. This is mounted on wheels, can be adjusted as to depth, and is drawn by six or eight horses. The maximum depth is about two feet and a half. On soils not too stony it is a very efficient instrument and has been shown to greatly reduce the cost of constructing trenches where it can be used.

Finally, there is the large traction machine, of which the Buckeye is a type. This is actuated by engines and is able to construct ditches up to about five feet in depth with a very accurate grade at one operation. It will work on a wider range of soil conditions than any other machine. It, of course, is not very successful on very stony land. The cost of trenching will

range from about 10 cents up to 50 cents a rod, depending upon the soil conditions and the depth. Probably an average of twenty-five to thirty-five cents may be stated. The cost of lateral tile will average from twenty-five to thirty-five cents, to which must be added from ten to fifteen or twenty cents for other expenses, such as hauling tile, filling, grading, etc., making the average cost of tile drains about seventy-five cents per rod. With drains fifty feet apart, there is approximately sixty-five rods per acre, making the total cost average about forty-five to fifty dollars for thorough drainage for general farming purposes. Much land can be greatly benefited by twenty to thirty rods, making the cost from twenty to thirty dollars per acre. In laying out of a regular system, it is generally advisable to put in the tile at a large interval subdividing this as conditions may indicate the necessity for so doing. To some, this cost seems large and frequently deters land owners for a considerable time from making such improvement. In some cases the cost is greater than the original cost of the land, but it should be noted that the practicability of drainage is not determined by the present cost of the land but by the loss that is being incurred from the lack of drainage. It has been said that the only man who can afford not to drain is the rich man, for the loss from the lack of drainage is so great that the poor man can not long withstand it. It should be noted that drainage is a long-time improvement. The first tile laid in New York are still in operation and the John Johnston farm is now giving better than twice the average crop returns in the state. Figures have been collected on the effect of drainage, and they show that the average cost of tile draining is returned by increased crops in from two to five years. The cost of drainage should be capitalized and set over against the annual loss due to the lack of drainage. If, for example, there is a loss of two dollars per year per acre in crops and in increased labor, this is 6% on an investment of thirty-five dollars.

This increase instead of being two dollars, is often very much greater. Throughout the state of New York, people are generally awakening to the importance of better drainage and the use of tile has increased many fold within the last ten years. As many of our good farmers put it, good land drainage is the acme

A MONUMENT TO PERMANENT SOIL FERTILITY.



This diagram shows the essential conditions of a fertile soil

These must be adjusted to the requirements of crops grown.

Each tier is made up of the farm practices used to regulate the soil condition represented by that tier

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of good farming. This is indicated by a diagram accompanying this article. It is the foundation of good soil management.

A series of lantern slides was shown, explaining the relation of drainage to good soil management, and showing effects of drainage upon the soil, together with primary features in the construction of drainage systems.

The poem, entitled "The Tile Drain," by L. H. Bailey, was read at conclusion.

DISCUSSION.

Ques. How is one to drain a piece of land having no natural gravity outlet?

Ans. Prof. Fippin. Such conditions frequently occur in soils of a gravelly nature. The low points frequently have a thin strata of clay under which is porous gravel. By perforating this clay bottom, water may be removed by subsurface percolation. Such an opening can be made by digging a well, or it may be made by the use of dynamite. In this connection, it should be noted that the much advertised dynamite for drainage purposes is only effective where the impervious strata is thin and underlain by a more pervious layer. Drainage by the use of dynamite in a compact soil of considerable depth is ineffective and generally makes conditions worse unless it is coupled with tile or some other means for the removal of the excess water.

Ques. Will roots of plants obstruct a tile drain?

Ans. Prof Fippin. This generally occurs only where tile drains a spring so that water flows continuously, and in dry seasons seeps out of the joints into the adjacent land. In that case it may attract the roots to the tile and permit them to enter. Where the tile serves only to remove the excess water in wet seasons there is no tendency for plant roots to enter the tiles.

At the close of the address, Secretary Dye declared the 41st Annual Meeting of the State Board of Agriculture adjourned sine die.

FRANKLIN DYE,
Secretary.

NURSERY STOCK INSPECTION IN N. J. 205

The Importance and Nature of the Nursery Stock Inspection in New Jersey.

The inspection work in New Jersey can be divided into two parts:

1st. The inspection of nurseries within the State.

2nd. The inspection of stock coming from foreign countries and various states of the Union.

Taking up the nurseries within the State, we find that they rather tend to specialize and divide about as follows:

1st. Those growing peach trees only. These are found mostly in the northern part of the State, and, as a rule, grow for local distribution only.

2nd. Those growing shade and ornamentals only, and these are found in all parts of the State and are greatest in number. The demand for ornamental stock is growing constantly as a result of the activities of shade tree commissions and similar associations. In the suburbs, smaller towns and villages, hedges and shrubbery are always in demand.

3rd. Those growing miscellaneous fruit and other stocks, of which there are only a few.

4th. Strawberry growers.

5th. Dealers who do not grow stock, but merely handle it.

Under the New Jersey law, these nurseries are inspected at least once a year, and if found free from San Jose scale or other dangerous insects, they are given a certificate on which such information is stated and which really permits them to do business in the seasons following the issuance of such certificates.

In number, there are some 140 nurseries within the State, of which 90 actually grow stock. These cover a total acreage of over 2,500, the largest containing about 400, while the smallest has one 1-4 of an acre. These nurseries handle during a season about 15,000,000 pieces of stock with a valuation of over two

millions of dollars, and in addition many of them carry on a greenhouse business.

Practically all of them are in first-class condition with respect to the San José scale, other insects and plant diseases. The fact that most of them handle more shade and ornamental stock is one reason for this, although such stock at times is found infested.

The main reason, however, is the good feeling which exists between the nurserymen and the men who are employed to police their business.

The State Entomologist's office has always endeavored to cooperate with instead of antagonizing the nurserymen, and as a result most nurserymen have willingly complied with our instructions to destroy or spray infested stock.

The purpose of nursery inspection is to reduce the injuries of insects and diseases already present. If no such inspection existed, the San José scale, for instance, would still continue to be distributed to every section of the Union, where deciduous trees exist.

In addition, the inspection aids the nurserymen by furnishing him with an insect record of his nursery and help in combatting insects likely to become injurious.

The expense of this inspection is borne entirely by the State. It costs the nurserymen nothing. All we ask is that he sell trees and plants free from insects and disease. This is a perfectly fair demand and in most cases is recognized as such.

In buying nursery stock, it is well to keep in mind the following points:

- 1st. Purchase stock only from reliable nurserymen whose nurseries have been inspected.

- 2nd. Reject stock having root or crown galls or such as is infested by insects and report the matter to the State inspector.

- 3rd. Do not think that the best stock always comes from the largest nursery. The small nurseries are likely to pay more attention to a **small order**.

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4th. Do not blame the nurseryman if you have permitted the stock to dry out by exposure to wind and sun.

5th. Do not pay a high price for any wonderful fruits just imported or of great promise.

6th. If you are in doubt concerning the varieties suited to your neighborhood, write to the State Horticulturist.

Coming to imported stock, the inspection of this is to prevent the introduction and spread of insects not already established.

There are still many serious insect pests in foreign countries which are not present in the United States, and to prevent their introduction all imported stock must be rigidly inspected. An insect, or disease, which is comparatively unimportant in its own country, may become a serious pest when placed under new conditions where climate is favorable and natural enemies absent.

The late Dr. J. B. Smith, while in Europe a few years ago, found that Germany maintained an elaborate system of quarantine and inspection at Hamburg against fruits and plants of all kinds, and excluded everything that might cause injury to her agricultural interests, but no care was taken in guarding her exports and the inspection system in force would not prevent the exportation of insects and diseases.

Belgium and Japan are also danger points. Holland, however, has an efficient and effective inspection system.

The principal carrier on which foreign insects are introduced in nursery stock. Many of our new common pests were imported before rigid inspection systems were in force, and the following list of insects, many of them undoubtedly familiar to you, have come to us from abroad:

The San Jose scale, the codling moth, the brown-tail and gypsy moths, which are doing considerable damage at present in New England States; the pear psylla, which, by the way, was troublesome in several points in South Jersey this past summer; the Hessian fly, an important enemy of wheat; the cabbage maggot, the wheat saw fly, the elm leaf beetle, well known along the Atlantic coast from New Jersey northward; the wood leopard moth, present in North Jersey and around New York City. These are the most serious pests.

Others which are destructive at times are pear midge, cherry and pear slugs, apple aphio, cherry aphio, fruit bark beetle, currant saw fly, rose scale, asparagus beetle, cabbage aphid, harlequin cabbage bug, onion maggot, cabbage caterpillar, bean weevil, pea weevil, Mediterranean flour moth, cotton boll worm.

Coming to insects injurious in our households, we have the clothes moth, the buffalo carpet beetle, the larder beetle, the bed bug, the house fly, the croton bug and the little red ant, all of which were imported.

The most recently introduced destructive insect pest is the alfalfa leaf weevil, which has already caused considerable damage in Utah and threatens to extend throughout the Middle West.

I have read this rather long list, which is not by any means complete, in order to give you an idea of what has happened in the past and how important it is to prevent similar introductions in the future.

As I have said before, nursery stock is the chief source of danger. Upon such stock can be found various scale insects, the eggs of plant lice, various wood boring larvae, cocoons, nests and eggs of other insects.

The amount of injury that such imported insects do, as shown by a loss in dollars and cents, is enormous. It is estimated that the Hessian Fly causes yearly a loss of from fifty to seventy millions of dollars. The codling moth ruins twenty million dollars worth of apples every year. Ten millions a year is the loss placed at the door of the San Jose scale, and the cotton boll worm in the South does twenty millions worth of damage. The New England States and the Federal Government together have spent seven millions in fighting the gypsy and brown-tail moths, and are continuing to spend at least one million every year.

Therefore the expenditure of a few thousands yearly in inspection work prevents a very probable outlay of millions later on.

During 1909 and 1910, fifty nests of the brown-tail moth were discovered on French stock by the late John B. Smith. During the same season, Japanese stock was found infested by two injurious species of scale insects. In fact, every year sees the destruction of infested stock from abroad, thereby saving the community at large many dollars in preventive measures should any of the pests become established.

During the year 1912 10,043 cases of stock were imported into New Jersey.

During the spring of the present year 6,659 cases were received from the following countries: Holland, 2,819; Belgium, 3,477; France, 143; England, 91; Japan, 59; Germany, 41; Ireland, 18; Scotland, 6; Italy, 2; Greece, 2; Spain, 1

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Of these 6,659 cases, containing millions of plants, 6,166 cases were inspected, the difference consisting of palms and other greenhouse stock, which do not require inspection in this State.

This stock is consigned to nurserymen, florists and various private individuals. I might add that New York is the only State that imports more stock than New Jersey.

From Holland we get boxwood, evergreens, rhododendrons and roses; from Belgium bay trees, palms and practically all of the azaleas which are sold around Christmas and Easter; from France trained and other fruit stock and various shrubs and evergreens; from Germany greenhouse stock, evergreens and fruit; from England roses and fruit; from Scotland roses and rhododendrons; from Japan miscellaneous fruit stock and evergreen; from Ireland roses.

During the spring, Japan was the worst offender, it being necessary to destroy azaleas, maples and fruit trees, all of which were infested by scale insects.

During the past few months the fall inspection has been going on and an unusually large number of foreign species have been found, although nothing serious so far.

Concerning domestic stock coming into New Jersey, the inspection of this is made by the State Plant Pathologist, who is devoting his energies to keeping out various diseases, root galls, etc.

Thus it is seen that by means of the State Entomologist's office, through the State Board of Agriculture, every fruit tree, shade tree and shrub intended for sale is inspected, thereby protecting all purchasers, large and small, and making it possible for them to secure clean, healthy stock.

INSECTS ON IMPORTED STOCK—FALL OF 1913.

Aleyrodes sp.	on 31	shipments	Azaleas	Belgium.
Aleyrodes sp.	" 1	"	.. Azaleas	Holland.
Aleyrodes sp.	" 1	"	.. Ancubas	Holland.
Aleyrodes sp.	" 1	"	.. Bonvardias	England.
Oyster shell scale	" 14	"	.. Box wood	Holland.
Tingitidae eggs	" 1	"	.. Rhododen.	Belgium.
Coccus hesperidum	" 9	"	.. Bays	Belgium.
Pseudococcus sp.	" 5	"	.. Palms	Belgium.
Pseudococcus sp.	" 1	"	.. Metrosideros ...	Belgium.
Pseudococcus sp.	" 2	"	.. Bays	Belgium.
Pseudococcus sp.	" 1	"	.. In bamboo canes	England.
Chrysomphalus didyospermii ...	" 1	"	.. Palms	Belgium.
Chrysomphalus aonidum	" 1	"	.. Palms	Belgium.

Aspidiatius britannicus	"	1	"	.. Bays	Belgium.
Aspidiatius hederæ	"	1	"	.. Bays	Belgium.
Aspidiatius hederæ	"	1	"	.. Palms	Belgium.
Aspidiatius hederæ	"	1	"	.. Yucca tricolor ..	England.
Diaspis boisduvallii	"	1	"	.. Orchids	England.
Hemichionaspis aspidistrae	"	1	"	.. Ferns	England.
Hemichionaspis aspidistrae	"	1	"	.. Ferns	Belgium.
Macrasurgus cuprarius	"	1	"	.. Azaleas	Belgium.
Peronia sp.	"	1	"	.. Azaleas	Belgium.
Gracilaria sp.	"	1	"	.. Azaleas	Belgium.
Limacodid eggs	"	1	"	.. Azaleas	Belgium.
Limacodid eggs	"	1	"	.. Roses	England.

INSECTS IMPORTED—SPRING 1913.

Scale insects, 2 species	Azaleas	Japan	Destroyed.
Scale insects, 1 specie	Maples	Japan	Re-shipped.
Scale insects, 3 species	Bays	Belgium	Cleaned.
Scale insects, 1 specie	Fruit trees	Japan	Destroyed.
Gypsy moth egg mars—on Azaleas—Belgium.			
Gypsy moth egg mars—New England stock by Dr. Headlee.			
New England stock now inspected by government as well as states.			
How stock inspected in New Jersey.			
Braker's and government notices.			
Inspectors stationed at different points.			
Actual method of inspection.			
Infested stock destroyed or re-shipped according to insects found.			

The Cranberry Industry.

By Lucian J. Fosdick.

The topic assigned me, "The Cranberry Industry," I shall treat under the following heads: Cranberry Bog Building, Cranberry Vine Setting, Cranberry Culture, Cranberry Harvesting, Cranberry Marketing, Fall, Winter and Spring Work on the Cranberry Meadow.

The cultivation of cranberries began during the nineteenth century, becoming an extensive industry in New England, New Jersey and Wisconsin during the last forty years; and it has become the leading industry on Cape Cod, the soil there being particularly adapted to their growth.

Few people appreciate, while enjoying their Thanksgiving dinner, how much time, labor and money were spent in obtaining that small but important part of the feast—the cranberry sauce.

Until of recent date cranberries were considered a luxury, but today they have become a staple necessity, and there is an ever-widening market for them.

The berry derived its name from the appearance of the flower, because, just before expanding into the perfect flower, the stem,

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calyx and petals resemble the neck, head and bill of the crane. Hence the name "Craneberry," which usage has shortened into the familiar "Cranberry." The sub-family name, *Oxycoccus*, is derived from *Oxus*, sharp or acid, and *Kokus*, a berry.

Cranberries have been known to northern Europe for centuries, and are grown in Russia, Sweden and Great Britain. The berry is a native of Russia, Siberia, South America and North America. Its normal latitude for cultivation is 39 degrees to 42 degrees north.

The cranberry known as the "Large American Cranberry" is superior to any known varieties, and is highly cultivated in New England, New York, New Jersey, Michigan, Wisconsin, Minnesota and the Pacific Coast States.

Cranberries were first cultivated on Cape Cod, Massachusetts, nearly a century ago, and of late years the harvested crop has netted the growers of the commonwealth from one million to one and a half million dollars per annum.

According to statistics, cranberry culture occupies about 23,000 acres in the United States. The chief districts are located in Massachusetts, New Jersey and Wisconsin, but the northwest coast line of Oregon and Washington promises to become a great field for this agricultural industry.

There is a constantly increasing market for this fruit in the United States, and without doubt in the near future cranberries will be exported in larger quantities. The acidity of the fruit is especially healthful, particularly for people living in warm climates.

Land.—The land upon which the cranberry is cultivated is reclaimed swamps and bogs, which have formerly been considered of but little value. The right kind of soil is low, moist land, suitably drained, consisting of peat, muck and mould, or decayed vegetation, classified as alluvial deposit. Clay soil is unfit for the cranberry, and loam will grow weeds too readily. Brown or brush bog is best, because less labor is required to bring it to a state of cultivation, and this kind of bog land is usually free from grass roots. If wooded swamp land is used, trees should be cut at the roots, to tip out the stumps in felling,

which can be burned or removed from the bog. Boulders will do no harm on a cranberry bog, but they take up room.

We prefer a bog open to the sunshine and winds, to one surrounded by high banks, as it is less liable to sun-scald and frost.

Turfing.—After the removal of brush and trees, the surface of the bog should be turfed by cutting with a turf axe into pieces 12x18 inches, and then with a pulling hook the turf should be turned upside down. If there are bunches or tussocks they should be removed from the bog, also all coarse roots of trees and brush; but the turf should not be taken off, as it is the best feeder of the cranberry vine, being superior to muck, for it is not so cold and wet, and is more spongy. The turf should be cut with a turf hoe after it has been turned over, and the high places should be leveled.

Drainage.—Good drainage must be attained, else during the growing season the berries will rot and sun-scald badly. To obtain good drainage, the bog should be ditched in sections adapted to its size and shape, six to twelve sections to the acre being the average. A short ditch should be cut entirely around the bog. This is needed for two reasons: first, to cut off any underground water courses; and second, to prevent upland growth encroaching on the bogs. If the bog is sufficiently wide, a central ditch for the flow of water is desirable. The central ditch should be four feet wide and of sufficient depth to carry the water from twelve to eighteen inches below the surface of the bog. The shore and cross-ditches should be cut three feet wide, and of sufficient depth to give proper drainage. After ditching, the sections should be graded and slightly crowned at the center, and the material thrown out in ditching may be used to fill up holes and to make the proper levels. And this reminds me of the Irishman who was digging in his back yard for gold and anxious to keep it a secret. His neighbor Mike happened along, stopped and looking over the fence, remarked: "Pat, what ye going to do with all this dirt" "Don't ye see, Mike; I'm digging a hole to put it in?" "All right, Pat; but what ye going to do with the dirt your throwing out now?" "Mike, yur a dull boy; can't you see that's what I'm digging the hole bigger for?"

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Water.—A good water supply is essential to the successful cultivation of the cranberry. The supply may be obtained from a pond, reservoir or running brook, but must be under full control at all seasons of the year.

Stop-Waters.—Stpo-waters, or gates, in the brook and ditches will enable the grower to keep the water at the desired level, which should be varied according to the time and season. Early in the season 4 to 8 inches from the level of the bog, and later 10 to 15 inches is a good average.

Sanding.—The next process in the preparation of a cranberry meadow is to cover the sections with clear, sharp sand or gravel, to the depth of 3 to 6 inches, 6 inches being none too much on the portions of the bog that are inclined to be soft and wet. The sand or gravel must be free from clay or loam. Sand will make a cold bog warm, and it will retain water while the surface is dry. It also retains the heat of the sun, causing the bog to be less liable to be affected by frosts and sun-scald than bogs not sanded. Sand also retards the growth of weeds, and affords the cranberry vine a better opportunity for growing.

When selecting bog lands to build into cranberry meadow, don't purchase when it is covered with snow or under water, unless you are familiar with the tract. Know the nature and condition of the land, and see that no one has a right of water flowage above or below your bog.

CRANBERRY VINE SETTING.

Sand.—Clear, sharp sand or gravel, free from clap or loam, is required, with which to cover the bog before setting vines.

Vine Setting.—We are now ready to set our cranberry vines. Care should be taken in the selection of varieties, there being over two hundred known varieties at the present time, all of which have not been cultivated sufficiently long to warrant their selection to any large extent. Vines which yield large crops of good-sized berries of uniform dark color are the ones to cultivate.

The "Early Black" is probably the most extensively cultivated.

It is pear-shaped, a prolific cropper, will keep well if picked before too ripe, and will color well after picking.

The "McFarlin" is a native of Carver, Mass., a round, large berry, ripening medium early, coloring uniformly. It is a good cropper, and a good keeper when picked at the proper time.

The "Centerville" is a handsome, long berry, takes a high color, crops well, and can be harvested late. These three varieties, ripening successively, can be handled readily at harvest time.

Marked Varieties.—The marked varieties are distinguished in shape as pear, pointed, bugle, oval and round. **Berries** vary in the time of ripening, also in keeping qualities. Some berries will color well after they are picked, while others will not change from white to red unless left upon the vines to ripen. The cranberry is first green, then white, then it turns to pink, then red; and some varieties, when ripe are so dark a red as to be almost black.

Vines should be set out evenly to produce an even and regular growth, and to accomplish this a marker is used, made like a rake with five or more teeth, set 12 to 18 inches apart. This is dragged at right angles across the sanded bog. No care is needed to set the vines right side up. They will grow as readily one way as the other. Two inches above the sand is sufficient. More than three vines in a hill are liable to heat, and if they all thrive, the vines are too thick in the hills where over three are set. Hills should be 12 to 18 inches apart. Where the lines cross each other those that were made by the marker will indicate where to set the vines. The dibble is used in setting to press the vines down through the sand into the soil beneath, leaving the vines just above the surface. Vines which do well will bear the second year. The third year a good crop may be expected, and the fourth year a full crop. With proper cultivation they will do well for many years.

ESTIMATED COST OF BUILDING CRANBERRY MEADOW.

Cost per acre for land,	\$ 10 00
Turfing, grading, ditching and sanding,	200 00
Six barrels vines at \$5 per barrel,	30 00
Setting out of vines,	16 00

\$256 00

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Nothing is allowed in this estimate for tools, building of dikes, flumes, roadways or for buildings. The cost will to a great extent depend on the conditions which exist naturally, the manner in which the bog is built, and the foreman having charge of the building of the bog. The estimate given is based upon labor at \$1.50 per day of nine hours.

It is not unreasonable to expect that a good piece of bog, properly built and vined with good varieties, receiving proper care, will give an average yearly yield of 60 to 75 barrels of cranberries per acre. Estimates based upon statistics gathered from many bogs for a term of years have been given by a large grower as about 32 barrels per acre.

CULTIVATION.

Thorough weeding the first three or four years will in ditches and on the ditch banks be necessary, and they should be dug out by the roots. If this part of the cultivation is neglected, they will grow so rank as to prevent the vines from bearing, and what few berries there may be on the ditch banks will be soft or green at harvesting. When the meadow is in bearing condition, all weeds should be removed by the time the vines are in bloom. On Cape Cod the blooming season is usually from June 10 to 25, unless winter flowage is continued late.

Walking over the meadow, after the berries have set, will destroy more or less of the fruit, and the weeding from this time to harvesting should be discontinued, removing only such weeds as may be reached by walking in the ditches.

Irrigation.—This is very essential to the successful cultivation of the cranberry. Too much or too little water are both difficulties to be avoided; or in other words, water must be under control of the cranberry grower. The vine roots should be well fed with water up to the blooming period, but when the berries are formed the water should be kept lower.

Cranberry vines are fond of running water, and if the water supply is limited, the brook and ditches may be flushed out during a rain. Gravitation is the cheapest method of irrigating with water. But sometimes the pond is lower than the bog.

In these cases a steam pump or windmill will overcome the difficulty.

Dikes.—In laying out cranberry meadows, in many instances it is necessary to build dikes. In case a meadow or bog is long, it might be economy to build a roadway dike across it, thus saving time and labor, and also by the same means reducing the depth of water to be carried at the time of flowing. This will be the case if the meadow has much of a fall. Providing the meadow is long and has a fall of 5 feet to cover properly the highest point of the bog, 7 feet of water will be required at the lower dike so that this lower dike will need to be 9 to 10 feet high. By building one or more midway dikes, the volume of water may be reduced very materially, which is desirable for quick flowage and rapid drainage.

If dikes are to be built, they should have a broad base below the center of which a three-foot trench should be dug to hard pan. This trench runs lengthwise of the dike, and is filled with sand or gravel. The width at the bottom of the dike depends upon the depth of the water to be carried in the pond or on the meadow at the time of flowage.

When the dike is to be used as a drive or roadway, the height will determine its width at the top. A dike four feet high, when constructed for this purpose, should be fourteen feet wide at the top and at least eighteen feet wide at the base. No heavy team should be allowed to drive over it for at least six months after it is built, and then the wagon should have wide tires.

A dike should be built amply strong to withstand the pressure of water which it is intended to carry; and if it is to be a reservoir dike, sand should be dumped off its bank on the reservoir or water side, to completely cover the turf. This sand covering will keep muskrats from burrowing into the dike, as the sand fills in whenever they try to burrow. The reservoir dike should be built at least two feet higher than high water mark, for strong winds will cause the water to wash and slop against it. The outlet must be ample to admit of overflow in case of heavy rains and melting snow. Pulling plank should be set at the reservoir flume at the height water is to be carried.

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The outside of all dikes should be built up with turf cut twelve by eighteen inches, and some twelve by twenty-four for binders. All turf should be laid longest way crosswise on the dike, and all seams lapped after the manner of laying bricks.

If the water is six feet deep at the flume, the dikes should be not less than eight feet high, eighteen feet wide at the base and narrowed to ten feet at the top. This will allow four feet of the sloping of each side, which is none too much, even when good, tough turf is used for its banks.

When a dike crosses a meadow, no ditch should be dug nearer than ten feet to its side, else the great weight of the dike will crowd and fill up the ditch, causing the dike itself to slump and cave. A crushed-down dike is an eyesore, and little better than no dike for holding back water.

If the dike crosses soft land, such as muck or mud, it should be spiled to hard pan lengthwise, in addition to the center filled trench. A thoroughly built dike will pay in the long run.

The flume through the dike must be carefully and strongly built. Some are built with stone, others with plank; but we prefer Portland cement flume, built with a bulkhead so water can be handled at the top rather than from the bottom of the flume. An experienced man will be profitable to employ for this part of the work.

The Reservoir.—A pond or reservoir at the head of a cranberry meadow is of great value to hold or reserve the water supply for irrigation purposes during the dry months of summer, and also to enable the grower to flood his meadows when occasion requires it.

HARVESTING.

The best method of harvesting or picking cranberries is problematical, and must be determined by the individual grower. Hand picking and raking were the original methods, and hand-picking is still adhered to by many growers. On large bogs machine picking solves the problem of securing the crop during the harvest season, which on Cape Cod usually begins the last of August and continues into October.

Overripe berries will not keep well, and it is a mistake to pick

the fruit when green, for, if marketed, it will bring a low price. If only good, high-colored, sound berries are marketed, the returns will be more satisfactory to the grower.

A fruit crop is sometimes saved from fall frosts by flowing. This can be done when there is an ample supply of water and good drainage. Water must be handled quickly in order that the meadow may be dry at time of picking; also to prevent the berries from sun scald.

When the bog is to be picked by hand, a margin around the section is picked first, usually by men and boys in the morning before the bog dries off sufficiently for regular picking. This is called ditch row picking. These berries will be picked while the vines are wet with the morning dew and only a few of them should be put into each picking box; when the berries are dry the boxes may be filled up. Care must be taken to have the berries dry when packed in the storehouse to insure their keeping qualities. Regular picking does not begin until the vines are dry.

After the margin is picked the section is ready to be lined off. This is done with a reel and line, two garden lines and a three-inch ring. The men who line out the sections walk only on the margins, which have previously been picked.

To harvest a ten-acre bog, yielding an average crop, about fifty hands are needed besides a foreman, two men helpers, a tally keeper and a dumper.

Cranberries should be stored dry, in a slatted bushel crate, with cleats on each end to insure good keeping qualities previous to their being marketed; and while in the storehouse they should receive ventilation, but not be subject to draughts.

Where native help is scarce bunkhouses are built to accommodate the pickers during the harvesting season.

Bunkhouse.—Dimensions 16x40 feet, with a partition through the center, so that one chimney is sufficient for the two apartments. In the extreme end in the center are built two tiers of four bunks each, separated by matched board partitions. Each bunk is four feet wide and is supposed to accommodate two persons. The space above the bunks is floored over by matched boards, the boys occupying the loft at one end of the bunkhouse

and the girls the loft in the opposite end. A bunkhouse arranged on this plan will easily accommodate sixty to seventy-five men, women and children.

The Screenhouse.—A building with ample capacity for packing boxes, barrels, the harvested crop and room to clean and pack berries is essential. A dry, properly ventilated cellar in this building is especially desirable, in which to store the harvested berries previous to packing and shipping to market.

Packing and Shipping.—The packing season usually begins soon after picking, following soon after the fall fruits are out of the market. Small shipments are made during the picking season, the berries being cleaned and packed in the morning while the bog is drying off and also on rainy days.

Berries stored in the storehouse at a cool temperature if brought to a much warmer temperature in the packing room will become wet. This is often spoken of as the sweating process, which term is hardly correct, for the cranberry skin is waterproof. To demonstrate this fact, submerge cranberries in water for days and they will be as fresh as when picked. When berries are wet under conditions mentioned, it is due to the process of condensation. Berries should never be packed in a wet condition. To avoid this the packing house should be kept cool and then if berries become wet it is best to discontinue packing until the atmosphere becomes cool and dry.

Berries are poured from the picking or storage boxes into the hopper or separator, which blows out the vines and separates the greater part of the poor from the good berries. From the separator the berries go to the screens, and are carefully picked over by the women, four or five usually working at a screen.

The shipping package has been to a great extent the 100-quart barrel, but the two-compartment crate holding 32 quarts, dry measure, is the proper shipping package for cranberries. In fact, many of the commission houses manifest their preference for the crate package by repacking from barrels into crates. The crate package will keep the berries in the best possible condition; it is easily handled, and it requires for equal holding capacity less storage room than the barrel.

Cooking.—As cranberries contain such acute acids, there is no fruit that will so quickly act upon tin, iron or brass when brought into contact, hence always cook cranberries into earthen-lined kettles, granite, agateware or still better, in aluminum kettles, which are now reasonable in price, are light to handle, will not tarnish or discolor the sauce, and do not easily scorch it. Never allow any article of food containing cranberries to stand in anything but earthen or glass dishes. Granulated sugar should always be used, as the poorer qualities of sugar and molasses destroy the flavor of this delectable berry.

Turkey strutting in the lane,
Thinks he's very fine;
Cranberries gleaming in the sun
How like rubies shine;
Mince pies sitting in a row,
Oysters from the bay;
What a glorious feast we'll have
On Thanksgiving Day.

MARKETING.

I want at this point to take up a feature of the cranberry industry which has a vital bearing on the financial success of the cranberry grower, and to a greater or less extent it is true of the growers of all farm products.

I have said the two-compartment, 32-quart package, is the proper package for cranberries.

The commission man tells the grower to make the shipment in barrels. Why? For his interest or for the grower's interest? The commission man asks the cranberry grower to ship him good colored berries, large and sound berries, berries that will keep and solid pack in barrels.

Now to have good colored cranberries, they must be to a good degree of ripeness when harvested, and for them to arrive at destination solid pack they must be properly handled and not over ripe when packed.

The commission man prefers the barrel package, and when he loosens the hoops he wants the head of the barrel to spring up, else he calls the barrel slack filled.

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If there are commission men present, I want them to hear me on this point, for the commission man should stand in for every and all things that help the grower.

My cranberry meadows were made from wild swamp land of no great value to the owners from the days when the red deer roamed the primeval forests of Plymouth plantation until improved for cranberry cultivation. There I made my cranberry farm which you see represented by the colored drawing on the wall of this hall.

There with these hands I chopped wood, piled stumps and brush for burning dug ditches, turned turf, wheeled sand, set vines, pulled weeds, built dikes, roadways, buildings, etc. I have lined out the meadows for the pickers; I have picked cranberries; I have kept tally; I have loaded the berries on the wagon and stowed them away in the screenhouse; I have run the separator, and I have screened the berries. I have packed them in shipping boxes and in barrels; I have teamed them to the freight depot; I have sold and I have consigned cranberries, and yet I am confident there is much remaining for me to learn in the cranberry industry. But on the question of shipping package and marketing, my mind is made up until I am convinced of a better way and I am prepared to give you the benefit of my conclusion on these two points, the "Package" and the "Marketing," as follows:

The good colored, sound cranberry is easily bruised. Now I want to ask you gentlemen one and all: Is it reasonable to expect this quality of cranberry to reach the retail dealer in good condition when it is subjected to the following conditions of handling, etc.:

First—They are picked.

Second—They are poured into the picking box.

Third—They are carried to the screen house.

Fourth—They are run through the separator.

Fifth—They are passed through the screens.

Sixth—They are shook down and pressed into a 100 quart barrel.

Seventh—They are loaded on the wagon and carted to the depot.

Eighth—They are unloaded and put into the freight car.

Ninth—They are hauled over the railroad one hundred to one thousand miles, more or less.

Tenth—Unloaded from freight car on to a truck team.

Eleventh—Hauled over the city pavements two miles, more or less, to the commission man's place of business.

Twelfth—Unloaded from truck team and rolled into his store.

Thirteenth—Loaded on to a truck team and hauled to freight depot.

Fourteenth—Loaded into freight cars.

Fifteenth—Hauled over the railroad, I wouldn't attempt to say how many miles.

Sixteenth—Unloaded from freight car and hauled to the retail dealer's store.

Wholesalers handling eight to nine times not included in the above.

Do you say "yes" to all of this and tell me that if the cranberries are in right condition and solid pack, they will stand all of this rough handling and arrive sound and solid pack to the retail dealer?

I would answer that I would sooner expect, if the proper amount of sugar was added to each barrel when it was packed, that it would arrive to the retail dealer in the condition of cranberry sauce.

There is a brief period in the life of the cranberry when it will stand a large amount of handling, but the period is too brief to stand the present methods.

There is no variety of cranberry that matures all of its fruit at the same time, and besides the growers are not accustomed to harvesting a variety in one day. Therefore the grower is unable to meet the conditions.

A cranberry barrel holds one hundred quarts, dry measure, and a barrel of cranberries will weigh one hundred pounds plus. This means that sixteen quarts of berries on either end of the barrel is subjected to a pressure of eighty-four pounds. But do you say the barrel should be kept on its bilge? I will ask, is it kept on its bilge? I see barrels of cranberries in the freight depots, in freight car, on city teams, in wholesale and retailers' stores, and the barrels are standing on end. The two-compartment thirty-quart shipping crate will carry the berries from the grower to the retail store in far better condition than the barrel package, and this fact alone is sufficient for its uniform adoption.

MARKETING.

Growers of cranberries often make the mistake of early ship-

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ments of unripe cranberries which will sell at a low price and to a certain extent influences the season price.

Growers should establish a grade of packing in order that the dealer who handles their berries may have full knowledge as to their quality. Cranberry growers and all farmers should take up the problem of freight rates, for there is too wide a margin on the freight rates between car-load lots, less than car-load lots, and between barrel and crate shipment.

1913 freight rates Cape Cod to Chicago, Illinois:

Car Load Lots.

Less Than Car Lots.

Barrels and crates.....	35c.	100 lbs.	Barrels.....	50c.	Crates.....	65c
15c barrels, 1,000 barrels,						\$150 00
30c barrels, 1,000 barrels,						300 00

This great difference in freight rates is detrimental to the grower, and the same pertains to the shipments of all farm products, and the farmers of the whole country should see to it that this unjust discrimination is changed to their advantage.

The system of selling farm products is unfortunate for the farmer. Commission man, commission plus profit; wholesale dealer, commission plus profit.

Over in New York State a prominent man, recently deceased, who did a considerable advertising, and his "ads." usually contained this statement: "And Jones pays the freight." For General Jones it was a good business proposition to pay the freight, for he made his own price on his manufactured product and added to that price the cost of freight charges. For General Jones a simple case of addition.

The farmers also pay the freight, but the process and results with them are both quite different. With the farmer it is a case of subtraction; with General Jones it was the price plus the freight, and mind you, he made his own price for his product. With the farmer it is the price minus the freight, and instead of the farmer making the price of his product, someone else made the price for him.

In the Farmers' Institute and the Grange is a potent power which, if exercised wisely, can be made to materially benefit all farmers. And the time is ripe for the farmer to come back to his own.

It was at Lexington Green that the embattled farmer stood and fired the shot heard around the world.

In our honorable and honored president, Woodrow Wilson, we have a friend who in his recent message to the Congress says:

"The farmer and the government will henceforth work together as real partners."

I am glad to note the growing interest in the competitive system for boys and girls, and from recent publications I learn that the able Secretary of your State Board of Agriculture, Mr. Franklin Dye, stands in the forefront of this movement. It is a new move in the right direction and will, I believe, be conducive in a large measure to the solving of the problem, how to keep our boys and girls on the farm after the school days are over. On the farm is raised a large percentage of men and women who do the things that are worth while. To draw out the latent power, the ambition and best endeavors of the boys and girls throughout our rural districts, and to create in their minds the ideal of a useful, a profitable and honorable life on the farm will, I believe, help very largely in shaping and moulding their minds to hoe corn and raise cranberries instead of their going to the city to sell pins and needles.

FALL WORK.

Previous to the ground freezing up for winter, all weeds should be removed from the bog, dikes and flumes should be examined to see if all is secure before the bog is flowed.

A rank growth of vines will not yield a good crop of berries, and what there are will be late in ripening and subject to rot, if the season is hot and wet. Under these conditions it is well to resand the vines with one to two inches of sand. Vine sanding is done on the same principle as the sanding of a new bog—with one exception. Instead of dumping the sand on the bog, each wheeler brings his shovel on the wheelbarrow load and spreads the sand from his barrow. To accomplish this a plank runway is laid from the sand pit to the bog. Upon this runway men with wheelbarrows bring the sand in as directed by the foreman, who attends to moving the runway as the sanding progresses. Sanding is often done after ice forms on the bog. The only

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objections to this are that the vines needing sand cannot be so readily seen, and sometimes when ice breaks up it drifts with the sand on it, carrying it to parts of the bog where it is not needed, thus distributing the sand unevenly.

WINTER WORK.

Winter Flowage.—For the protection of cranberry vines during the cold months, flowage should take place just prior to the freezing up of the ground. This prevents winter killing of vines, which is liable to occur during severe winters, the same as grass will winter-kill. It also prevents the throwing of vines by the accident of freezing and thawing. Should any portion of the bog be less than twelve inches under water, it will be well to keep a sharp lookout to the outlets after the ice forms and prevents any lifting of the ice by heavy rains or sudden thaws, which will pull the vines where frozen into the ice.

SPRING WORK.

Late flowing in the spring will retard the growth of the cranberry vine, and thus it can be carried beyond the usual frost-killing season. Water is kept on by some growers on the Cape until early summer to avoid the late spring frosts; but this will shorten the growing season and cause the berries to ripen late in the fall. Seasons will vary, but on Cape Cod, from the last of November to the last of April is a good average period for bog flowing. When there is an ample supply of water, the grower to kill off injurious insects will resort to twenty-four hours' flowing of his bog during a rain or cloudy weather, and the sun will scald berries that are under water. If a bog is seriously infected with worms or insects, to the destruction of a fruit crop, it may be desirable to flood the meadow all summer and sacrifice one season's crop. March winds are injurious to cranberry vines, as this is usually a thawing and freezing month, and a covering of water will protect them.

Drawing Off.—When the winter flowage of water is drawn off, a rainy spell should be chosen. More or less slime, etc., will form

on the bog and vines, and if the water is drawn off during a storm, the rain will wash the vines and the exposure to the air at this time, minus the sun's rays, is very beneficial.

I see my time is about up, and this reminds me of the story of Patrick, who for a long while had been paying attention to Bridget, when finally one evening says Pat to Bridget, says he, "Would ye marry me, Bridget/" and Bridget says to Pat, says she, "Pat, I love ye that much that I have to say yis." And Patrick relapsed into silence, until Bridget could stand it no longer, and Bridget said to Pat, said she, "Pat, say some more pleasant words to me." And Pat replies, "Whist, Bridget; too much has been said already."

God bless the man who sows the wheat,
Who finds us milk and fruit and meat,
May his purse be heavy, his heart be light,
His cattle and corn, and all go right.
God bless the seeds his hands let fall,
For the farmer, he must feed them all.

In the cranberry industry there are many things which will interest the doubtful and diligent man. The speaker has made no attempt to give a glowing account, but his purpose has been to encourage the intelligent cultivation of waste places possessing great fertility, which under right management can be made to produce paying crops. To be successful in the cranberry industry, three things are necessary: To know how; to do the right thing; to do it at the right time.

Fellow farmers, I thank you for your attention.

Report of the State Entomologist.

By Thomas J. Headlee, Ph.D.

The attention of the State Entomologist and his assistants, operating under the direction of the State Board of Agriculture, has been devoted to the inspection and certification of nurseries, the inspection of nursery stock coming into New Jersey from

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foreign countries and from the Brown-tail and Gypsy-Moth infested areas of New England, the control of insect outbreaks and the inspection of bee yards.

Mr. H. B. Weiss has continued as assistant to the State Entomologist in nursery inspection and insect outbreak control, Mr. E. G. Carr as deputy of the State Entomologist in bee inspection, and Miss Augusta Meske as clerk.

NURSERY STOCK INSPECTION.

Purpose and Method.

The purpose of inspecting and certificating nursery stock is to prevent the distribution of seriously injurious insects and the placing of stock seriously infested with any insect pest regardless of its present distribution on sale. This inspection and certification is highly advantageous both to the general public and to the nurserymen, for it enables the purchaser of nursery stock to obtain clean plants and the nurseryman readily to gain the confidence of his customers.

Dangerously infested nursery stock may come into the hands of our people through the sale of bad stock by a nurseryman and by a dealer in nursery stock, through interstate shipments or through importations from foreign countries.

To prevent the sale of nursery stock infested with serious insect pests, the sale of all nursery stock without a proper certificate of inspection is forbidden. To permit the sale of clean stock grown in New Jersey or elsewhere the following provisions have been made: (1) all home-growing nursery stock is annually examined and if found free promptly certificated; if not found free the certificate is withheld until the infestation is removed; (2) nursery stock properly certificated is allowed to come into the state consigned to nurserymen, dealers and individuals; (3) the nurseryman is allowed to ship this stock under his regular certificate, and the dealer is furnished with a special certificate permitting him to do the same thing. The value of requiring interstate shipments to be accompanied by a certification of inspection depends upon the truthfulness of the certificate and the honesty of the firm using it. To the State Entomologist

is reserved the right to test the value of these certificates and the honesty of the firms using them by examining the stock which they cover and the State Entomologist makes it a point to examine a certain amount of this stock every year. During the past year the work of examining incoming stock of all sorts was divided between the State Plant Pathologist and the State Entomologist, the former taking the examination of interstate shipments and the latter the examination of foreign stock. As a result, far more than the usual amount of interstate shipments have been examined and the truthfulness of the certificates and the honesty of the firms using them have received a better test. A number of instances in which the stock did not show the character given it by the certificate have been discovered, and the State officials responsible for the certificate and the firms responsible for the stock have been promptly notified. This action has already resulted in a marked improvement of stock coming from these sources.

Until within recent years the importation of nursery stock from foreign countries has received no adequate consideration at the hands of State inspectors or the United States Government. Some years ago, however, the influx of a very large amount of stock infested with the winter nests of the Brown-tail Moth and the egg masses of the Gypsy Moth aroused inspection officials to the danger of importing exceedingly injurious insects on this type of stock. Then began an effort on the part of State inspectors to examine all incoming foreign stock which was thought likely to bring dangerous infestation. The amount of dangerous infestation found in this way was so large that Congress was urged to enact a law, countrywide in its application, relative to this matter.

As a result, in the year 1912 an act regulating the importing of nursery stock and other plants and plant products was enacted and an organization known as the Federal Horticultural Board was created for the purpose of enforcing it.

Under this law no foreign stock can enter the United States without a special form of procedure, which is both long and complicated, except as it is covered by a proper certificate of inspection. The record of the past was such that both the Federal Horticultural Board and the State inspectors felt that

for a time at least the certificates of inspection from foreign countries could not be depended upon, and that it would be necessary to examine all of the incoming stock. The activity of the Federal Horticultural Board has rendered it easy for the State inspector to get track of all importations, and in that way has rendered valuable services to the State of New Jersey. During the past year nearly all of the stock coming into New Jersey from foreign countries has been examined, as well as a considerable part of that shipped to us from the moth-quarantined areas of New England. This means that all told, New Jersey has received 12,722 cases of nursery stock from foreign countries and from the moth-quarantined areas of New England. Only one hundred and thirty-five came from the latter source.

Actual Work.

One hundred and forty-one certificates have been issued, seventeen of which were given to dealers. Eighty-three nurseries were found to be clean when first inspected. Forty-three showed some infested stock. Thirty-nine have destroyed the infestation and received the certificate.

San José scale was found on *Cornus Florida*, *Cornus Siberica*, fruit stock, Hungarian lilacs, Chinese lilacs, common lilacs, currants, mountain ash, willow, flowering crab, *Aronia nigra* and *Cydonia japonica*. In the course of inspection the following species of insects were found: Cherry scale (*Aspidiotus forbesi*, Johns.), oyster shell scale (*Lepidosaphes ulmi*, Linn.), on lilac and poplars; pine leaf scale (*Chionaspis pinifoliae*, Fitch), on pines; the elm scale (*Gossyparia spuria*, Modees.), on elms; fruit bark beetle (*Scolytus rugulosus*, Ratz.), on cherry, plum and peach; *Datana* Sp. on quince; lilac bore (*Podasesia syringæ*, Harr.), in lilacs; red spider (*Tetranychus bimaculatus*, Haw.), on evergreens; peach borer (*Sanninoidea exitiosa*, Say.), in peach; wood leopard moth (*Zeuzera pyrina*, Fab.), in shade trees; bag worm (*Thyridopteryx ephemeraeformis*, Steph.), on arbor vitæ; spruce gall aphid (*Chermes abietis*, Linn.), on spruce; pear leaf blister mite (*Eriophyes pyri*, Pgst. on pears and euonymus scale (*Chionaspis euonymi*, Comst.), on euonymus.

The most serious nursery pest of the season has been the

red spider. The Elizabeth Nursery Company has been able to control this creature by thoroughly spraying the infested conifers with concentrated lime-sulphur wash, one part to thirty-five parts of water, and Bobbink and Atkins have been successful in controlling it with "Scaline."

Seven nurseries are devoted entirely or largely to the production of fruit stock; thirty-seven to handling a small amount of fruits; twenty-five to peach trees only; fourteen to berry plants and forty-three to ornamental stock. These figures hardly do justice to the importance of the ornamental stock production for fully three-fourths of New Jersey's nursery production consists of ornamentals.

- | | |
|-----|---|
| No. | 1. Henry A. Dreer, Inc., Riverton, (general). |
| " | 2. A. H. Swain, Erma, (blackberry). |
| " | 3. George H. Peterson, Fair Lawn, (general). |
| " | 4. Albert Nelson, Allentown, (general). |
| " | 5. W. F. Lacroix, Buena, (lilac). |
| " | 6. Peter Flame, Minotola, (strawberry). |
| " | 7. K. M. van Gelderen, Long Branch, (general). |
| " | 8. James Ambacher, West End, (general). |
| " | 9. Victor J. Humbrecht, W. Windsor Township, (general). |
| " | 10. John Casazza, Vineland, (blackberry). |
| " | 11. Frank A. Breck, Vineland, (privet). |
| " | 12. Charles A. Bennett, Robbinsville, (general). |
| " | 13. John Ryan, Basking Ridge, (general). |
| " | 14. Henry Pfeiffer, Cologne, (general). |
| " | 15. George H. Leipe, Cologne, (general). |
| " | 16. J. Murray Bassett, Hammonton, (general). |
| " | 17. George W. Bassett, Hammonton, (general). |
| " | 18. F. E. Beugelaar, Rutherford, (general). |
| " | 19. Wm. Tricker, Arlington, (general). |
| " | 20. J. H. Baird, Englishtown, (special on peach buds only). |
| " | 21. Bobbink & Atkins, Rutherford, (general). |
| " | 22. The Julius Roehrs Co., Rutherford, (general). |
| " | 23. Duke's Farm, Somerville, (general). |
| " | 24. Amon Heights Nurseries, Inc., Merchantville, (general). |
| " | 25. Thomas W. Head, Bergenfield, (general). |
| " | 26. H. C. Steinhoff, West Norwood, (general). |
| " | 27. F. and F. Nurseries, Springfield, (general). |
| " | 28. Peter Henderson & Co., Jersey City Heights, (general). |
| " | 29. Emerson Pullen, Cranbury, (peach). |
| " | 30. Pullen & Co., Englishtown, (peach). |
| " | 31. Charles Black, Hightstown, (general). |
| " | 32. Jos. H. Black, Son & Co., Hightstown, (general). |
| " | 33. Samuel C. DeCou, Moorestown, (general). |
| " | 34. Harold Hornor, Mount Holly, (general). |
| " | 35. T. C. Kevitt, Athenia, (strawberry). |
| " | 36. W. A. Manda, Inc., South Orange, (general). |
| " | 37. J. T. Lovett, Little Silver, (general). |
| " | 38. Charles Schneider, Little Silver, (general). |
| " | 39. John Moore, Little Silver, (general). |
| " | 40. J. H. O'Hagan, Little Silver, (general). |
| " | 41. North Jersey Nurseries, Millburn, (general). |
| " | 42. Frank Lenz, Irvington, (general). |
| " | 43. Arthur J. Collins, Moorestown, (general). |
| " | 44. Mrs. N. P. Creely, Burlington, (strawberry). |

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- " 45. Smith & Haff, Plainfield, (general).
- " 46. Bound Brook Nursery Co., Bound Brook, (general).
- " 47. Henry E. Burr, East Orange, (general).
- " 48. A. A. Watts, Westfield, (general).
- " 49. Wm. O'Hagan, Asbury Park, (general).
- " 50. M. O'Hagan, Asbury Park, (general).
- " 51. Benjamin Connell, Merchantville, (general).
- " 52. Elizabeth Nursery Co., Elizabeth, (general).
- " 53. F. J. Tomlinson, Pottstown, (strawberry).
- " 54. C. A. Conover & Son, Lebanon, (peach).
- " 55. Hiram T. Jones, Elizabeth, (general).
- " 56. George A. Steele, Eatontown, (general).
- " 57. Mrs. E. P. McColgan, Red Bank, (general).
- " 58. Wm. S. Rose, Red Bank, (general).
- " 59. Charles Pinkernelly, Eatontown, (general).
- " 60. Hartung Bros., Jersey City, (general).
- " 61. J. F. Randolph, East Rutherford, (general).
- " 62. Charles Momm & Son, Irvington, (general).
- " 63. T. E. Steele, Palmyra, (general).
- " 64. K. E. de Waal Maleijt, Ridgewood, (general).
- " 65. Hammonton Nursery Co., Hammonton, (general).
- " 66. Hugo Kind, Hammonton, (general).
- " 67. Frank Koehler, Camden, (general).
- " 68. Estate Wm. Henry Maule, Hightstown, (dealer).
- " 69. S. T. Hillman, West Cape May, (dealer).
- " 70. J. W. Wooton, Arlington, (dealer).
- " 71. J. F. Noll & Co., Newark, (dealer).
- " 72. W. M. Howey, Sewell, (dealer).
- " 73. Richard Evans, Jr., Wenonah, (dealer).
- " 74. Wm. C. Evans, Sewell, (general).
- " 75. John McCleary, Sewell, (general).
- " 76. Charles A. Baird, Freehold, (general).
- " 77. George A. Shultz, Jamesburg, (peach).
- " 78. Samuel Brant, Madison, (peach).
- " 79. Edin Allen, Jr., New Brunswick, (general).
- " 80. Charles L. Stanley, Plainfield, (general).
- " 81. Alvah H. Reynolds, Madison, (general).
- " 82. Charles H. Totty, Madison, (greenhouse).
- " 83. Lager & Hurrell, Summit, (greenhouse).
- " 84. Mrs. W. S. Hertzog, Morris Plains, (general).
- " 85. James Clinton, Morris Plains, (general).
- " 86. James L. Hall, Farmingdale, (dealer).
- " 87. Dirk de Haas, Plainfield, (dealer).
- " 88. Garfield Williamson, Ridgefield, (dealer).
- " 89. John Bennett, Atlantic Highlands, (general).
- " 90. J. T. Garrison & Sons, Bridgeton, (strawberry).
- " 91. Ellsworth Pedrick, Bridgeton, (strawberry).
- " 92. J. E. Kuhns, Cliffwood, (strawberry).
- " 93. W. H. Polhemus, Robbinsville, (strawberry).
- " 94. Charles Bird, Arlington, (general).
- " 95. A. G. Freer, Manasquan, (general).
- " 96. Michael N. Borgo, Vineland, (general).
- " 97. Mrs. E. C. Eaton, Newark, (dealer).
- " 98. J. C. Williams, Montclair, (general).
- " 99. A. S. Wallace, Montclair, (dealer).
- " 100. Mansfield Eick, Lebanon, (peach).
- " 101. John W. Henry, Lebanon, (peach).
- " 102. Howard Philhower, Mountainville, (peach).
- " 103. Angar & Cregar, Fairmount, (peach).
- " 104. Willard Apgar, Fairmount, (peach).
- " 105. James Angar, Fairmount, (peach).
- " 106. E. A. Pierce, Vineland, (dealer).
- " 107. Luther A. Angar, High Bridge, (peach).
- " 108. J. H. Lindslev, White House, (peach).
- " 109. Samuel H. Wilson, Lebanon, (peach).
- " 110. Isaac Hildabrant, New Germantown, (peach).

STATE BOARD OF AGRICULTURE.

- " 111. J. Kaiser Davis, Chester, (peach).
- " 112. John Fleming, Califon, (peach).
- " 113. Mathias Fleming, Califon, (peach).
- " 114. W. S. Perry, Delaware, (general).
- " 115. Warren Shinn, Woodbury, (dealer).
- " 116. K. Herman Stoye, Eatontown, (dealer).
- " 117. J. D. Lindsley, Mendham, (general).
- " 118. James H. Vliet, Gladstone, (peach).
- " 119. Edward M. Pope, Bransboro, (general).
- " 120. John F. Leed, Waterford Works, (general).
- " 121. Willard B. Kille, Swedesboro, (strawberry).
- " 122. Peter V. Drake, Hopewell, (peach).
- " 123. David V. Higgins, Ringoes, (peach).
- " 124. Wilfred Everingham, Woodsville, (peach).
- " 125. Cicero Higgins, Ringoes, (general).
- " 126. R. D. Cole, Bridgeton, (general).
- " 127. Carlman Ribsam, Trenton, (general).
- " 128. W. H. Forrstel, Plainfield, (general).
- " 129. Peter Henderson & Co., Jersey City Heights, (special).
- " 130. Charles C. Owens Co., Orange, (dealer).
- " 131. W. Grant Schoenly, Dayton, (dealer).
- " 132. W. W. Lukens, Princeton, (dealer).
- " 133. J. Monroe Mattison, Englewood, (general).
- " 134. Samuel E. Blair, Nutley, (general).
- " 135. Wm. H. Morgan, Westmont, (general).
- " 136. George McNeill, Erma, (blackberry).
- " 137. Max. Rumprecht, Fort Lee, (general).
- " 138. P. J. Fithing & Son, Hammonton, (raspberry).
- " 139. Leonard J. Smith, Merchantville, (general).
- " 140. Wm. Bryan, Elberon, (dealer).
- " 141. W. G. Eisle, West End, (general).

During the spring of 1913, 6,659 cases of nursery stock came into New Jersey, of which 6,166 cases were inspected. Those not examined consisted of greenhouse-grown stock and Holland stock which came in during January and February. It was deemed neither practicable nor necessary to inspect them—impracticable because of lack of funds, and unnecessary because such stock had been found in the past universally free. Later experience has, however, led us to believe that the failure to examine any stock may prove to be a serious mistake. Accordingly the 5,928 cases received during the fall of 1913 were all examined. All told, New Jersey received 12,587 cases, containing at least 9,000,000 plants.

In the spring shipments, *Pseudaonidia paconiae* Ckll and *Pseudococcus azaleae* were found on azaleas from Japan, *Parlatoria pergandii*, Comst. on maples from Japan, *Diaspic pentagona* on *Prunus persicae* from Japan, *Aspidiotus hederæ* Vall., *A. brittannicus* Newst., and *Coccus hesperidum* Linn on bay trees from Belgium. The azaleas and *Prunus persicae* were destroyed, the maples re-shipped to consignor, and the bay trees cleaned before being sold.

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In the fall of 1913 white fly (*Aleyrodes Sp.*) was found on 33 shipments from Belgium, on 1 shipment from Holland and on one shipment of bouvardias from England, oyster shell scale, *Lepidosaphis ulmi* Linn., on fourteen shipments of box wood from Holland, *Coccus hesperidum* Linn., on nine shipments of bay trees from Belgium, *Pseudococcus Sp.* on one shipment of metrosideros from Belgium, two shipments of bays from Belgium, on five shipments of palms from Belgium, on one shipment of oleanders from Belgium and on shipment of bamboo canes from England, lace bug (tingitid) eggs on one shipment of rhododendrons from Belgium, *Aspidiotus hederae* Vall., on one shipment of oleanders from Belgium, one shipment of bays from Belgium, one shipment of palms from Belgium, one shipment of Yucca tricolor from England; *Aspidiotus brittannicus* Newst., on one shipment of bays from Belgium; *Chrysomphalus dictyosperni* Marg., on one shipment of palms from Belgium; *Chrysomphalus aonidum* Linn., on one shipment of palms from Belgium; limacodid eggs on one shipment of azaleas from Belgium, on one shipment of roses from Holland; *Hemichionaspis aspidistra* Sign. on one shipment of palms from Belgium, on one shipment of ferns from England; *Peronia Sp.* on one shipment of azaleas from Belgium; *Gracilaria Sp.* on one shipment of azaleas from Belgium; *Macrosargus cuprarius*, one specimen, on azaleas from Belgium. In the collections for the fall of 1903, *Aleyrodes Sp.*, and the oyster shell scale were the most numerous. Infestations by the other species were slight.

In addition to the cases of nursery stock received from foreign countries 135 cases came in during the fall from the moth-quarantine area of New England. Although these shipments had been twice inspected—once by the State inspector and once by the United States officials, a considerable percentage was re-inspected at point of destination.

For the purpose of giving an idea as to the relative importance of the sources of the stock, the writer submits the following table:

Country or State	Number of cases		Total
	Spring	Fall	
Belgium	3477	3634	7111
Denmark		3	3
England	91	142	233
France	143	45	188
Greece	2		2
Germany	41	244	285
Holland	2819	1807	4626
Ireland	18	41	59

Italy	2		2
Japan	59		59
Scotland	6	2	8
Spain	1	10	11
<hr/>			
Total from foreign countries			12587
Moth Quarantine are of New England			135
<hr/>			
Grand total			12722

Belgium is thus seen to furnish about 56 per cent, Holland about 36 per cent and the rest about 8 per cent.

For the purpose of showing the nature of the stock, the writer presents the following table:

Country.	Nature of the Stock.
Belgium	Bay trees, azaleas, palms and other greenhouse stock.
Denmark	
England	Roses and fruit.
France	Fruit stock, shrubs, evergreens.
Greece	
Germany	Greenhouse stock, roots, evergreens and fruit.
Holland	Box-wood, evergreens, rhododendrons, roses and fruit stock.
Ireland	Roses.
Italy	Grape vine cuttings.
Japan	Evergreens, fruit stock and shrubs.
Scotland	Roses.
Spain	Dracena canes.

Results.

The results of this year's work in inspecting nurseries is so much a part of the general improvement in nursery products that it is impossible to separate it. The full importance of this general improvement cannot be detected unless a comparison is drawn between the conditions of fifteen years ago and those of the present. Fifteen years ago nursery stock was sent hither and thither without let or hindrance. Insect pests and plant diseases were distributed broadcast. This condition continued until the discovery that San Jose scale had become distributed in the orchards of the east, and that it had unquestionably been distributed on nursery stock. Then laws were enacted and the foundations of the present system laid down. Now, as a direct result of the movement then started the nurserymen can get clean roots, scions and buds, and can and does produce a reliable, clean type of stock, and the grower is able to get good, clean, vigorous, healthy trees. Of course there are certain exceptions which offer chances for improvement; but in general the statement is true and corresponds to the conditions.

The result of the vigorous treatment of unsatisfactory stock sent into New Jersey by certain firms in other States has been a

decided improvement in the stock with which these firms furnish our people.

The rigid inspection of stock from foreign countries and from Brown-tail and Gypsy moth-infested parts of New England has had the effect of rendering the stock much cleaner than formerly. When the inspection of this dangerous class of stock was first taken up, large numbers of brown-tail moth nests were found and many eggs masses of the gypsy moth discovered. Last year an egg mass of the gypsy moth was found on azaleas from Belgium and a brown-tail moth nest in a box of stock from New Hampshire. This year no traces of either insect were discovered.

CONTROL OF INSECT OUTBREAKS.

Plant lice were remarkably abundant during the past summer, and many complaints were received. Letters of direction were sent and in some cases personal visits were made to afflicted localities.

It is of great interest to note that the past season has shown a great reduction in San Jose scale (*Aspidiotus perniciosus*, Comst.), apparently largely due to predaceous and parasitic enemies. In North Jersey practically every peach tree inspected had a dozen or more specimens of a lady bird beetle (*Smilia misella* Lec.). Considerable numbers of three species of San Jose scale parasites have been bred from scale-infested twigs. The species in question are *Prospaltella aurantii* How., *Aphelinus fuscipennis* How., and *Signiphora nigrita* Ashm. It begins to look as if the San Jose scale has now been long enough in New Jersey orchards for its natural enemies to get the upper hand, and for the scale consequently to assume the status of a native insect. This means, of course, a great reduction in its virulency. The grower should not, however, allow the good work the scale's natural enemies are doing to induce him to neglect spraying, because serious damage to both trees and crop is likely to follow such procedure.

Two complaints have been made that persons were maintaining plants infested with seriously injurious insects that were spreading from the infested planting into neighboring plantings. Examination showed that San Jose scale in both instances was thus being distributed. The person maintaining one of the nuisances has been

notified and it is expected he will treat his planting with scale-destroying spray. The second complainant later effected a satisfactory arrangement with the owner of the nuisance and withdrew his complaint.

The cranberry katydid (*Scudderia texensis* Sauss.), assisted by grasshoppers and possibly by crickets, stripped the berries from many acres of cranberry bogs. This damage appears to have been serious only where spraying and the usual cultural methods were neglected.

Areas in this State reported in the past to have been infested with gypsy moth have this year been kept under most careful observation; but no evidence of infestation has been discovered.

The rose bug (*Macroractylus subspinosus* Fab.) appeared in parts of Central and South Jersey in sufficient numbers to form a serious outbreak. The arsenate of lead and glucose treatment proved a satisfactory means of control.

We have this year to record the discovery of an injurious European insect, new to this country. This is the pine beetle (*Myelo-philus piniperda* Linn.), a species known for many years as injurious to European conifers, particularly the Scotch fir. The adult beetles attack the terminal twigs and by hollowing them out destroy them. This compels the side twigs to continue the growth of the tree, resulting in an unsightly crooked stem resembling the deformity produced by the work of the white pine weevil. This insect has been found in only one place, and that one of our large nurseries. All other nurseries within the limits of the State growing conifers have been carefully examined; but no traces of the beetle have been found. It is impossible to say whether this creature has any foothold, or whether it will prove seriously injurious even if it should have obtained one. It is likely, however, that it has obtained a start in one locality and that it will prove injurious. This opinion is based on the fact that the damage this season was done by the adult beetles, which should have been bred during the summer and which must have, therefore, been produced in the locality where their damage appeared, and on the further fact that they did kill some of the terminal shoots of Scotch fir in the nursery where they appeared. This beetle will be kept under constant observation, and if possible eradicated.

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While inspecting nurseries in the northern part of the State during August, a buprestid gall was found by Mr. Weiss on Standard roses, which had been imported from Holland the preceding spring. At one nursery it was necessary to destroy \$200 worth of infested stock, and at another it required two men for a period of ten days to cut and burn the infested *Rosa rugosa*. At the present time there is no record of *Agrilus* sp. (the larva has been identified by Mr. Weiss, whose determination was confirmed by Mr. F. H. Chittenden as belonging to this genus) infesting *Rosa rugosa*. A letter from the office of the Holland official in charge of nursery stock inspection indicates that nothing is known there of such an insect.

The hickory bark beetle (*Scolytus quadrispinosus*, Say) has in certain parts of New Jersey, especially about the cities of Paterson and Madison, assumed the character of a terrible pest. It appears in these localities to be almost as destructive to the hickory as the chestnut bark disease is to the chestnut. As yet no really satisfactory measures of control have been devised; but the entomological department of the New Jersey Agricultural Experiment Stations is now engaged in making a study of the subject.

BEE WORK—GENERAL STATEMENT.

In planning the bee-disease control work for the past year the writer and his deputy, Mr. E. G. Carr, decided (1) to select several counties which, because of their location, would prove least liable to reinfection after the diseases then present had been brought under control, examine every colony within their limits, cause all cases of disease to be treated, and to follow the situation in these counties for the next few years for the purpose of stamping the bee diseases out of at least one part of the State; (2) to investigate as the law provides all complaints of the existence of disease in apiaries or other places where bees are kept; (3) to carry on a campaign of education as a means of teaching bee-keepers to protect their bees against diseases.

CONTROL OF DISEASES IN A LIMITED AREA.

Salem, Cumberland, Cape May and Atlantic Counties were selected, and the first year's work as planned carried out. Disease was found in all except Atlantic.

These counties had 180 apiaries, in 40 of which foul-brood was found. In Salem and Cumberland Counties both American and European foul brood were discovered, while in Cape May only the latter appeared. Of the total number of colonies, 1,252, 11.5 per cent were infested with one of the brood diseases, 1 per cent with American and 10 per cent with European.

Of the 1,252 colonies found in these counties 800 were in some style of movable frame hive and 452 in box hives.

INVESTIGATION OF COMPLAINTS.

In addition to an effort to stamp out serious bee diseases in a certain part of the State, Mr. Carr has answered twenty-one requests for inspection. The number of persons requesting inspection this year is three times as great as that requesting the same service last year.

Summary of Inspections.

A case of bee disease came to our notice in June, 1913, the exact nature, cause and remedy for which we were unable to find. This trouble occurred in Monmouth County and caused the death of very young adult bees. No larvæ were affected. While poisoning was suspected it was not proven. This trouble resulted in a loss to our bee-keeper of about \$300 worth of honey crop. A yard of bees less than two miles away was not affected. The trouble ceased when the bees were moved.

All told, 337 apiaries, including 2,932 colonies of bees, were examined. Of these 2,326 were in some type of movable frame hive and 606 were in boxes and kegs. There were 81 cases of American foul brood and 238 cases of European.

Education.

In bringing the brood diseases of bees under control nothing is so important as education. We have found that a certain degree of it must precede law enforcement itself or the lack of co-operation if not active opposition of the bee-keepers will prevent the efforts of the inspector from accomplishing the object for which they are put forth.

REPORT OF PLANT PATHOLOGIST.

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Accordingly, exhibits of bee-keeping materials, processes and results, have been placed at various fairs—Trenton, Elizabeth, Monmouth County, etc. Lectures on bee keeping have been delivered to special students in the New Jersey State Agricultural Collge, to farmers' institutes and to granges.

A manual of bee husbandry well illustrated largely with original drawings and photographs has been prepared and is ready for publication.

NEEDS.

The principal need in nursery and foreign stock inspection and insect outbreak control is sufficient funds to continue the careful inspection now in force, and the prompt application of control measures now customary when insect outbreaks occur. Some States are now inspecting all nursery stock coming into the State regardless of its source, and it may be that all will have to come to that point. At the present time New Jersey inspects only a part of the stock received in interstate shipments and all of its importations.

With the present funds the methods now in use for bee-disease control are the ones likely to bring best results and to prepare our people for more far-reaching and complete work in the future. It is our belief that quick and satisfactory control of bee diseases can be achieved only when sufficient funds are provided (about \$6,000 annually) to permit the examination of every colony of bees in New Jersey each year and the re-examination of diseased colonies as often as the case demands.

Report of the State Plant Pathologist.

Melville T. Cook, Ph.D.

Gentlemen:—

The undersigned presents the following report:

(1) All the nurseries of the State have been inspected and certificates issued as indicated below. The greater part of the inspection was done by Mr. Edgar L. Dickerson, who was appointed special assistant for the months of July and August, 1913. Mr. Dickerson's familiarity with the nursery interests of the State

and his long experience as an inspector makes him an exceptionally efficient worker. Some of the inspection work was done by the writer and some by Mr C. A. Schwarze, the regular assistant, and some few by Mr. H. B. Weiss of the Department of Entomology.

The following nurseries were certificated during 1913:

- | | |
|-----|---|
| No. | 1. Henry A. Dreer, Inc., Riverton. |
| " | 2. A. H. Swain, Erma. |
| " | 3. Geo. H. Peterson, Fair Lawn. |
| " | 4. Albert Nelson, Imlaystown. |
| " | 5. W. F. Lacroix, Buena. |
| " | 6. Peter Flame, Manatola. |
| " | 7. K. M. Van Geederen, Long Branch. |
| " | 8. Jas. Ambacker, West End. |
| " | 9. Victor Hummrecht, West Windsor Township. |
| " | 10. John Casazza, Vineland. |
| " | 11. Frank A. Breck, Vineland. |
| " | 12. Chas. A. Bennett, Robbinsville. |
| " | 13. John Ryan, Basking Ridge. |
| " | 14. Henry Pfeiffer, Cologne. |
| " | 15. Geo. H. Liepe, Cologne. |
| " | 16. J. Murray Bassett, Hammonton. |
| " | 17. Geo. W. Bassett, Hammonton. |
| " | 18. F. E. Bengelaer, Rutherford. |
| " | 19. Wm. Tricker, Arlington. |
| " | 21. Bobbink & Atkins, Rutherford. |
| " | 23. J. B. Duke, Somerville. |
| " | 24. Amon Heights Nursery, Inc., Camden. |
| " | 25. T. W. Head, Bergenfield. |
| " | 26. H. C. Steinhoff, West Norwood. |
| " | 27. Wm. Flemer, Springfield. |
| " | 28. Peter Henderson & Co., Jersey City Heights. |
| " | 29. Emerson Pullen, Cranbury. |
| " | 30. Pullen & Co., Englishtown. |
| " | 31. Chas. Black, Hightstown. |
| " | 32. Jos. H. Black, Son & Co., Hightstown. |
| " | 33. Samuel C. DeCou, Moorestown. |
| " | 34. Harold Horner, Mount Holly. |
| " | 35. T. C. Kevitt, Athenia. |
| " | 36. W. A. Manda, Inc., South Orange. |
| " | 37. J. T. Lovett, Little Silver. |
| " | 38. Chas. Schneider, Little Silver. |
| " | 39. John Moore, Little Silver. |
| " | 40. J. H. O'Hagan, Little Silver. |
| " | 41. E. D. Pannell, Milburn. |
| " | 42. Frank Lenz, Irvington. |
| " | 43. Arthur J. Collins, Moorestown. |
| " | 44. Mrs. N. P. Creely, Burlington. |
| " | 45. Smith & Haff, Plainfield. |
| " | 46. Bound Brook Nursery Co., Bound Brook. |
| " | 47. Henry E. Lurr, South Orange. |
| " | 48. A. A. Watts, Westfield. |
| " | 49. Wm. O'Hagen, Asbury Park. |
| " | 50. M. O'Hagen, Asbury Park. |
| " | 51. Berj. Cornell, Mercantville. |
| " | 52. Elizabeth Nursery Co., Elizabeth. |
| " | 53. F. J. Tomlinson, Pittstown. |
| " | 54. C. A. Conover & Son, Lebanon. |
| " | 55. Hiram T. Jones, Elizabeth. |
| " | 56. Geo. A. Steele, Fatontown. |
| " | 57. Mrs. E. P. McColegan, Red Bank. |
| " | 58. Wm. S. Rose, Red Bank. |

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59. Chas. Pinkernelly, Eatontown.
60. Haitung Bros., Jersey City.
61. John F. Randolph, Rutherford.
62. Chas. Momm & Sons, Irvington.
63. T. E. Steele, Palmyra.
64. K. E. de Waal Malefyt, Ridgewood.
65. W. H. French, Hammonton.
66. Hugo Kind, Hammonton.
67. Frank Koehler, Camden.
74. Wm. C. Evans, Sewell.
75. John McCleary, Sewell.
76. Chas. A. Baird, Freehold.
77. Geo. A. Shultz, Jamesburg.
78. Samuel Brant, Madison.
79. Edw n Allen, Jr., New Brunswick.
80. Chas. L. Stanley, Plainfield.
81. Alvah H. Reynolds, Madison.
82. Chas. H. Totty, Madison.
83. Lager & Hurrell, Summit.
84. Mrs W. S. Hertzog, Morris Plains.
85. Jas. Clinton, Morris Plains.
88. Garfield Williamson, Ridgefield.
89. John Bennett, Atlantic Highlands.
90. J. T. Garrison & Sons, Bridgeton.
91. Ellsworth Pedrick, Br dgeton.
92. J. E. Kuhns, Cliffwood.
93. W. H. Polyhemus, Robbinsville.
94. Chas. Bird, Arlington.
95. A. G. Freer, Manasquan.
96. Michael N. Borgo, Vineland.
98. J. C. Williams, Montclair.
100. Mansfield Eich, Bissell.
101. John W. Hervey, Lebanon.
102. Howard Philhower, Mountainville.
103. Apgar & Cregar, Fairmount.
104. Willard Apgar, Fairmount.
105. Jas. Apgar, Fairmount.
107. Luther A. Apgar, High Bridge.
108. J. H. Lindsley, White House.
109. Samuel H. Wilson, Lebanon.
110. Isaac Hildabrant, New Germantown.
111. J. Kaiser Davis, Chester.
112. John Fleming, Parker.
113. Mathias Fleming, Parker.
114. U. S. Perry, Vails.
117. J. D. Lindsley, Mendham.
118. Jas. H. Vliet, Gladstone.
119. Ed. M. Pope, Barnsboro.
120. John F. Leeds, Waterford Works.
121. Willard Kille, Swedesboro.
122. P. V. Drake, Hopewell.
123. Dav'd V. Higgins, Ringoes.
124. Wilfred Everingham, Woodsville.
125. Cicero Higgins, Ringoes.
126. R. D. Cole, Bridgeton.
127. Carlman Ribsam, Trenton.
128. W. H. Forristel, Plainfield.
133. J. Monroe Mattison, Englewood.
134. Samuel E. Blair, Nutley.
135. Brookview Nursery, Westmont.
137. Max Rumprecht, Fort Lee.
138. J. P. Fitting & Son, Hammonton.
139. Leonard J. Smith, Merchantville.
141. W. G. Eisele, West End.

The nurserymen very generally expressed a willingness to co-operate with the work of the department, and in some cases called our attention to diseases which might otherwise have been overlooked.

In addition to the regular inspection, all those nurseries carrying white pine stock were inspected in the spring of 1913 for the white pine blister rust. Only two nurseries were found to be infected, and all of their white pine stock was destroyed.

Crown Gall (*Pseudomonas tumefaciens*, Smith & Townsend) was found in several nurseries, but the nurserymen are coming to appreciate the importance of this disease and are eradicating it voluntarily. Our greatest problem in connection with this disease is the bush berries. It is practically impossible to get many varieties of bush berries free from this pest, and insistence on absolutely clean stock would prove a great injury to the industry. However, it is no doubt true that these plants are largely responsible for the spread of the disease. We have insisted that no plants be marketed which show the disease.

Fire Blight (*Bacillus amylovorus*, (Burr) DeToni) of the apple and pear was quite severe in both orchard and nursery.

Scab of the apple (*Venturia pomi*, Mont. & Fr.) Sacc.) and of the pear (*V. pyrina* Aderh.), were abundant in both orchard and nursery.

Black Rot (*Sphaeropsis malorum*, Pk.) was quite severe on quince nursery stock.

Double Blossom (*Fusarium rubi*, Wint.) is quite common on several varieties of bush berries, but the nurserymen are responding to our efforts to control this pest.

In general it may be said that the nurseries were in much better condition than in 1912.

FARM INSPECTIONS.

During the summer of 1913 we responded to a number of calls for inspection of orchards, wood lots and farms, the greatest number of calls coming from the potato growers.

REPORT OF PLANT PATHOLOGIST.

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INSPECTION OF IMPORTED STOCK.

For the inspection of the imported stock, we co-operated with the Department of Entomology, dividing the work so far as possible and the assistant inspectors making examinations for both diseases and insects. The shipments from other States were in much better condition than those of 1912, and we have had occasion to destroy but a very small amount of stock. However, we have had occasion to destroy one rather large shipment from Europe. It is very evident that our inspection in 1912 resulted in giving us better stock in 1913.

OUTBREAKS.

Several diseases deserve special mention.

(1) The chestnut bark disease (*Endothia parasitica*, Murrill) continues as the most remarkable epidemic of modern times. Its severity is only reduced by the previous destruction of the chestnut. It is now very generally conceded that the fungus is of Asiatic origin.

(2) The leaf curl of the peach (*Exoascus deformans* (Berk) Fuckel) was quite severe in many parts of the State. Its severity was primarily due to the sudden coming of the warm weather and the consequent rapid blooming of the trees, which in many cases prevented the proper spraying with lime-sulphur.

(3) The sweet potato diseases were not so severe as in 1912.

(4) The most severe outbreak of the year was the potato diseases, which caused exceptionally heavy losses. They were as follows:

Bacterial Rot (*Bacillus vulgaris* (?)).—This disease appeared as a rotting of the tubers, and was the cause of many complaints from various parts of the State. Some of the seed from Maine contained numerous rotten potatoes, and the plantings from these lots suffered a greater loss than the plantings from seed that were not so affected. The cold wet weather the latter part of March made this rot exceptionally severe.

Southern Bacterial Wilt (*Bacillus solanacearum*, E. F. Smith).—This disease, also known as "sleeping sickness," attacks po-

tatoes, tomatoes, egg plants, peppers and tobacco. It was especially severe this year and was the most important cause of our shortage of crop. It is always most severe in very dry seasons and on dry soils. It has been known in the State on tomatoes since 1903.

Black Leg (*Bacillus phytophthorus*, Appel.)—This well-known disease was quite severe throughout the southern half of the State and was second in importance as the cause of our shortage.

Scab (*Oospora scabies*, Thaxt.)—This disease was fully as severe as in the past years except in those localities where the growers used the formaldehyde treatment for their seed. This treatment was so successful that many more may be expected to use it next year.

Russet Scab (Cause undetermined).—A peculiar russetting was common in many parts of the State. It is one of the subjects for further study.

Scurf (*Corticium vagum*, B. & C., var. *solani*, Burt.)—This very widely distributed disease was much more severe this year than usual. It was especially severe on the late crops, and was one of the very important factors in reducing the yield.

Silver Scurf (*Spondylocladium atrovivens*, Harz.)—This newly introduced European disease was very common on the Maine seed. Its seriousness is a problem for the future.

Dry Rot and Wilt (*Fusarium oxysporium*, Schlecht.)—This well-known disease was about equally severe as in 1912, and is one of the diseases with which our growers must contend.

Early Blight (*Alternaria solani* (E. & M.) S. & G.)—This disease was of very little importance this year.

Late Blight (*Phytophthora infestans*, De By.)—This disease was of very little importance in our field. However, some of the Maine seed was thrown away because of affected tubers.

(5) A complete list of the plant diseases reported in 1913 will be found in the Annual Report of the New Jersey Agricultural Experiment Station.

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EXPERIMENTAL WORK.

Appreciating the great difficulties confronting both the nurserymen and the farmer, we have the following experimental work in progress:

(1) Experiments for the control of the diseases of the potato in co-operation with the New Jersey Agricultural Experiment Station and the growers.

(2) Experiments for the control of the diseases of the orchards in co-operation with the New Jersey Agricultural Experiment Station and the orchardists.

(3) Experiments for the control of the crown gall in co-operation with the New Jersey Agricultural Experiment Station and one of the leading nurseries of the State.

(4) Experiments for the control of the fungus diseases of coniferous seedlings in co-operation with the New Jersey Agricultural Experiment Station and one of the leading nurseries of the State.

(5) Experiments on the chestnut blight in co-operation with the New Jersey Agricultural Experiment Station and the United States Bureau of Plant Industry.

Mr. Guy West Wilson, Special Agent of the United States Department of Agriculture, is stationed at New Brunswick for this particular work.

(6) Our studies of fruit diseases in both orchard and nursery emphasizes the impossibility of absolutely controlling peach yellows and little peach by inspection. Therefore, we co-operated with the Department of Horticulture in offering the nurserymen a limited number of peach buds from the State Orchard. These buds were taken from bearing trees that had been under observation for several years and which we had every reason to believe to be free from the above diseases. Seventeen nurserymen availed themselves of this offer, but one application was made too late to be filled. More than 30,000 buds were distributed. The list of nurseries and the variety they received is given in the following table:

	Stevens Rare Ripe	Early Crawford	Late Crawford	Champion	Miss Lolo	Arp Beauty	Edgemont	Francis	Fox Seedling	Stump	Belle of Georgia	Carman	Elberta
Willard Apgar, Califon	x			x	x						x	x	x
Jos. H. Black, Son & Co., Hightstown	x	x	x	x		x			x		x	x	x
Bound Brook Nurseries, Bound Brook	x	x	x	x	x	x	x	x	x	x	x	x	x
Samuel Brant, Madison	x			x	x	x	x	x	x	x	x	x	x
R. D. Cole, Bridgeton	x	x	x	x					x	x	x	x	x
C. A. Conover & Son, Lebanon	x	x	x	x		x	x		x	x	x	x	x
J. K. Davis, Chester	x		x	x					x	x	x	x	x
F. & F., Springfield	x	x	x	x	x				x	x	x	x	x
John Fleming, Califon	x					x				x		x	
Matthias Fleming, Califon	x		x	x					x	x	x	x	x
Cy. Gousett Allendale *	x	x	x							x			
L. D. Lindsley, Mendham	x			x						x	x	x	x
J. T. Lovett, Little Silver	x				x								
John McCleary & Son, Sewell	x			x				x			x	x	
W. S. Perry, Delaware	x	x	x	x	x		x	x	x	x	x	x	x
Howard N. Philhower, Mountainville	x		x	x	x	x	x	x	x	x	x	x	x
Samuel H. Wilson, Lebanon	x		x	x					x	x	x	x	x

* Not a nurseryman.

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PUBLICATIONS.

The following publications have been issued during the year :

1. Press Bulletin No. 7, by the State Board of Agriculture, on "Winter Treatment of Peaches and Pears."

2. A Circular (No. 18), by the Extension Department of the New Jersey Agricultural Experiment Station, on "Potato Diseases and Methods of Control."

3. A short paper on "The Jonathan Spot Rot," by Mel. T. Cook and G. W. Martin, in *Phytopathology* (3; 119, 120).

4. A short paper on "A Botrytic Disease of Dahlias," by Mel. T. Cook and C. A. Schwarze, in *Phytopathology* (3; 171-173).

The following publications will be issued in the near future by the New Jersey Agricultural Experiment Station :

"Potato Diseases in New Jersey."

"Crown Gall and Hairy Root."

"Diseases of Nursery Stock."

"Treatment of Seed Wheat for Smut."

ROSTER OF NEW JERSEY STATE GRANGE

OFFICERS OF THE STATE GRANGE OF NEW JERSEY P. of H., 1914

MASTER—G. W. F. Gaunt, Mullica Hill, Gloucester County.
OVERSEER—John M. Woolman, Elmer, Salem County.
LECTURER—David H. Agans, Three Bridges, Hunterdon County.
STEWARD—Frank O. Ware, Deerfield, Cumberland County.
ASSISTANT STEWARD—C. C. Basley, Farmingdale, Monmouth County.
CHAPLAIN—Evi Vandruff, Sussex, Sussex County.
TREASURER—Charles Collins, Moorestown, Burlington County.
SECRETARY—John T. Cox, Three Bridges, Hunterdon County.
GATE KEEPER—D. Howard Jones, Freehold, R. D., Monmouth County.
CERES—Hester G. Hildreth, Rio Grande, Cape May County.
POMONA—Eliza Perrine, Cranbury, Middlesex County.
FLORA—Louisa Mabie, Westwood, Bergen County.
LADY ASSISTANT STEWARD—Phebe Hutchinson, Robbinsville, Mercer County.

EXECUTIVE COMMITTEE.

GEORGE W. F. GAUNT, Mullica Hill, Gloucester County.
ALBERT HERITAGE, Mickleton, Gloucester County.
A. G. VAN NEST, Neshanic Station, R. D. No. 1, Somerset County.
H. M. LOVELAND, Bridgeton, R. D. No. 8, Salem County.
A. W. FUND, Chatham, Morris County.
JOHN T. COX, Three Bridges, Hunterdon County.

STATE GRANGE MEETS FIRST TUESDAY IN DECEMBER, 1914

COUNTY DEPUTIES.

ATLANTIC—Henry Pfeiffer, Cologne, Atlantic County.

BERGEN—A. I. Ackerman, Ridgewood, R. D. No. 2, Bergen County.

BURLINGTON—Joseph Engle, Mount Holly, Burlington County.

David L. Ballinger, Moorestown, Burlington County.

CAMDEN—John M. Garwood, Ashland, Camden County.

CAPE MAY—A. T. D. Howell, Dias Creek, Cape May County.

CUMBERLAND—Walton E. Davis, Shiloh, Cumberland County.

ESSEX—A. W. Fund, Chatham, R. D., Morris County.

GLOUCESTER—Alvin L. Gaventa, Swedesboro, Gloucester County.

I. B. Pancoast, Clayton, Gloucester County.

HUNTERDON—Joseph Bodine, Flemington, Hunterdon County.

Frank V. D. Fisher, Stockton, R. D. No. 2, Hunterdon County.

MERCER—C. Newton Hutchinson, Robbinsville, Mercer County.

MIDDLESEX—W. H. Havens, Cranbury, Middlesex County.

MONMOUTH—D. Howard Jones, Freehold, Monmouth County.

MORRIS—A. W. Fund, Chatham, R. D., Morris County.

OCEAN—D. Howard Jones, Freehold, Monmouth County.

PASSAIC—D. Henniger, Paterson, R. D. No. 2, Passaic County.

SALEM—Maxwell W. Buzby, Woodstown, Salem County.

SOMERSET—H. W. Kline, New Brunswick, R. D. No. 6, Somerset County.

SUSSEX—E. W. Clark, Sussex, Sussex County.

Sanford J. Crown, Newton, R. D., Sussex County.

UNION—A. W. Fund, Chatham, R. D., Morris County.

WARREN—James I. Cooke, Delaware, R. D. No. 2, Warren County.

WOMEN'S WORK COMMITTEE—Eudora N. Rue, Windsor; Mary Ella Vanaman,
Dias Creek; Mabel Lippincott, Marlton.

FINANCE COMMITTEE.

WILLIAM H. BORDEN, Mickleton.

J. T. ALLISON, Robbinsville.

WALTER H. HAVENS, Cranbury.

1914, POMONA GRANGES.

MASTERS AND SECRETARIES WITH POST OFFICE ADDRESSES.

BURLINGTON CO., No. 1.

Master, Henry S. Lippincott, Marlton, N. J.

Secretary, Wm. B. Shedaker,, Burlington, N. J.

Meets fourth Tuesday in January, April, July and October.

SUSSEX CO., No. 2.

Master, Robt. L. Everett, Lafayette, N. J.

Secretary, George C. Smith, Hamburg, N. J.

Meets first Saturday in January and October; third Saturday in April and July.

HUNTERDON CO., No. 3.

Master, William E. Rittenhouse, Sergeantsville, N. J.

Secretary, Edward P. Nief, Flemington, N. J., R. D. No. 2.

Meets second Friday in January, April, August and October.

CUMBERLAND CO., No. 4.

Master, William H. Taylor, Millville, N. J.

Secretaray, L. F. Glaspey, Shiloh, N. J.

Meets second Tuesday in January, April, July and October.

MERCER CO., No. 5.

Master, N. F. Woodward, Pennington, N. J.

Secretary, T. A. Bolmer, Rocky Hill, N. J.

Meets March 4th, Hopewell; June 3rd, Ewing; September 2nd, Hightstown; November 18th, Hamilton Square.

SALEM CO., No. 6.

Master, Clifford Crispin, Salem, N. J.

Secretary, Minnie C. Wilkinson, Woodstown, N. J.

CAMDEN AND ATLANTIC COS., No. 7.

Master, A. J. Stevens, Blackwood, N. J.

Secretaray, Harry E. Horner, Merchantville, N. J.

Meets second Saturday in January, Haddonfield; last Saturday in April, July and October at Berlin, Blue Anchor and Blackwood.

STATE BOARD OF AGRICULTURE.

GLOUCESTER CO., No. 8.

Master, Albertus Orr, Swedesboro, N. J.

Secretary, Lidie Hoffman, Clarksboro, N. J.

CENTRAL DISTRICT, No. 9.

Master Ehler Wettyn, Caldwell, N. J.

Secretary, E. Oscar DeCamp, Roseland, N. J.

Meets fourth Wednesday in January, April and October.

WARREN CO., No. 10.

Master, N. Warne, Broadway, N. J.

Secretary, Henry Race, Washington, N. J.

Meets January, May, September and November.

BERGEN CO., No. 11.

Master, E. M. Lyman, Park Ridge, N. J.

Secretary, L. Pikaart, Midland Park, N. J.

Meets February, April, October and December.

MONMOUTH CO., No. 12.

Master, Henry W. Herbert, Englishtown, N. J.

Secretary, S. B. Wells, Marlboro, N. J.

Meets second Saturday in March, June, September and December.

MIDDLESEX AND SOMERSET COS., No. 13.

Master, A. G. Van Nest, Neshanic Station, N. J.

Secretary, H. W. Kline, New Brunswick, R. D. No. 6, N. J.

Meets third Thursday in January, April, August and October.

CAPE MAY CO., No. 14.

Master, Frank E. Bate, Fishing Creek, N. J.

Secretary, Eli Townsend, Stone Harbor, N. J.

SUBORDINATE GRANGES.

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SUBORDINATE GRANGES.

PIONEER, No. 1. Master, A. J. Titus, Cranbury, R. D. No. 1, Middlesex, N. J.
Secretary, J. E. Chamberlain, Cranbury Station, N. J.
Lecturer, W. H. Havens, Cranbury, N. J.
Meets second and fourth Tuesday evenings at Cranbury, N. J.

MARL RIDGE, No. 2. Master, William H. Davis, Cream Ridge, Monmouth County.
Secretary, Earl C. Jameson, New Egypt, Monmouth County.
Lecturer, Mrs. Emily Buck, New Egypt, Monmouth County.
Meets first and third Friday afternoons.

HAMMONTON, No. 3. Master, W. Wallace Mayberry, Hammonton, Atlantic County.
Secretary, Mrs. W. Wallace Mayberry, Hammonton, Atlantic County.
Lecturer, Mrs. Orville Basset, Hammonton, Atlantic County.
Meets first and third Fridays.

SWEDESBORO, No. 5. Master, William Rainey, Swedesboro, Gloucester County.
Secretary, Minnie Young, Swedesboro, Gloucester County.
Lecturer, Ella H. Brown, Swedesboro, Gloucester County.
Meets every Wednesday evening in Black's Hall.

SOMERSET, No. 7. Master, H. W. Kline, New Brunswick, R. D. No. 6, Somerset County.
Secretary, Mrs. Maud M. Goodrich, Middlebush, Somerset County.
Lecturer, Mrs. C. J. Wilson, Middlebush, Somerset County.
Meets second and fourth Wednesday in Wyckoff's Hall, Middlebush.

MOORESTOWN, No. 8. Master, Aubrey S. Walton, Moorestown, Burlington County.
Secretary, Sadie E. Collins, Moorestown, Burlington County.
Lecturer, Marianna L. Coles, Moorestown, Burlington County.
Meets Thursday afternoons November to April; alternate Thursday evenings balance of year, Grange Hall.

WOODSTOWN, No. 9. Master, J. Gilbert Bo ton, Woodstown, Salem County.
Secretary, M. W. Buzby, Woodstown, Salem County.
Lecturer, Tacie C. Bromell, Woodstown, Salem County.
Meets Wednesday evenings in Peterson's Hall.

STATE BOARD OF AGRICULTURE.

- VINELAND, No. 11. Master, William C. Parsons, Vineland, Cumberland County.
Secretary, Mrs. M. E. Hendrickes, South Vineland, Cumberland County.
Lecturer, Mrs. William C. Parsons, Vineland, Cumberland County.
Meets Saturday afternoons, Grange Hall, Landis Avenue.
- RINGOES, No. 12. Master, Frank L. Trout, Ringoes, R. D. No. 1, Hunterdon County.
Secretary, J. S. Williamson, Ringoes, R. D. No. 2, Hunterdon County.
Lecturer, Miss Jessie Fullerton, Ringoes, R. D. No. 1, Hunterdon County.
Meets first and third Saturday evenings, second and fourth Saturday afternoons, in Grange Hall.
- HOPEWELL, No. 16. Master, Eric Carlson, Bridgeton, R. D. No. 1, Cumberland County.
Secretary, Walton E. Davis, Shiloh, Cumberland County.
Lecturer, Auley C. Davis, Shiloh, Cumberland County.
Meets every Wednesday night, Grange Hall, at Shiloh.
- CUMBERLAND, No. 18. Master, Samuel L. Watson, Greenwich, Cumberland County.
Secretary, J. Henry Bacon, Greenwich, Cumberland County.
Lecturer, Anna T. Goodwin, Greenwich, Cumberland County.
- FENWICK, No. 20. Master, John P. Ridgeway, Hancock's Bridge, Salem County.
Secretary, Anna E. Harris, Harmersville, Salem County.
Lecturer, Susie Ridgeway, Hancock's Bridge, Salem County.
Meets at Harmersville, Grange Hall, Thursday evenings.
- MANNINGTON, No. 25. Master, Frank Austin, Woodstown, Salem County.
Secretary, Lida N. Hamilton, Salem, Salem County.
Lecturer, Acsa Austin, Woodstown, Salem County.
Meets Tuesday evenings at Mannington.
- HARRISONVILLE, No. 26. Master, Leroy Jordan, Woodstown, Gloucester County.
Secretary, Belle Kirby, Harrisonville, Gloucester County.
Lecturer, Mary H. Urion, Harrisonville, Gloucester County.
Meets Tuesday evenings at Harrisonville.
- ELMER, No. 29. Master, Jacob Schwertly, Monroeville, Salem County.
Secretary, Mary W. Gaunt, Monroeville, Salem County.
Lecturer, Laura A. Evans, Elmer, Salem County.
Meets Wednesday evenings in Garrison's Hall at Elmer, Salem County.
- BRIDGEPORT, No. 32. Master, Carman Richardson, Swedesboro, Gloucester County.
Secretary, Charles B. Vickery, Bridgeport, Gloucester County.
Lecturer, Ella H. Vickery, Bridgeport, Gloucester County.
Meets Tuesday nights in Grange Hall at Bridgeport.
- CEDARVILLE, No. 34. Master, A. H. Westcott, Fairton, Cumberland County.
Secretary, L. R. Diamant, Cedarville, Cumberland County.
Lecturer, Margarette Starkey, Fairton, Cumberland County.
Meets first and third Thursday evenings at Cedarville.

SUBORDINATE GRANGES.

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- MEDFORD**, No. 36. Master, Eckard J. Ballinger, Medford, Burlington County.
 Secretary, Bessie A. Haines, Medford, Burlington County.
 Lecturer, Mary E. Cowperthwaite, Medford, Burlington County.
 Meets Thursday afternoons from December 1 to April 1; first and third
 Thursday afternoons of April, May, September, October and No-
 vember; first and third Monday nights of June, July and August.
- HADDON**, No. 38. Master, Howard Garwood, Haddonfield, Camden County.
 Secretary, Wesley R. Stafford, Marlton, R. D. No. 3, Camden County.
 Lecturer, Amelia Bates, Haddonfield, Camden County.
 Meets Wednesday afternoons. November to April; Saturday evenings,
 balance of the year.
- MANTUA**, No. 39. Master, Alexander Burt, Wenonah, Gloucester County.
 Secretary, H. C. Viereck, Wenonah, Gloucester County.
 Lecturer, Deborah Kirkbride, Sewell, Gloucester County.
 Meets Monday evenings, Noblit's Hall, Wenonah.
- WINDSOR**, No. 40. Master, B. T. Emmons, Trenton, R. D. No. 2, Mercer County.
 Secretary, R. D. Perrine, Windsor, Mercer County.
 Lecturer, Mrs. Laura Waddy, Windsor, Mercer County.
 Meets second and fourth Tuesdays.
- HOPE**, No. 43. Master, Leslie Platts, Bridgeton, R. D. No. 3, Cumberland County.
 Secretary, Elizabeth Miller, Bridgeton, R. D. No. 4, Cumberland County.
 Lecturer, Mrs. Mary D. Miller, Bridgeton, R. D. No. 2, Cumberland
 County.
 Meets first and third Tuesday evenings in Grange Hall.
- MARLTON**, No. 45. Master, J. Orville Evans, Marlton, R. D. No. 1, Burlington
 County.
 Secretary, Caroline S. E. Wills, Marlton, R. D. No. 1, Burlington County.
 Lecturer, Florence Winner, Marlton, R. D. No. 1, Burlington County.
 Meets in Endicott's Hall, Tuesday afternoons, December to March; first
 and third Tuesday evenings, balance of year.
- PEMBERTON**, No. 50. Master, Elmer J. Fort, Vincentown, Burlington County.
 Secretary, Frank M. Hargrove, Vincentown, Burlington County.
 Lecturer, Robert Welsh, Pemberton, Burlington County.
 Meets first and third Friday evenings in Grange Hall.
- MULLICA HILL**, No. 51. Master, Asa Moore, Mullica Hill, Gloucester County.
 Secretary, Anna G. Tonkin, Mullica Hill, Gloucester County.
 Lecturer, Elizabeth Gardiner, Mullica Hill, Gloucester County.
 Meets Tuesday evenings in Grange Hall.
- DEERFIELD**, No. 52. Master, Howard B. Padgett, Deerfield, Cumberland County.
 Secretary, Allen D. Ackley, Deerfield, Cumberland County.
 Lecturer, Mrs. F. O. Ware, Deerfield, Cumberland County.
 Meets every Wednesday evening in Brotherhood Hall.

STATE BOARD OF AGRICULTURE.

CENTRE GROVE, No. 57. Master, William H. Taylor, Millville, R. D. No. 1, Cumberland County.

Secretary, Anna M. Taylor, Millville, R. D. No. 1, Cumberland County.

Lecturer, Elizabeth Taylor, Millville, R. D. No. 1, Cumberland County.

Meets second and fourth Wednesday evenings, Centre Grove School House.

COLUMBUS, No. 58. Master, David H. Rigg, Columbus, Burlington County.

Secretary, Reba J. Sharp, Columbus, Burlington County.

Lecturer, Clara E. Pew, Columbus, Burlington County.

Meets every other Friday evening in Grange Hall, Columbus.

THOROFARE, No. 59. Master, Charles W. Platt, Thorofare, Gloucester County.

Secretary, Charles H. Budd, Thorofare, Gloucester County.

Lecturer, Mabel Clement, Thorofare, Gloucester County.

Meets Monday evenings at Thorofare.

COURSES LANDING, No. 60. Master, Charles F. Hackett, Woodstown, R. D., Salem County.

Secretary, Gertrude W. Freas, Sharptown, Salem County.

Lecturer, Alice L. Ware, Woodstown, R. D., Salem County.

Meets Tuesday evenings in K. of P. Hall, at Sharptown.

CROSSWICKS, No. 61. Master, Charles L. Dey, Crosswicks, Burlington County.

Secretary, Emma Margerum, Crosswicks, Burlington County.

Lecturer, C. Edwin Margerum, Crosswicks, Burlington County.

Meets second and fourth Saturdays.

PENNINGTON, No. 64. Master, A. T. Blackwell, Harborton, Mercer County.

Secretary, C. C. Bahrenburg, Pennington, Mercer County.

Lecturer, Mrs. S. S. Hixson, Harborton, Mercer County.

Meets second and fourth Saturday afternoons.

VINCENTOWN, No. 67. Master, Harold W. Githens, Vincentown, Burlington County.

Secretary, Mrs. F. Githens, Vincentown, Burlington County.

Lecturer, Rebecca Scott, Vincentown, Burlington County.

Meets Saturday evenings in Grange Hall, Vincentown.

EWING, No. 73. Master, Hadoram M. Fine, Trenton, R. D. No. 1, Mercer County.

Secretary, William H. Cadwallader, Trenton, R. D. No. 1, Mercer County.

Lecturer, Eva Herbert, Trenton, R. D. No. 1, Mercer County.

Meets first and third Tuesday evenings at Church House, Ewing.

MERCER, No. 77. Master, Charles L. Sullivan, Skillman, Mercer County.

Secretary, J. M. Dalrymple, Hopewell, Mercer County.

Lecturer, Mrs. Ida H. Larason, Hopewell, Mercer County.

Meets second and fourth Saturday afternoons in Grange Hall, Hopewell.

SUBORDINATE GRANGES.

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WANTAGE, No. 78. Master, Eugene Slaughter, Sussex, Sussex County.

Secretary, Mrs. Evi Vandruff, Sussex, Sussex County.

Lecturer, Mrs. Brice Roy, Sussex, Sussex County.

Meets first and third Wednesday evenings in Grange Hall at Sussex.

HAMILTON, No. 79. Master, H. H. Hutchinson, Robbinsville, Mercer County.

Secretary, R. E. Haines, Robbinsville, Mercer County.

Lecturer, Mrs. Bessie Condit, Robbinsville, Mercer County.

Meets first Tuesday afternoon and third Tuesday evening in Grange Hall.

FRIESBURG, No. 81. Master, Thomas E. Roork, Elmer, R. D. No. 3, Salem County.

Secretary, Attie D. Loveland, Bridgeton, R. D. No. 8, Salem County.

Lecturer, Mrs. Kate Sigars, Bridgeton, R. D. No. 8, Salem County.

Meets Tuesday evenings at Friesburg Grange Hall.

WILLIAMSTOWN, No. 85. Master, John H. Bittle, Sicklerville, R. D., Gloucester County.

Secretary, Grace Ritchie, Williamstown, Gloucester County.

Lecturer, Edith V. Wilson, Sicklerville, R. D., Gloucester County

Meets second and fourth Tuesday evenings from November to May; every Tuesday balance of year, in Grange Hall.

LOCKTOWN, No. 88. Master, William H. Wagner, Flemington, R. D. No. 2, Hunterdon County.

Secretary, Harry B. Bodine, Flemington, R. D. No. 2, Hunterdon County.

Lecturer, Fred Addis, Flemington, R. D. No. 2, Hunterdon County.

Meets every Tuesday evening in Grange Hall, Locktown.

BLACKWOOD, No. 90. Master, E. J. Cunard, Blackwood, Camden County.

Secretary, Martin Schubert, Laurel Springs, Camden County.

Lecturer, Josephine Severns, Blackwood, Camden County.

Meets every Saturday evening in Grange Hall.

MONMOUTH, No. 92. Master, G. L. DuBois, Freehold, Monmouth County.

Secretary, G. W. Blatchley, Jr., Freehold, Monmouth County.

Lecturer, Mrs. J. W. Dobbins, Freehold, Monmouth County.

Meets first and third Wednesday evenings, except from November 1 to March 1; the first meeting is in the afternoon.

HIGHTSTOWN, No. 96. Master, George Davison, Cranberry, Middlesex County.

Secretary, F. C. Danser, Cranbury, Middlesex County.

Lecturer, Miss May Perrine, Hightstown, Middlesex County.

Meets Saturday afternoons, December to April; balance of year second and fourth Saturday evenings.

- ALLENTOWN**, No. 98. Master, E. S. Otterson, Robbinsville, R. D. No. 3, Monmouth County.
Secretary, Sara G. Chamberlin, Robbinsville, R. D. No. 2, Monmouth County.
Lecturer, Mrs. J. Carroll Burtis, Allentown, Monmouth County.
Meets first and third Saturday evenings in Grange Hall at Allentown.
- LIBERTY**, No. 99. Master, G. C. McDowell, Wickatunk, Monmouth County.
Secretary, S. B. Wells, Marlboro, Monmouth County.
Lecturer, Rev. William W. Hoagland, Marlboro, Monmouth County.
Meets second and fourth Wednesdays in Grange Hall at Bradevelt.
- SERGEANTSVILLE**, No. 101. Master, E. C. Rockafellow, Stockton, R. D. No. 1, Hunterdon County.
Secretary, William E. Rittenhouse, Stockton, R. D. No. 1, Hunterdon County.
Lecturer, May T. Merrill, Sergeantsville, Hunterdon County.
Meets Saturday evenings in Grange Hall at Sergeantsville.
- LIVINGSTON**, No. 104. Master, J. H. M. Cook, Roseland, Essex County.
Secretary, A. W. Fund, Chatham, Morris County.
Lecturer, Ralph Hall, Roseland, Essex County.
Meets third Thursday in Collins' Hall.
- MORRIS**, No. 105. Master, A. M. Webb, Hanover, Morris County.
Secretary, A. L. Reinmann, Jr., Hanover, Morris County.
Lecturer, Mrs. Louise Young, Whippany, R. D., Morris County.
Meets second and fourth Tuesdays.
- KINGWOOD**, No. 106. Master, J. N. Alpaugh, Frenchtown, R. D. No. 1, Hunterdon County.
Secretary, J. H. Stull, Raven Rock, Hunterdon County.
Lecturer, Mrs. Emma K. Cline, Frenchtown, R. D. No. 1, Hunterdon County.
Meets Saturday evenings in Grange Hall, Barbertown.
- CALDWELL**, No. 107. Master, Austin E. Hedden, Verona, Essex County.
Secretary, Emma W. Hedden, Verona, Essex County.
Lecturer, R. C. Campbell, Caldwell, Essex County.
Meets second and fourth Thursday evenings.
- ROSELAND**, No. 108. Master, Marcus W. DeCamp, Roseland, Essex County.
Secretary, E. Oscar DeCamp, Roseland, Essex County.
Lecturer, Rev. H. R. Blackwood, Roseland, Essex County.
Meets second and fourth Tuesday evenings in Grange Hall at Roseland.
- WARREN**, No. 110. Master, Frank Housel, Broadway, Warren County.
Secretary, Henry J. Beers, Stewartsville, R. D., Warren County.
Lecturer, Joseph Banghart, Broadway, Warren County.
Meets first and third Tuesday evenings in Grange Hall at Broadway.

SUBORDINATE GRANGES.

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- MICKLETON, No. 111. Master, Reuben Wiley, Mickleton, Gloucester County.
Secretary, Benjamin C. Heritage, Mickleton, Gloucester County.
Lecturer, Florence Owen, Mickleton, Gloucester County.
Meets Thursday evenings at Mickleton.
- HURFFVILLE, No. 115. Master, Benjamin F. James, Pitman, Gloucester County.
Secretary, Walton H. Chew, Pitman, Gloucester County.
Lecturer, C. J. Davenport, Sewell, R. D. No. 1, Gloucester County.
Meets Saturday evenings in Davenport's Hall, Hurffville.
- ROCKSBURG, No. 116. Master, Van Young, Phillipsburg, R. D., Warren County.
Secretary, Warren Herman, Phillipsburg, R. D., Warren County.
Lecturer, Flossie Buchman, Stewartsville, R. D., Warren County.
Meets every two weeks.
- WASHINGTON, No. 117. Master, S. T. Bowman, Washington, R. D., Warren County.
Secretary, Mrs. Joseph Bodine, Washington, R. D., Warren County.
Lecturer, M. L. Rush, Washington, R. D., Warren County.
Meets first and third Thursdays at home of S. T. Bowman.
- OAK GROVE, No. 119. Master, Howard Robinson, Pittstown, Hunterdon County.
Secretary, Mrs. Melissa Mathews, Pittstown, Hunterdon County.
Lecturer, Mrs. Maria Shepard, Pittstown, Hunterdon County.
Meets Tuesday evenings in Grange Hall, one mile from Pittstown.
- SPRING MILLS, No. 120. Master, Eli P. Burgstresser, Milford, Hunterdon County.
Secretary, Mrs. Mary E. Woolf, Milford, Hunterdon County.
Lecturer, William P. Eichlin, Bloomsbury, Hunterdon County.
Meets first and third Tuesday evenings in Grange Hall.
- STEWARTSVILLE, No. 121. Master, Howard L. Frey, Stewartsville, R. D., Warren County.
Secretary, Mrs. Myrtle R. Frey, Stewartsville, R. D., Warren County.
Lecturer, Mrs. Annie Carhart, Stewartsville, R. D., Warren County.
Meets first and third Thursday evenings in I. O. O. F. Hall.
- AURA, No. 122. Master, Leroy Hughes, Monroeville, R. D., Gloucester County.
Secretary, H. C. Ivins, Monroeville, R. D., Gloucester County.
Lecturer, Sarah Miller, Glassboro, R. D., Gloucester County.
Meets Wednesday evenings at Aura, N. J.
- CROSS KEYS, No. 123. Master, Jacob Harper, Cross Keys, Gloucester County.
Secretary, Mrs. Jennie Scott, Sicklerville, Gloucester County.
Lecturer, Mrs. Stella Hurff, Cross Keys, Gloucester County.
Meets every Saturday evening in Hurff's Hall.

STATE BOARD OF AGRICULTURE.

- GRAND VIEW, No. 124. Master, James J. Higgins, Flemington, Hunterdon County.
Secretary, William Y. Holt, Flemington, Hunterdon County.
Lecturer, Edward P. Nief, Flemington, Hunterdon County.
Meets Saturday nights April to October; balance of year Wednesday nights.
- RIVERSIDE, No. 125. Master, A. D. Schomp, Whitehouse Station, R. D. No. 2, Hunterdon County.
Secretary, W. W. Foster, Three Bridges, Hunterdon County.
Lecturer, John T. Cox, Three Bridges, Hunterdon County.
Meets every Saturday evening in Grange Hall at Three Bridges.
- DELAWARE, No. 126. Master, I. S. Appleman, Columbia, Warren County.
Secretary, J. H. Albertson, Delaware, Warren County.
Lecturer, Elizabeth Hartung, Delaware, Warren County.
Meets first and third Fridays.
- IONA, No. 127. Master, Harry Hook, Franklinville, Gloucester County.
Secretary, Ella Hinchman, Newfield, R. D., Gloucester County.
Lecturer, Grace Sterling, Franklinville, Gloucester County.
Meets every Saturday evening in Nute's Hall, Franklinville.
- CAPE MAY, No. 128. Master, Ralph Schellinger, Green Creek, Cape May County.
Secretary, Edward W. Tuttle, Dias Creek, Cape May County.
Lecturer, A. T. D. Howell, Dias Creek, Cape May County.
Meets Tuesday evenings in I. O. M. Hall at Dias Creek.
- BERGEN, No. 129. Master, Joseph P. Winters, Ridgewood, Bergen County.
Secretary, Arthur Lozier, Ridgewood, Bergen County.
Lecturer, John C. Banta, Hackensack, Bergen County.
Meets first and third Wednesdays in Grange Hall, Spring Valley road.
- FRANKLIN, No. 130. Master, A. G. Smith, North Haledon, Bergen County.
Secretary, Jennie Vanderhoff, Wyckoff, Bergen County.
Lecturer, J. E. Van Kuren, Wyckoff, Bergen County.
Meets every Tuesday evening in Grange Hall, Wyckoff, except June, July and August, every two weeks.
- RANCOCAS, No. 131. Master, Charles E. Shinn, Jr., Burlington, R. D. No. 1, Burlington County.
Secretary, Mrs. Nancy M. Leeds, Rancocas, Burlington County.
Lecturer, Mrs. Mary L. Miller, Burlington, R. D. No. 1, Burlington County.
Meets first Wednesday afternoon, third Wednesday evening, from April to November; balance of year every Wednesday afternoon.
- COLD SPRING, No. 132. Master, Frank E. Bate, Fishing Creek, Cape May County.
Secretary, Jennie H. MacPherson, Erma, Cape May County.
Lecturer, Minnie Bate, Fishing Creek, Cape May County.
Meets Monday evenings in Grange Hall, Cold Spring.

SUBORDINATE GRANGES.

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HICKORY, No. 133. Master, Charles D. Tharp, Pattenburg, Hunterdon County.
Secretary, A. B. McCrea, Pattenburg, Hunterdon County.
Lecturer, Mrs. Otto Zick, Pattenburg, Hunterdon County.
Meets Wednesday evenings in Grange Hall.

VERONA VALLEY, No. 134. Master, Charles L. Giveans, Vernon, Sussex County.
Secretary, Emma P. Giveans, Vernon, Sussex County.
Lecturer, Rev. Hiram G. Conger, Vernon, Sussex County.
Meets first and third Tuesday evenings at Parish House, Vernon.

RAMSEY, No. 135. Master, John Q. Young, Mahwah, Bergen County.
Secretary, Alice Young, Mahwah, Bergen County.
Lecturer, Mrs. Alvin Winter, Allendale, R. D., Bergen County.
Meets every Tuesday night in I. O. O. F. Hall, Ramsey.

LINCOLN, No. 136. Master, Thomas J. Post, Westwood, R. D. No. 1, Bergen County.
Secretary, William H. Bomm, Westwood, R. D. No. 2, Bergen County.
Lecturer, Mrs. Thomas J. Post, Westwood, R. D. No. 1, Bergen County.
Meets second and fourth Wednesdays in I. O. O. F. Hall, Westwood.

Mt. VIEW, No. 137. Master, S. Leroy Tuttle, Beemerville, Sussex County.
Secretary, Mrs. Dolson Ayres, Beemerville, Sussex County.
Lecturer, Eleanor Perry, Branchville, R. D., Sussex County.
Meets every other Tuesday evening.

BERLIN, No. 138. Master, H. N. Gillon, Berlin, Camden County.
Secretary, X. F. Ottiger, Berlin, Camden County.
Lecturer, Anna M. Gillon, Berlin, Camden County.
Meets Tuesday evenings in Grange Hall, Broad street, Berlin.

TUCKAHOE, No. 139. Master, J. Alfred Reeves, Tuckahoe, Cape May County.
Secretary, Z. A. Townsend, Tuckahoe, Cape May County.
Lecturer, Mrs. Alice E. Stewart, Tuckahoe, Cape May County.
Meets Friday evenings in Mechanics' Hall, Tuckahoe.

MONTAGUE, No. 140. Master, John Scheets, Port Jervis, N. Y., Sussex County.
Secretary, Harry E. Cortright, Port Jervis, N. Y., Sussex County.
Lecturer, Charles Reinhardt, Port Jervis, N. Y., Sussex County.
Meets second and fourth Saturday evenings.

PASCACK, No. 141. Master, John M. Myers, Westwood, R. D. No. 2, Bergen County.
Secretary, E. M. Lyman, Park Ridge, Bergen County.
Lecturer, Mrs. I. E. Mabie, Westwood, Bergen County.
Meets second and fourth Saturday evenings in Borough Hall, Wood-cliff.

OLIVE BRANCH, No. 142. Master, George F. Keller, Cliffwood, Monmouth County.
Secretary, J. H. Douglass, Matawan, Monmouth County.
Lecturer, R. V. Cline, Morganville, Monmouth County.
Meets Thursday evenings.

STATE BOARD OF AGRICULTURE.

- DELAWARE VALLEY, No. 143. Master, Ira Stoll, Layton, Sussex County.
Secretary, George E. Hursh, Layton, Sussex County.
Lecturer, Frank Stoll, Layton, Sussex County.
Meets first and third Saturday evenings in Grange Hall at Layton.
- SADDLE RIVER, No. 144. Master, Irving N. De Baum, Allendale, R. D. No. 1, Bergen County.
Secretary, J. Fred. Koopman, Waldwick, Bergen County.
Lecturer, J. Nelson Carlock, Westwood, R. D. No. 2, Bergen County.
Meets first and third Wednesday evenings.
- WAYNE TOWNSHIP, No. 145. Master, Aaron Laauwe, Paterson, R. D. No. 1, Passaic County.
Secretary, H. M. Berdan, Paterson, R. D. No. 1, Passaic County.
Lecturer, John Lobb, Paterson, Passaic County.
Meets first and third Thursdays in Grange Hall, Preakness.
- EGG HARBOR, No. 146. Master, Carl F. Schirmer, Egg Harbor, R. D., Atlantic County.
Secretary, Henry Tapkin, Egg Harbor, R. D., Atlantic County.
Lecturer, Henry Pfeiffer, Cologne, Atlantic County.
Meets first and third Saturday evenings at Krein's Hall.
- WRIGHTSTOWN, No. 147. Master, Milton Thompson, Wrightstown, Burlington County.
Secretary, Rosha Thompson, Wrightstown, Burlington County.
Lecturer, Andrew Nelson, Jobstown, R. D., Burlington County.
Meets second and fourth Wednesday evenings.
- STANTON, No. 148. Master, Fremont Gary, Lebanon, R. D. No. 1, Hunterdon County.
Secretary, James W. Lare, Flemington, R. D. No. 1, Hunterdon County.
Lecturer, Miss Emma Anderson, Lebanon, R. D. No. 1, Hunterdon County.
Meets Thursday evenings at Stanton Station.
- NORTH ARLINGTON, No. 149. Master, P. J. O'Malley, North Arlington, Bergen County.
Secretary, Edward Favier, Lyndhurst, Bergen County.
Lecturer, Celia Brandenburg, North Arlington, Bergen County.
Meets second and fourth Saturdays.
- BURLINGTON, No. 150. Master, William H. Bodine, Florence, Burlington County.
Secretary, Hope E. Adams, Burlington County.
Lecturer, Julia Creely, Beverly, Burlington County.
Meets Saturday afternoons from December 1st to March 1st; evenings balance of year.

SUBORDINATE GRANGES.

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MILLTOWN, No. 151. Master, George Redshaw, Jr., New Brunswick, R. D. No. 3, Middlesex County.

Secretary, Joseph J. Smith, South River, Middlesex County.

Lecturer, Miss Mary Wilcox, New Brunswick, Middlesex County.

Meets second and fourth Wednesday evenings in Mechanics' Hall, Milltown.

NEW MARKET, No. 152. Master, Everett Marshall, New Brunswick, R. D. No. 2, Middlesex County.

Secretary, B. De Witt Giles, New Market, Middlesex County.

Lecturer, Mrs. Jessie Randolph, New Brunswick, R. D. No. 1, Middlesex County.

Meets second and fourth Thursday evenings.

RARITAN VALLEY, No. 153. Master, S. D. Opie, Neshanic Station, Somerset County.

Secretary, Mrs. C. S. Phillips, South Branch, Somerset County.

Lecturer, A. G. Van Nest, Neshanic Station, Somerset County.

Meets second and fourth Monday evenings in Grange Hall at South Branch.

UNION, No. 154 Master, Isaiah Tomlin, Leesburg, Cumberland County.

Secretary, Samuel Chambers, Leesburg, Cumberland County.

Lecturer, Eunice Chambers, Leesburg, Cumberland County.

Meets second and fourth Tuesday evenings in I. O. O. F. Hall, Leesburg.

FAIR LAWN, No. 155. Master, Aaron Courter, Fair Lawn, Bergen County.

Secretary, A. I. Ackerman, Ridgewood, R. D. No. 2, Bergen County.

Meets first and third Mondays in Grange Hall, Fair Lawn.

RARITAN, No. 156. Master, J. P. Brower, Keyport, Monmouth County.

Secretary, H. M. Aumack, Keyport, Monmouth County.

Lecturer, Mrs. J. S. Van Mater, Hazlet, Monmouth County.

Meets second and fourth Wednesday nights the year around; first and third Wednesday afternoons from November to March.

FARMINGDALE, No. 157. Master, Charles Craig, Freehold, R. D. No. 1, Monmouth County.

Secretary, Cora J. Thompson, Allenwood, Monmouth County.

Lecturer, Mattie Craig, Farmingdale, Monmouth County.

Meets first and third Friday evenings.

LAFAYETTE, No. 158. Master, Brice B. Stanton, Lafayette, Sussex County.

Secretary, Anna Everett, Lafayette, Sussex County.

Lecturer, Mrs. C. V. Runion, Lafayette, Sussex County.

Meets third Tuesday evenings.

STATE BOARD OF AGRICULTURE.

WHITEHOUSE, No. 159. Master, P. Davis Reed, Whitehouse, Hunterdon County.

Secretary, Ethel M. Burdette, Whitehouse, Hunterdon County.

Lecturer, Walter H. Opie, Whitehouse Station, R. D. No. 2, Hunterdon County.

Meets Saturday afternoons October to April; evenings balance of year in Grange Hall.

FRANKFORD, No. 160. Master, Andrew Sherred, Branchville, R. D. No. 2, Sussex County.

Secretary, Mrs. Bertha Conover, Branchville, R. D. No. 2, Sussex County.

Lecturer, Mrs. T. C. Roe, Augusta, Sussex County.

Meets first and third Friday evenings at Branchville.

SHREWSBURY, No. 161. Master, George G. Ivins, Little Silver, Monmouth County.

Secretary, F. A. Bloodgood, Red Bank, Monmouth County.

Lecturer, James C. Richdale, Phalanx, Monmouth County.

Meets first and third Tuesday evenings at Red Bank.

SOUTH SEAVILLE, No. 162. Master, Joseph Messick, Clermont, Cape May County.

Secretary, Clara D. Townsend, South Seaville, Cape May County.

Lecturer, Lizzie H. Westcott, South Seaville, Cape May County.

Meets second and fourth Tuesdays in P. O. S. of A. Hall.

TITUSVILLE, No. 163. Master, William H. Blackwell, Titusville, Mercer County.

Secretary, J. Hart Smith, Titusville, Mercer County.

Lecturer, Charles H. Olmstead, Titusville, Mercer County.

Secretary, Mrs. Rena Johnson, Adelphia, Monmouth County.

Lecturer, Edwin R. Barkalow, Freehold, No. 3, Monmouth County.

Meets first and third Monday evenings in K. of P. Hall, Adelphia.

NEWPORT, No. 197. Master, Morton N. Bradford, Newport, Cumberland County.

Secretary, Harry Lore, Newport, Cumberland County.

Lecturer, Lizzie Newcomb, Newport, Cumberland County.

Meets in K. of P. Hall, Newport.

CHESTER, No. 198. Master, Romeo Robinson, Chester, Morris County.

Secretary, Edward Collis, Chester, Morris County.

Lecturer, William H. Woodruff, Chester, Morris County.

Meets second and fourth Friday evenings.

STONE HARBOR, No. 199. Master, Miss Marie L. Van Thuyne, Stone Harbor, Cape May County.

Secretary, Miss Frances C. Sank, Stone Harbor, Cape May County.

Lecturer, Mrs. R. P. Risley, 2805 Chestnut Street, Philadelphia, Pa.

Meets every Friday night.

SUBORDINATE GRANGES.

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TOMS RIVER, No. 200. Master, C. W. Herflicker, Toms River, R. D., Ocean County.

Secretary, John Fischer, Silverton, Ocean County.

Lecturer, Mrs. C. L. King, Toms River, Ocean County.

Meets first Thursday in Mechanics' Hall, Toms River.

Mt. BETHEL, No. 201. Master, F. T. Horton, Plainfield, R. D. No. 3, Somerset County.

Secretary, J. R. Adams, Plainfield, R. D. No. 3, Somerset County.

Lecturer, A. Einz, Plainfield, R. D. No. 3, Somerset County.

Meets second and fourth Friday evenings in Mountain House Hall at Mt. Bethel.

MILLSTONE CENTRAL, No. 202. Master, James McKnight, Freehold, R. D., Monmouth County.

Secretary, John V. Ely, Cream Ridge, Monmouth County.

Lecturer, Rosalie Pullen, Cream Ridge, Monmouth County.

STATISTICAL TABLE OF FARM CROPS AS REPORTED BY THE SECRETARIES OF THE COUNTY BOARDS.

COUNTIES.	CORN.		WHEAT.		RYE.		BARLEY.		WHITE POTATOES.		SWEET POTATOES.		HAY.	
	Average yield per acre —bushels.	Average price.	Average yield per acre —bushels.	Average price.	Average yield per acre —bushels.	Average price.	Average yield per acre —bushels.	Average price.	Average yield per acre —bushels.	Average price per bushel.	Average yield per acre —bushels.	Average price per bushel.	Average yield per acre —tons.	Average price per ton.
Atlantic	40	.90							135	1.00	200	.50	1½	19.00
Bergen									30	1.00			½	23.00
Burlington	40	.75	15	.90	10	.55	25	.48	100	.65	150	.40	1¼	16.00
Camden	50	.65							100	.75	250	.60	2	16.00
Cape May	25	.80	20	1.10			25	.55	70	.75	110	.58	1½	16.00
Cumberland	42	.70	18	1.00			30	.55	30	1.00	60	1.50	1½	18.00
Essex														
Gloucester														
Hunterdon	35	.55	15	.90	13	.60	25	.45	25	.70			1	17.00
Mercer	50	.70	20	.90	12	.70	50	.45	80	.70	140	.90	1½	18.00
Middlesex	30	.70	15	.95	12	.70	30	.50	100	.80	90	.80	1	20.00
Monmouth	80	.70	16	1.00	18	.85			225	.80	200	.90	2	20.00
Morris	80	.70	15	1.00	18	.70	30	.50	70	2.50			1	20.00
Ocean	30	.67	18	1.00	15	.70	25	.50	100	.80	110	.90	1½	16.00
Passaic														
Salem	60	.80	16	1.00					60	.68			2	17.00
Somerset	36	.80	16	.90	15	.75	40	.45	75	2.00			1½	16.00
Sussex														
Union	30	.90			18	.90	12	.50	100	1.00			1	25.00
Warren	36		15		10		20		75				1¼	

Reports of County Board of Agriculture

Reports of County Boards of Agriculture.

REPORT OF ATLANTIC COUNTY BOARD OF AGRICULTURE OFFICERS FOR 1914.

OFFICERS FOR 1914.

President, JOHN HUENKE, SR.Egg Harbor City, R. D. No. 1
Vice-President, PROF. A. J. RIDERHammonton, N. J.
Secretary, WM. E. HOHNEISENEgg Harbor City, R. D. No. 1
Treasurer, WM. LIEPPECologne, N. J.

BY THE SECRETARY.

The Atlantic County Board of Agriculture held three meetings during the year 1913.

The first meeting was held at Hammonton on March 28 in connection with Hammonton Grange.

The second was held at Cologne in connection with Cologne Grange.

The third and annual meeting was held at Egg Harbor City in connection with Egg Harbor Grange.

All three of the meetings were well attended, more so than in former years.

The speakers, consisting of A. J. Rider, Prof. Alva Agee, Prof. Prince. Prof. Clark and several more, gave very interesting lectures on agriculture and agricultural needs in Atlantic County. Thanks are due these speakers for making the meeting a success. Thanks are also due John Huenke, Sr., president of the Board, for the activity he shows at the meetings. The boys and girls corn growing and home making contest of the different schools throughout the county proved to be very successful, as there was a good display of corn and sweet potatoes; also needlework and bread and cake. It shows that our county superintendent of schools is the right man to conduct it.

The spring and winter of 1913 was very warm; all work was done in good time, and things looked pretty good for the farmer and small fruit grower. However, it did not last long. On the night of the 10th till the 11th of May a frost killed considerable blossoms.

The hay crop was not as good as last year, but was harvested in good condition, about one and a half tons to the acre. Strawberries were a very short crop in general owing to the freeze on May 11th, and also on account of the strawberry weevil. Prices received for strawberries were good throughout the season, 12 and 14 cents being the average price received. Raspberries were plentiful; prices were satisfactory. Dewberries and blackberries were also hurt

to some extent in the freeze; prices were good. Early potatoes were better in yield than last year; average about 135 bushels per acre; price \$1.00. Grapes were a short crop; prices about \$60.00 per ton. Corn a very good yield, about 40 bushels per acre. Sweet potatoes a very large crop throughout this county; selling slow. The apple crop was good in some orchards, while others had hardly any fruit. Peaches a total failure owing to the warm winter; blossomed early and a few cold nights fixed them. Kieffer pears froze also. The farmers that had Bartlett pears did well, as they bloomed later. The tomato crop set heavy, but when it came to pick same they rotted badly; yield about 4 tons per acre; price \$9.00 per ton. Crimson clover and rye started good this fall, as it was wet and warm.

There was no epidemic disease in farm animals this year, and farmers whose crops the frost did not strike so heavy are very well satisfied.

BERGEN COUNTY.

OFFICERS FOR 1914.

<i>President</i> , F. M. CURTIS	Harrington Park
<i>Vice-President</i> , I. A. HOPPER	Fair Lawn
<i>Secretary</i> , JOHN M. MYERS	Westwood, R. D. No. 2.
<i>Treasurer</i> , F. V. STROHSAHL	Park Ridge

BY THE SECRETARY.

During the year 1913 the Bergen County Board of Agriculture held four quarterly meetings and three institutes. We also gave birth to a fine poultry organization.

Our Board has its headquarters in the imposing new courthouse at Hackensack, and is now properly recognized in the affairs of the county. Agriculture and horticulture are so closely allied in this county it would be a difficulty matter to separate them. The soil, elevations and general conditions seem to favor diversified farming rather than specialized. We have a number of dairy herds producing milk for retail trade. We have poultry plants that are a real credit to our county. We have large truck farms that largely supply the great cities near us with vegetables; but a majority of the farms are producing a great variety of fruits and vegetables as well as live stock, while every farm has a flock of poultry to complete the list of departments.

Since the State Board of Agriculture and the spray pump have helped to prove that apples and peaches can be produced here far surpassing in flavor the fruits of the West and South, there seems to be new interest taken in planting and caring for orchards. There is room for many thousand of trees, and nearby markets for all that can be produced of choice fruits of quality and color.

Poultry is the industry or branch of agriculture that is drawing a great share of attention. The Bergen County Board organized the Bergen County Poultry Association at our last meeting. It is still an infant, but promises to become one of the strongest organizations in the State.

A large crop of apples was harvested and sold at good prices.

BURLINGTON COUNTY.

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Peaches were abundant in orchards that were elevated above the line of late spring frosts. Orchards on low or lever areas were blank, or nearly so.

Potatoes planted early yielded very light crops on account of long drouth in May, June and July, while those planted late in June or early July yielded a good crop of large tubers.

BURLINGTON COUNTY.

OFFICERS FOR 1914.

President, HERMAN CROSHAWWrightstown
Vice-President, FRED LIPPINCOTTMoorestown
Secretary and Treasurer, H. H. ALBERTSONBurlington

BY THE SECRETARY.

The annual meeting of our County Board was held in Mount Holly on December 21, 1912, and was largely attended. The addresses were all interesting and instructive, and the exhibits of the prize winning corn in the Boys' Corn Contest was an added attraction.

In place of holding a summer meeting this year, the members of the County Board accepted an invitation to attend the summer meeting of the State Horticultural Society at the farm of Granville W. Leeds, near Rancocas, where a most interesting day was enjoyed by a large attendance. The sincere thanks of the County Board is extended to Mr. Leeds and to the State Horticultural Society for the invitation.

No specific statement as to crop conditions would apply to all parts of the county. There was a wide difference in some crops in different sections owing to the prevalence of plant diseases and to drouth. Some parts of the county were fairly well supplied with water by heavy showers, while other places were not so favored and suffered severely.

Hay in many places was short, although cured favorably. Oats were mostly a very light crop, and wheat and rye much below the average. The light crop and fine weather made an easy harvest on many farms. Some farmers say they never had a better corn crop, while others report an exceptionally poor yield.

The potato crop was a disappointment to many growers this year, and especially to those who planted cobbles. With the drouth, blights and the "sleeping sickness" prevalent, losses were very heavy and spraying often ineffective. Some farmers intend to cut down the potato acreage another year, while others feel that by fumigating or soaking the seed, and spraying the plants too, all of the enemies can be controlled sufficiently to insure a profitable crop.

Sweet potatoes were a large crop and rather low price.

Apples were mostly a good crop, and good prices were realized. There was more fungus disease on apples and pears than usual. Pears were a light crop, with good prices.

With many growers peaches were a failure, and with others some varieties were badly hit by frost injury in April. Orchards on other farms were apparently not injured sufficiently to prevent a full crop. Several growers burned

smudges in their orchards. There is need of more exact knowledge concerning the whole subject of frost injury and the means of preventing it in the East. Two growers in this county sold a total of 50,000 baskets of peaches this year.

The dry summer emphasized the value of irrigation as demonstrated at the summer meeting of the Horticultural Society on the farm of Mr. Leeds.

Cows have been in good demand. They have brought good prices, which have not been lowered by dry pastures here or in neighboring states, which still largely furnish the supply.

The Farmers' Exchange shipped approximately 500 cars of potatoes, about 40 of strawberries and 5 of other commodities, besides commission business.

This year the premiums for the Boys' Corn Contest include \$25 in prizes to be given by the County Board to send five boys to the Farmers' Week at New Brunswick for two days.

The Joint Committee of the State Board of Agriculture and the State Horticultural Society, appointed to secure exhibits for the meetings to be held in the armory, Trenton, December 8-12, 1913, have requested the Granges and County Boards of the different counties to secure exhibits and forward them to Trenton. Here is an opportunity to show what Burlington County can do, which some efforts have been made to take advantage of, with results which remain to be seen.

Petitions have been circulated, petitioning the State Superintendent of Farm Demonstration to provide for a county farm demonstrator in this county. The argument that a great many farmers know more than any demonstrator would does not cover the fact that a great many know less of some things valuable to learn. As a clearing house for practical and timely local experience and scientific methods, such a man of the right sort would seem highly valuable. Frequent contact with a live man going the rounds of the farms would have a tendency to stimulate everyone to do better farming, and especially those who think they know more than the demonstrator, so as to prove it.

Burlington County is adopting the slogan of all up-to-date rural communities, "Stay on the Land," in comparison to which the "Back to the Land" movement is an inconsequential fad. Profiting by the experience that most can be accomplished to prevent a rural exodus by working with the young people, the agricultural contests for boys and the home-making contests for girls have been adopted. Last year the boys grew only corn, but this year the exhibits include corn, potatoes and poultry. Many more young people have entered the contests this year, and larger and better exhibits are hoped for. Ultimately the contests should be widened to include vegetables, botanical and entomological collections and objects useful on the farm made by the young folks. Some county-wide organization of the young people themselves is desirable, and possibly a Junior County Board could be organized and hold regular meetings, where the contestants could discuss their plans and compare notes on their successes and failures.

To the initiative of the County Y. M. C. A. Committee is due the credit for starting and largely for carrying on the boys' contests, as well as for circulating petitions for a county demonstrator. The work of conducting the contests has been limited only by the lack of helpers who will work with the boys. There are many more boys who could and should be interested, and we ask for more men to carry the contest work to the boys on the farms throughout the county. The results of the contest this year must appeal to every live farmer, and it is hoped that many more loyal farmers will lend a hand in active co-operation with the Contest Committee.

BURLINGTON COUNTY.

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To accomplish results with the farm boys and girls requires enthusiastic leadership. Much is done in this way by the school teachers of the county, and much more could be done by them with the proper facilities and real sympathy with the conditions. The members of the Agricultural Contest Committee have found in their work this past summer in visiting many of the farmers that there is a feeling among them that the school boards of the rural districts should not allow the country school to be an experiment station for the untried school teachers who expect eventually to go to the large towns and cities, but that they should demand country-bred teachers who see in the young people of the open country the greatest possibilities for national leadership.

While not all farm boys should stay in the country, it is evident that there is a strong current away from the farms, which the contests alone cannot stem effectively. Several of the brightest boys who won prizes in the 1912 contest are fitting themselves for a commercial life in the cities. Attending school day after day in the towns and cities, where urban glamour meets their eyes and urban ideals dominate the school life and curriculum, it is no wonder that our young people prefer the town and city life. Would that a rural high school could be built in the open country in Burlington County, where the children could be taught by teachers with a genuine love and understanding of nature and the best there is in country life, than which there is no finer culture. It is not so important what is taught of agriculture, as it is to have the inspiration and the point of view, that the whole education may be in harmony with life in the country.

A western newspaper interprets the rural exodus in the following way. "Less than one-third of the consumers' dollar reaches the farmer; why boys leave the farm is to see if they can't get another third of the dollar." The problem of efficient distribution of farm crops so as to put money in the pockets of both the producer and consumer is so constantly before us in the agricultural and daily press, and is the object of such wide thought and research by State and Federal governments and students of social science, that a survey of our own conditions may be cause for congratulation.

With the markets of a great city within hauling distance of many of our farms over good roads, a distance made possible to some and shorter to others by the increasing use of the motor truck; with a rich trucking and fruit section along the river with road and boat transportation to Philadelphia and express service to New York, and with a Farmers' Exchange to distribute our products to advantage in distant markets, Burlington County farmers have many great advantages in their means for marketing produce. We have many problems to solve and improvements to make all the same. Freight deliveries are a perplexity to all shippers, and especially to him who produces perishable goods, on the delivery of which a few hours' delay means a heavy loss. The railroads should take more pains to meet the requirements of shippers in maintaining a prompt and regular schedule that can be relied upon.

To make an effective impression on the railroad companies, the individual complainant has small chance of accomplishing very much, but the organization of farmers, the granges and exchange, can and have accomplished far more. There is less of the tenacity to individualism among Burlington County farmer than in many localities, and more of that spirit of co-operation which has accomplished much in the past, and promises better things for the future.

I feel sure we can report some advance during the year in the three directions indicated by the great Irish farmer, Sir Horace Plunkett (Rural Life Problems of the United States), "Agriculture, the basis of rural existence, must be regarded as a science, as a business and as a life. Better farming simply means the application of modern science to the practice of agriculture. Better business is the no less necessary application of modern commercial methods to the business side of the farming industry. Better living is the building up, in rural communities, of a domestic and social life which will withstand the growing attractions of the modern city."

CAMDEN COUNTY.

OFFICERS FOR 1914.

President, LEON COLLINSMerchantville
Vice-President, CLINTON CLEMENTWestville
Secretary and Treasurer, JOSEPH BARTONMarlton

BY THE SECRETARY.

We have held about three meetings of the board of directors. The thirtieth annual meeting of the County Board of Agriculture was held in the Grange Hall, Berlin, N. J., November 22, 1913. President Leon Collins after calling the meeting to order delivered a very stirring address, directing his remarks mainly to the hundreds of boys and girls present. We were then favored with talks by Messrs. Pelton and Cook of the college staff. Dr. Cook gave us a very exhaustive talk on potato diseases and their treatment.

After the noon recess we entered upon the program of the County Corn Contest meeting. The first address, by Alva Agee, was a very impressive talk on rural life and matters relating to country life in general. He was followed by Mrs. Edith Ellicot Smith of Pennsdale, Pa.

Following this Mr. Maydale, secretary of the County Y. M. C. A., presented the prizes to the winners in the corn contest, and Mrs. Whetacre to the girls winning in the home-making contest.

This combined meeting of the County Board of Agriculture and the corn growing and home making contest was probably the largest gathering of the kind ever held in the county. Fully one thousand persons showed their interest by being present. This vast crowd was fed by the ladies of the Grange and the wives of the directors of the County Board.

I feel safe in saying that the enthusiasm developed by the exertions of the County Board, the Y. M. C. A. and the Grange co-operating, is destined to do more for the rural districts of the county than any other activity which we have ever attempted.

CAPE MAY COUNTY.

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CAPE MAY COUNTY.

OFFICERS FOR 1914.

<i>President</i> , JOSEPH CAMP	Pierces
<i>Vice-President</i> , HOWARD HOFFMAN	Cold Spring
<i>Secretary</i> , RALPH SCHELLINGER	Green Creek
<i>Treasurer</i> , RALPH TAYLOR.	

BY THE SECRETARY.

Cape May County Board held two meetings during the year, one at Tuckahoe in February and one at Cape May Court House in November. Both meetings were well attended and seemed to be of much interest. Prof. Carris gave us a good talk at Tuckahoe, and Prof. L. Myers of Wildwood gave us a very good address at Cape May Court House at the November meeting. We had very good meetings at both places.

CUMBERLAND COUNTY.

OFFICERS FOR 1914.

<i>President</i> ,	WILLIAM SHOEMAKER
<i>Vice-President</i>	WALTON E. DAVIS
<i>Secretary</i>	A. M. SEABROOK
<i>Treasurer</i>	LESLIE A. PLATT
<i>Representatives to State Board</i>	WM. OTT, L. WILLARD MINCH

The Cumberland County Board held two meetings during 1913, one at Cedarville on January 14th and one at Bridgeton on March 13th. Prof. Alva Agee addressed the former meeting. Considerable time at this meeting was given to a discussion of the training of children and the importance of young men attending our agricultural colleges and giving more attention to the study of the soil. An address was also delivered by Prof. Eagans.

At the meeting held on March 13th, Messrs Allen Ackley and Arthur P. Seabrook, delegates to the State Board, gave very interesting and instructive reports of the meeting. A committee was appointed to confer with the granges of the county to take up the matter of organizing a County Corn Club. A. R. McAllister read a very meritorious paper upon "Irrigation," and L. Willard Minch spoke on "The Importance of More Carefully Grading Apples," a subject that is of vital interest to the great fruit growing sections of South Jersey.

Thomas M. Ware, of Merridale, N. Y., spoke upon dairy interests, with which he had been connected for over twenty years. Prof. Agee gave a general talk in which he laid considerable stress upon keeping the young men upon the high grade fertilizers were considered the most economical to buy by a majority farm. In a discussion on "Seeds" domestic seeds were strongly recommended, of those present. The audience was very much interested in all of the topics taken up for discussion.

—(From Minutes of County Boards.)

ESSEX COUNTY.

OFFICERS FOR 1914.

<i>President</i> , A. W. FUND	Chatham
<i>Vice-President</i> , A. E. HEDDEN	Verona
<i>Secretary</i> , GEO. P. F. MILLAR	Chatham
<i>Treasurer</i> , GEO. E. DECAMP	Roseland

BY THE SECRETARY.

The year 1913 was not as good to the farming interests of Essex County as the year 1912. In both these years the county had its drouth and bad weather, but the year just passed through was the hardest on agriculture. In the early spring there was a severe frost which played havoc with buds; then heavy rains which delayed planting, and then a severe drouth which tried to burn up what did grow.

TRUCKING.

As Essex County farms lie near the large towns and cities, a great deal of fruit and vegetables are grown and sold as soon as they come to maturity, and these farmers have suffered considerable from the freaks of the weather, although some had very good crops of some things, all had more failures than the year before.

ESSEX COUNTY.

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FARMING.

This line, which is carried on in the districts farther back, had rather a more suitable year. Hay was a short crop, but of better quality, as the weather was so dry one could not spoil it if he wanted to. Potatoes in most places were not worth the digging, but the corn was a fair crop. Turnips, which were planted when so dry, stood around, and when the rain did come grew with great rapidity and made a good crop.

FRUIT.

This year was a funny year for fruit, as the frost only affected spots, hollows or sometimes valleys. Some farmers would have no peaches and lots of apples, others the reverse, some no fruit at all while his neighbor would have a good crop and the trees which did bear had a large crop. Strawberry blossoms were badly frosted, and the blackberry which bloomed after all danger of frost and set heavily was caught with the drouth, and the latter half of the crop was not picked.

POULTRY.

This part of the farm is hard to tell about, as it does not confine itself to the farm, but are found in large numbers in the suburban towns. To give an idea of the poultry industry in Essex County I can only say that the Essex County Poultry Association continues to grow in number and benefit, and they have just held another poultry show larger and better than last year.

DAIRYING.

This branch of farming is receiving considerable attention in Essex County. Although the number of cows is on the decrease, the quality is on the advance. The stables are being improved. A great deal of this is due to the vigilance of the health inspectors. They have caused the discontinuance of several dairies. The silo is another factor that is on the increase, and alfalfa is keeping step with the silo, and from the dairyman's stand his year has been better than farmers in other lines.

The year just passed, although having its late frosts and severe drouth, had its benefits, for during the dry summer work became scarce, and the farmers turned to improving their fences, painting and repairing buildings, with a sincere hope that the years that are to follow will be better than the one just passed through.

Although the year just passed has not been as good as expected, the Essex County Board has kept at the good work and has held five board meetings and two institutes, which are fairly well attended, who will spread the good tidings of better farming.

GLOUCESTER COUNTY.

OFFICERS FOR 1914.

<i>President</i> , FRANK KIRBY	Harrisonville
<i>Vice-President</i> , WILLARD KILLE	Swedesboro
<i>Secretary</i> , MINNIE YOUNG	Swedesboro
<i>Treasurer</i> , WM. H. BORDEN	Mickleton

BY THE SECRETARY.

Gloucester County Board of Agriculture has held four regular meetings during the year 1913, with an average attendance of 75, and much interest has been manifested in the various subjects brought up for discussion. Also co-operating with the State Board we have held two institutes, one a two-days institute at Swedesboro on the 19th and 20th of November, the other at Williamstown on November 22nd, both of which were well attended, and could not prove otherwise than a benefit to all those who came for the purpose of gaining information.

Also co-operating with the County Y. M. C. A., Women's Congress of Mothers and other organizations, a very successful corn-growing contest was held, as well as a home-making contest for the girls. This contest was held at Glassboro on November 29th, and the number of exhibits were said to be the largest ever shown in a similar contest in the State. Both the boys and the girls received many useful and valuable prizes to compensate them for their efforts, and arrangements have already begun to conduct a similar contest the coming year.

As to crops in general, the climatic conditions have been such during the past year as to prove very detrimental and at times very discouraging to the farmer. The pleasant weather and warm sunshine of April seemed so promising, and thinking growing weather had surely come many farmers put their tomatoes in the fields, which for a time looked very promising. when, lo! the mercury dropped below the freezing point and in a few short hours many a farmer's prospects were blighted, and in many cases whole fields were gone save perhaps one left here and there, while others seemed to be but slightly injured. Again as the season advanced the white potato fields, which looked unusually fine, suddenly from some cause attributed to the excessive hot and dry weather, the vines turned yellow and died and in many instances the crop was hardly worth gathering, many failing to realize enough from them to pay for the fertilizer used. Yet in the face of all discouragements there was shipped from Swedesboro station alone from the 1st of July to the 3rd of October 2,106 carloads of produce all combined, there being 474,680 crates of tomatoes, 104,754 hampers and 66,368 barrels of sweet potatoes. These were actual shipments, besides over 200,000 baskets of tomatoes shipped by boat and train to canning factories and several thousand barrels of sweet potatoes stored in warehouses. So you can readily see the farmers of Gloucester County are not all idle.

The corn crop also suffered very much from the severe drought, some sections suffering much worse than others. In riding over the country you noticed some fields looking so yellow and dry it was indeed a pitiable sight, while other sections seemed to have been favored with showers and a fair crop of corn.

HUNTERDON COUNTY.

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HUNTERDON COUNTY.

OFFICERS FOR 1914.

<i>President</i> , JOSEPH BODINE	Flemington, N. J.
<i>Vice-President</i> , GEO. DE BUSHFIELD	Stanton, N. J.
<i>Secretary</i> , ROSCOE DEMOTT	Three Bridges, N. J.
<i>Treasurer</i> , F. J. TOMLINSON	Pittstown, N. J.

BY THE SECRETARY.

The annual meeting of the Board was held in the court house, Flemington, November 29, 1913, and the above officers re-elected.

The Board elected delegates to represent our county at the horticultural and agricultural exhibit in the armory at Trenton during the second week in December. F. J. Tomlinson was elected to attend the horticultural meeting and Roscoe DeMott the agriculture. H. E. Deats was elected delegate to the annual meeting of the State Board in the state house January 29 and 30.

During the autumn an attempt was made to secure speakers from the experiment station to give addresses at a County Board meeting at Grandview Grange Hall, a place not touched by the State Board Institute workers, being out of touch with the railroad accommodations, but were disappointed to learn that all were booked for the institute season.

The officers of our County Board will endeavor to be more prompt in securing help from the State and try to create an interest in parts of the county not reached by institute workers.

There has been little change in the crops or farming interests of the county during the past year. A few dairies have closed and perhaps a few in the poultry business have discontinued; but others are taking their places.

The figures given below are prices received at local markets during November and December, 1913:

New corn ears	75c per cwt.
Wheat	80-90c per bushel
Rye	60-65c per bushel
Oats	45c per bushel

Pork started at 12c per pound, but at the end of the season was down to 9c and 10c. Live poultry brought from 13c to 15c.

Milk has been running about one-half cent behind last year's price. During November the average price was $3\frac{3}{4}$ c and 4c, and in December $3\frac{1}{2}$ c and $3\frac{3}{4}$ c per quart.

Horses and cattle are holding their own in price and numerous dealers find ready market for western stock.

MERCER COUNTY.

OFFICERS FOR 1914.

<i>President</i> , J. T. ALLISON	Yardville, N. J.
<i>Vice-President</i> , H. H. HUTCHINSON, JR.....	Robbinsville, N. J.
<i>Secretary</i> , R. E. HAINES	Robbinsville, N. J.
<i>Treasurer</i> , F. W. CRUSER	Hopewell, N. J.

BY THE SECRETARY.

The Mercer County Board of Agriculture held three enthusiastic meetings during the year 1913.

The twenty-ninth annual meeting held in the court house, Trenton, on February 22, was the largest in its history. The following subjects were discussed: "Lime and Its Application," by Dr. J. G. Lipman; "White Potato Production," by Prof. Alva Agee; "Three Meals a Day on the Farm," by Mrs. Edith C. Salisbury; "Books for Farmers," by Miss S. B. Askew.

They also held the sixth field meeting at the beautiful home of F. W. Cruser, near Hopewell, on July 31. State Senator Leavitt and State Master Gaunt, also Prof. Alva Agee, addressed the meeting. The lecturer of Mercer Grange, Mrs. C. L. Sullivan, had a fine entertainment for all present to enjoy. It was a fine day and about five hundred people were present.

The County Board and Farmers' Institute held a joint meeting at Lawrenceville on November 26, and the following subjects were handled: "Woman and the Grange," by Dr. Hanna McK. Lyons; "Growing Potatoes in New Jersey," by Robert M. Dilatush; "Diseases of Potatoes," by Prof. Cook; "Farm Manures," by Dr. J. G. Lipman.

All of the meetings of the year show that the farmers of Mercer County are becoming more interested, and through the untiring effort of our president, J. T. Allinson, our County Board is what it is today.

The spring of 1913 was noted for a heavy frost that cut potatoes down to the ground and damaged the wheat crop in some sections. We also had a very dry summer and early fall, making it so the farmers could not plow their fallow ground till late, making a late sowing of grain in the northern section of our county. Crops were about as follows: Wheat, 80 per cent. at 90c; rye, 90 per cent. at 70c; oats, 75 per cent. at 45c; corn, 80 per cent. at 70c; hay, 70 per cent. at \$18; potatoes, 65 per cent. at 70c; peaches, 20 per cent.; apples, 50 per cent.; fall seeding of grass looking fine; milk scarce; pork, 10½c to 12c.

In conclusion will say that the farmers of our county feel very grateful for the summing up for the year 1913. for it was far better than we expected.

MIDDLESEX COUNTY.

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MIDDLESEX COUNTY.

OFFICERS FOR 1914.

<i>President,</i>	D. J. PERRINE
<i>Vice-President,</i>	W. H. GILES
<i>Secretary,</i>	WM. B. KURTZ

BY THE SECRETARY.

The regular meeting of the Middlesex County Board of Agriculture was held in the court house February 15, with a large attendance. An all-day session was held, with lunch served by the ladies. There was an exhibit of bread, cake, sandwiches, canned fruit and jelly, also field corn. Prizes were given for the best in each exhibit. Mrs. Edith Salisbury then at the College Farm judged the ladies' exhibit, and Dr. K. C. Davis the field corn.

Mrs. Salisbury gave a lecture on "How to Keep Well Without a Doctor." Prof. M. A. Blake gave an interesting lecture on "Why, When and How to Spray." Dr. K. C. Davis also lectured on "How to Select Seed Corn." He said we must do that when the corn is ripe in the fall. It must be stored in a dry place. Pick out all the ears as near alike as possible and have all the kernels the same color. Be sure the corn is ripe. Have the rows straight and uniform and have a deep kernel.

At our May meeting Dr. K. C. Davis spoke on "Corn Growing," and it was very instructive. Mr. D. J. Perrine spoke on "The Preparation of Soil for Grass," and Mr. Russel Perrine gave an exhibit of testing corn for seed by sprouting in a box. Mr. John M. Evans of New Market exhibited some very fine seed corn.

The regular yearly meeting was held in November with a large attendance.

A number of new names were added to the roll. The officers made their yearly reports. There was a large exhibit of apples, vegetables and field corn. Prof. Agee, of the College Farm, gave a very instructive lecture on raising corn. He said with good strong seed you can grow from ten to sixty more bushels of corn than can be grown with poor seed. Prof. Farley showed us how to pack apples in boxes so as to get the best price.

The Farmers' Institute was held in New Market December 4th, with a good attendance.

Hay and corn was a short crop, owing to the very dry summer. Vegetables were also a short crop.

MONMOUTH COUNTY.

OFFICERS FOR 1914.

<i>President</i> , G. W. BLATCHLY	Freehold, N. J.
<i>Vice-President</i> , T. P. JONES	Freehold, N. J.
<i>Secretary</i> , D. H. JONES	Freehold, N. J.
<i>Treasurer</i> , W. M. MOREAU	Freehold, N. J.
<i>Chairman</i> , Ex-Com. C. D. B. FORMAN	Freehold, N. J.

BY THE SECRETARY.

The activity of the Monmouth County Board of Agriculture is on the increase.

The two regular meetings were held in Freehold, one in March, 1913, and another in November, 1913, the March meeting being held in the court house and the November meeting in the grammar school auditorium. This was in connection with the Y. M. C. A. Boys' Agricultural and Girls' Industrial Contest, the work of both being exhibited and prizes awarded.

Addresses were given by Prof. John Enright, county superintendent of schools, and by W. B. Duryee, teacher of agriculture at Freehold High School. The boys and girls deserve a great deal of credit for the exhibit, which showed interest and time put forth to accomplish what they did.

A very interesting field meeting was held July 19, 1913, at the farm of the secretary, D. H. Jones, about six hundred present coming from all parts of Monmouth and adjoining counties.

At 11 o'clock fields were inspected of the growing crops; 12:30 a basket lunch was had on the shady lawn; 2 p. m. interesting addresses were delivered by the following: Mr. Jones gave an address of welcome; Dr. Lipman, Prof. Agee, Blake and Cook all addressed the farmers and their wives, who were seated on the lawn.

Eighty-five autos and thirty-five carriages were parked about the lawn. All departed in the late afternoon, expressing the desire to have it repeated again next year.

The secretary made an earnest call for reports from the township directors, and received but two.

Crops and prices are about as follows: Hay, fair, \$20 per ton; grain, good; corn, 65c per bushel; wheat, \$1; rye, 75c; small truck, light crop, prices good; potatoes, good crop and good prices; butter, 30c per pound, eggs, 35c per dozen average; cows, high, good milch cows bringing \$100; horses, prices little lower; veal, 10c per pound live weight; pork, dressed 11c per pound; beef, by quarter 14c per pound; property farm land still high.

The Monmouth County Farmers' Exchange had the best year since it has been organized, doing a large amount of business and putting dollars in the farmers' pockets, for which many farmers give it no credit. Selling all farm produce and purchasing goods needed by the farmer, such as seed fertilizer, etc.

Not much produce in hands of the farmers at beginning of the year 1914.

Considerable fall plowing done.

Many learning the art of mixing their commercial fertilizer and saving many dollars by the art.

MORRIS COUNTY.

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A heavy acreage of white potatoes will be planted in the county.

Monmouth county has twelve live granges, which adds to the agriculture interest and a Pamona Grange.

MORRIS COUNTY.

OFFICERS FOR 1914.

President, GEORGE E. FELCH Florham Park
Secretary and Treasurer, EDGAR C. HOPPING Florham Park

BY THE SECRETARY.

At the annual meeting of the Morris County Board of Agriculture held at Florham Park December 13, 1913, nine new members joined and the above officers were elected.

The Board held two meetings the past year since the Annual Meeting held September 14, 1912. One at Morristown on Tuesday, January 28, under the auspices of the New Jersey State Board of Agriculture Farmers' Institute, and which was very poorly attended and very little interest shown, although we had very good and interesting subjects and good speakers.

The next day, Wednesday, the 29th, the meeting was held at Dover, which was very interesting, with good attendance, good speakers and good subjects. "Socialized or Mixed Farming, Which is Better for This Section?" Discussion. "Swine Production; How to Succeed," George L. Gillingham; "Improvement of Our Farm Horses," Prof. F. C. Minkler; "Peach Production," Charles D. Barton; "Home Mixing vs. Commercial Fertilizers" (charts used), C. C. Hulsart; "Modern Methods in Poultry Raising" (illustrated with stereopticon slides), Prof. H. R. Lewis, New Brunswick, N. J.

A request was made that more meetings should be held at Dover.

The following resolution was offered and carried unanimously:

"That the Secretary of the Morris County Board notify the Secretary of the State Board that we are in favor of the continuation of quarantine of foreign potatoes."

It gave the Morris County Board great pleasure when the President informed them he had been awarded the cup at the exhibit at Elizabeth again.

OCEAN COUNTY.

OFFICERS FOR 1914.

<i>President</i> , C. M. RORER	Cassville, Ocean County
<i>Vice-President</i> , P. DAVITT	Toms River, Ocean County
<i>Treasurer</i> , H. R. WILLS	Toms River, Ocean County
<i>Secretary</i> , R. C. GRAHAM	Holmeon, Monmouth County

BY THE SECRETARY.

Ocean County Board of Agriculture has held three meetings this year, practically all in Jackson Township, as the dates for the other meetings at Toms River were canceled on account of the absence of the President, who was unable to attend; but our home meetings were both instructive and interesting, with discussions by some of the members on different crops and how to combat the different insects and to preserve moisture during the dry periods, that we have to contend with, as there seems to come every summer a lack of rain which lasts for weeks at a time.

On May 9 and 10 there was a killing frost and much damage done to all early truck, killing potatoes, strawberries and blackberries, huckleberries and cranberries in places; but the farmer did not despair. He up and at it again, and will come out all right, as most of the crops yielded far beyond his expectations.

We find that there is something that has benefited the farmers in the way of farming of late years whether it is from reading the literature that has been distributed or common sense. There are better and better crops, considering the seasons, than were raised a few years ago.

While Ocean County is not considered a farming county, still there are sections that can compete with any farming land in the State, and for the many different crops there are very few counties that excel it. The only obstacle in the way is railroad facilities, and that will be overcome by motor power to a large extent. The timber is being exhausted by fires and lumber mills, and soon the stately old pine and famous cedar swamps will be a thing of the past, as about all the large holdings have, through death, been sold to the lumber dealers.

Grass and grain looking good, considering the winter being without snow to cover them.

Pork is still high in price, while poultry and eggs are not as high as last year.

At our last meeting, December 21, the election of officers being the principal business, and after trying to find some new material, finally elected all the old officers.

SALEM COUNTY.

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SALEM COUNTY.

OFFICERS FOR 1914.

<i>President</i> , HENRY M. LOVELAND	Friesburg
<i>Vice-President</i> , MARWELL BUZBY	Woodstown
<i>Secretary</i> , GEORGIE A. DUELL	Woodstown
<i>Treasurer</i> , J. GILBERT BORTON	Woodstown

BY THE SECRETARY.

The meetings of the Board have been held, as usual, January, April and October, in 1913, and most interesting and instructive programs provided.

Prof. Alva Agee has been with us, also Prof. Carris, and all who have heard these men know we have been greatly benefited by their talks.

The weather conditions, with rains, droughts and late frosts, were very disastrous to many farmers; yet some escaped and had good crops, the reports of potatoes varying from fifty bushels per acre to three hundred and fifty-five.

Through a committee appointed by the County Board a potato and corn contest was carried on in the county. Several entries for the contest were made, but probably owing to weather conditions but few reported. The first prize for best acre was awarded to Clifford Crispin of Salem, who reported 344 bushels and 55 pounds; second, Clifford Flitcraft, Elmer, 250 bushels and 30 pounds; third, Carleton Moore, Daretown, 241 bushels and 10 pounds.

The prizes for best five acres were awarded: First, Clifford Crispin, 77,710 pounds, 1,295 bushels, 10 pounds, averaging 259 bushels; Carleton Moore, 60,360 pounds, 1,056 bushels, averaging 211 bushels, 12 pounds.

There were not enough contestants in the corn contest to claim all the prizes. First prize in check rows was awarded to Henry M. Loveland, 5,450 pounds, equal to 75 25-36 bushels. First prize in drill rows Clifford Flitcraft, 9,420 pounds or 130 5-6 bushels. Best ten ears, Robert Baynes, Woodstown. Best ten ears by boy under 18 years of age: First to Frank Davis, Jr.; second, Ralph Davis. Special prize for best ten ears, Floyd Flitcraft, Elmer.

As but few farmers seemed interested, the contest is not to be carried on this year.

We are looking forward to having a farm demonstration for the county, which will be a great benefit to the farmers.

UNION COUNTY.

OFFICERS FOR 1914.

<i>President</i> , E. R. COLLINS	Westfield
<i>Vice-President</i> , G. E. LUDLOW	Cranford
<i>Secretary</i> , C. H. BREWER	Rahway
<i>Treasurer</i> , OGDEN WOODRUFF	Elizabeth

BY THE SECRETARY.

Eleven regular meetings were held by the Board during the season. Some of the meetings known as specials were covered by specialists on subjects chosen by the Board. February 8 the mosquito question was gone into in detail by Russell W. Gies, and a very interesting talk on what the mosquito commission had done and what they intended to accomplish if continued, was gone over, and the Board, after discussion, passed a resolution recommending continuation of the commission for a couple of years longer, as they believed that good results were being obtained. The interests of both agriculture and horticulture were well brought out in the annual exhibition held the first week in December in Elizabeth by the fine display of fruits, vegetables and cereals grown in the county during the season. Considering the unusually dry weather during the summer and fall it was a remarkable exhibit, over sixty plates of apples of several varieties being shown, also several varieties of pears and quinces. The vegetable display was large and included many fine specimens, as well as some of great size and weight. In the summer corn contest for the best five ears of Reed's yellow dent grown in the county from seed distributed by Mr. F. W. Summer last spring, Mr. W. B. Woodruff, of Westfield, captured the silver cup put up by Mr. Summer as a special prize, and also ten dollars in gold for the best five ears grown in the county, the five ears grown by Mr. Woodruff scoring 99½ points.

The poultry interests in the county are wide awake, and at the exhibition many exhibits were made and some very fine stock shown. The exhibit of poultry and other birds being much larger than in 1912.

The crop season for the county has been almost a repetition of the season of 1912, a cool, wet spring retarding planting and growth of crops, and then extreme drought. In this respect more severe than that of the past year, which cut down the yields of all crops and matured fruits from ten days to two weeks ahead of normal conditions. Frost in the early part of May did considerable damage, causing loss of some pears and apples. Part of the strawberry crop and some other plants set out for early crops. Hay was a light crop, and grains grown in the county suffered much for lack of moisture to mature normal yield.

Several new members have been added to the membership of the Board the past year, and the work done in the interest of agriculture in the county of much benefit. The question of having a farm demonstrator for Union county was taken up by the Board, and a resolution passed asking the superintendent of farm demonstrators for the State to secure one for Union County, as notwithstanding the fact that each year sees more of the acreage of land going into building lots, there is an increase each year in the amount and acreage of crops grown, and with the nearby markets there is no reason why the growing of more truck and small fruits should not prove profitable. Some of the large

WARREN COUNTY.

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truckers have purchased automobile trucks to take their produce to market. Quick transportation will mean an increase in crops, as it will save a good share of the time the marketman has had to put in on the road to and from market, besides allowing the use of the horses at home.

WARREN COUNTY.

OFFICERS FOR 1914.

President, JAMES I. COOK Delaware, R. F. D.
Vice-President, NICHODEMUS WARNE Broadway, R. F. D.
Secretary and Treasurer, CHAS. M. OBERLY Phillipsburg

BY THE SECRETARY.

The Warren County Board of Agriculture held four meetings the past year. These meetings were held in different places in order to make it convenient for members and farmers to attend.

Help on the farms in Warren County is very scarce, the inexperienced not caring to work on farms.

The year of 1913 has shown a fair yield of the different crops in this County, the oat crop was not up with the others, but the farmer is satisfied.

At the present time poultry is bringing 18c to 20c, and dressed extra 10c. Pork is 12c wholesale, and good veal calves bring 11½c to 12c.

With fair prices, the farm with an up-to-date farmer is today a good-paying investment. The growth of our towns make good markets. In the lower part of Warren County we have trolley roads to carry freight and macadam roads.

While our Board has gained a few members the past year, it is hard work for the leaders to understand that a person must have a few days in the year to devote to education. The ones that attend the most lectures are making the best headway in farming. We need more financial aid from the State to have lectures in the remote places from the railroads.

If we can get the young men and ladies interested and started, there will be happier lives and healthier people, otherwise the city will get them.

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