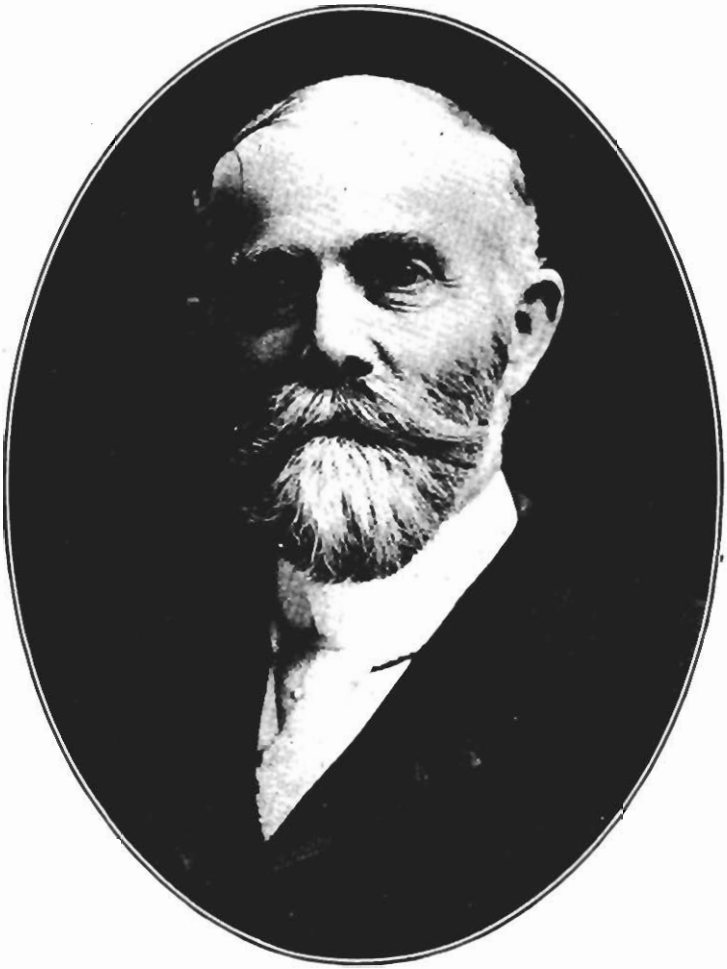


FRANKLIN DYE.

For thirty years Secretary of State Board of Agriculture, and July 1st, 1916, appointed Chief of Bureau of Statistics and Inspection in the new Board.

STATE OF NEW JERSEY

Forty-third Annual Report

OF THE

State Board of Agriculture

1916.

Printed by Order of the Legislature

TRENTON, N. J.
MacCrellish & Quigley Co., State Printers.
1916

Letter of Transmittal.

To the Hon. James F. Fielder, Governor of New Jersey:

SIR—In accordance with the act creating the State Board of Agriculture, adopted April 22d, 1884, and with the provisions of the law approved June 15th, 1895, I have the honor to present the report of said Board for the year 1915.

FRANKLIN DYE,
Secretary.

Dated Trenton, February 1st, 1916.

State Board of Agriculture.

OFFICERS AND EXECUTIVE COMMITTEE FOR 1916.

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 of State Board of Agriculture.

CLASS A.

.....		Geological Survey.
.....		Board of Visitors of Agricultural College.
.....		
Dr. J. G. Lipman, ...	New Brunswick,..	Professor of Agriculture.

CLASS B.

Geo. W. F. Gaunt,	Mullica Hill, ...	Master of State Grange.
John T. Cox, ...	Whitehouse Station, ...	Secretary of State Grange.

CLASS C.

E. O. Wittyen, ...	Cedar Grove, ...	State Horticultural Society.
Henry Hopper, ...	Wyckoff, ...	Bergen Co. Pomona Grange.
Henry S. Lippincott, ..	Marlton, ...	Burlington Co. Pomona Grange.
Martin Schubert, ...	Laurel Springs, ..	Camden and Atlantic Co. P. G.
Joseph Camp, ...	Pierces, ...	Cape May Co. Pomona Grange.
F. O. Ware, ...	Deerfield, ...	Cumberland Co. Pomona Grange.
E. Oscar DeCamp, ...	Roseland, ...	Central District Pomona Grange.
Albertus Orr, ...	Swedesboro, ...	Gloucester Co. Pomona Grange.
David H. Agans, ...	Three Bridges, ..	Mercer Co. Pomona Grange.
John Applegate, ...	Princeton, R. D. 2,	Hunterdon Co. Pomona Grange.
H. W. Kline, ...	New Brunswick,..	Middlesex and Somerset Co. P. G.
H. E. Taylor, Alternate,.	Freehold, ...	Monmouth Co. Pomona Grange.
M. J. Brooks, ...	Elmer, R. D. 3, ..	Salem Co. Pomona Grange.
John S. Katzenstein,..	Hamburg, ...	Sussex Co. Pomona Grange.
James I. Cook, ...	Hope, ...	Warren Co. Pomona Grange.

BOARD OF DIRECTORS.

NAME.	ADDRESS.	TERM.	COUNTY.
J. L. Purzner, ...	Egg Harbor City, R. D. 1, ...	2 years.	Atlantic.
Carl Schirmer, ...	Egg Harbor City, R. D. 1, ...	1 year.	"
Albert I. Ackerman, ..	Ridgewood, R. D. 2, ...	2 years.	Bergen.
Fred M. Curtis, ...	Harrington Park, ...	1 year.	"
Silas Walton, ...	Moorestown, ...	2 years.	Burlington.
Edward Rogers, ...	Medford, ...	1 year.	"
Benj. Barrett, ...	Blue Anchor, ...	2 years.	Camden.
Wm. Horner, ...	Merchantville, ...	1 year.	"
Clinton Cresse, ...	Goshen, ...	2 years.	Cape May.
L. D. Compton, ...	South Dennis, ...	1 year.	"
Roland B. Gilman, ...	Cedarville, ...	2 years.	Cumberland.
L. Willard Minch, ...	Bridgeton, R. F. D., ...	1 year.	"

NAME.	ADDRESS.	TERM.	COUNTY.
A. W. Fund,	Chatham, R. F. D.,	2 years.	Essex.
Cyrus B. Crane,	Verona,	1 year.	"
B. Owen Pancoast,	Swedesboro,	2 years.	Gloucester.
Amos Kirby,	Mullica Hill,	1 year.	"
Hiram E. Deats,	Flemington,	2 years.	Hunterdon.
Egbert T. Bush,	Stockton,	1 year.	"
Thomas Loughran,	Jersey City,	2 years.	Hudson.
Daniel Y. Lewis,	280 Fairmount Avenue, Jersey City,	1 year.	"
Wm. H. Blackwell,	Titusville,	2 years.	Mercer.
Fred Gardner,	Robbinsville,	1 year.	"
W. Hendrickson Clark,	New Brunswick,	2 years.	Middlesex.
W. B. Kurtz,	Bound Brook, R. D. 1,	1 year.	"
Edw. W. Winsor,	Farmingdale,	2 years.	Monmouth.
D. H. Jones,	Freehold,	1 year.	"
Edgar C. Hopping,	Florham Park,	2 years.	Morris.
S. E. Young,	Rockaway,	1 year.	"
R. C. Graham,	Holmeson,	2 years.	Ocean.
John W. Jamison,	Cassville,	1 year.	"
Harry M. Berdan,	Paterson, R. F. D. 1,	2 years.	Passaic.
Jos. J. Nellis,	Paterson, R. F. D. 1,	1 year.	"
Frank Powell,	Salem,	2 years.	Salem.
H. M. Loveland,	Bridgeton, R. D. 8,	1 year.	"
Jacob D. Quick,	South Branch,	2 years.	Somerset.
Geo. D. Randolph,	Grove St., Somerville,	1 year.	"
Thos. E. Inslee,	Newton,	2 years.	Sussex.
Thos. M. Roe,	Branchville,	1 year.	"
E. R. Collins,	Westfield,	2 years.	Union.
C. T. Woodruff,	Elizabeth, R. F. D.,	1 year.	"
N. Warne,	Broadway,	2 years.	Warren.
Ernest Race,	Oxford,	1 year.	"

OTHER ASSOCIATIONS.

J. D. Holman,	American Cranberry Growers' Association.
Leon W. Mount,	New Jersey Bee Keepers' Association.
Geo. A. Crawshaw,	Veterinary Medical Association of New Jersey.
Chas. J. Fiske, Plainfield, Lewis G. Heller, Bridgeton,	New Jersey State Poultry Association.
A. McLean Parker,	Princeton Agricultural Club.
	Mercer County Farm Bureau.
	New Jersey Holstein-Fresi Association.
Robert T. Evans,	Mt. Laurel Farmers' Club.
Arthur Lozier, Ridgewood, R. F. D.,	Bergen County Farm Bureau.
G. M. Eckert, Saddle River, Wm. M. Peck, Dumont,	Bergen County Dairymen's Association.
Robt. Fairburn, Joseph Larocque, Jr.,	North Jersey Agricultural Association.
Ellwood Douglass,	Department of Farm Demonstration and Vocational Education of Atlantic County.
Fred Lippincott,	Burlington County Farm Bureau.

NEW JERSEY STATE BOARD OF AGRICULTURE.

Forty-third Annual Meeting.

THE STATE HOUSE,
TRENTON, N. J., February 2d, 1916.

The meeting was called to order by President Frelinghuysen in the chair.

President Frelinghuysen—It has been customary to open these proceedings with prayer. The minister who was to be here does not seem to be in attendance. I will ask the delegates to rise and attend me in prayer.

Grant us Thy blessing, Heavenly Father, as we gather to take up our work. Bless our collective and individual effort, and may it ripen to Thy glory and the welfare and happiness of all the people of this commonwealth. We ask this not for any merit that we possess, but for Thy honor and glory, for Christ's sake. Amen.

President Frelinghuysen—The next business is the calling of the list of delegates. All delegates are requested to answer as their names are called. The Secretary will call the list.

(Secretary Dye then called the list of delegates, which is inserted preceding the Minutes.)

Secretary Dye—The Bergen County Dairymen's Association, quite recently organized, has sent two delegates, and ask for admission to this Board. It will be proper to make a motion for their admission.

Mr. Rider—I move that the delegates be received.

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

President Frelinghuysen—I understand the North Jersey Agricultural Society is a very flourishing society, in Somerset and Morris counties. It has about 100 or 125 members, and has been very active. One of the members is Mr. Schley, who carries out that wonderful exhibition every year at the fair in Somerset county. And at a recent meeting they appointed two delegates, Mr. Fairburn and Mr. Larocque. I understand they are going to attend. A motion to admit the North Jersey Agri-

cultural Society to the proceedings and activities of this Board will be in order.

Mr. Rider—I make that motion.

This motion was seconded by Mr. Parker, and, on a vote, carried.

President Frelinghuysen—The next business is the presenting of the Order of Business.

Secretary Dye—The Order of Business is in your hands.

President Frelinghuysen—The next business is announcing the committees appointed. The Chair will announce the following committees:

Committee on Credentials—Edward Rogers, Medford; James I. Cook, Hope; Amos Kirby, Mullica Hill.

Committee on Resolutions—Egbert E. Bush, Stockton; H. M. Loveland, Woodstown; E. O. Wettgen, Cedar Grove.

If there is no objection, those committees will stand.

The reading of the Executive Committee's report is next in order.

The report was read by Mr. Brown, and is as follows:

Executive Committee's Report, 1915.

Your Executive Committee has held twelve meetings during the year past, and have endeavored in all possible legal ways to advance the interests of agriculture in the State of New Jersey, as represented in and by this Board. Acting in coöperation with State Entomologist, State Plant Pathologist, Director of Extension Work and the Dean and Director of State Agricultural College and Experiment Station, and in providing for the direction and work of the Farmers' Institutes. Questions of interest to our farmers, and affecting to some extent the welfare of the general public, have claimed attention.

At the February meeting the Full Crew law was discussed, and a resolution adopted recommending that the Legislature consider the advisability of committing this matter to the Public Utility Commission, with proper power to regulate the same. The matter of shortage of freight cars during the season of harvesting the crops was considered. It was shown that the farmers had never coördinated their demands for cars early enough so that the railroads could devise some comprehensive plan to meet the demand. The question was referred to the State Chamber of Commerce, to act with the Executive Committee, the State Grange, the business interests of the State and the railroads, in order that the trouble might be removed. The resolutions adopted were also sent to Mr. E. R. Collins, chairman Transportation Committee of this State Board.

At the March meeting President Frelinghuysen offered a resolution calling upon the Legislature for necessary appropriation to control and eradicate

foot and mouth disease now invading our State. (See Minutes, March 9th, 1915.)

At the December meeting Dr. Headlee recommended an amendment to the law, chapter 249, laws 1903, so that a quarantine could be effected against importing Christmas trees and greens from areas affected with Brown-tailed and Gypsy Moths, as well as other pests affecting trees and plants.

At the May meeting permission was given to print a comprehensive bulletin on Poultry and Egg Production. Prof. H. R. Lewis, of the Poultry Department of the State Agricultural College, was requested to prepare the material for the bulletin. Prof. Lewis volunteered his services, and the bulletin has been prepared and an edition of 5,000 copies printed and put in circulation. The demands for them are so many that another edition will soon be needed. For details of your committee's work, see Minutes in office of the Secretary.

The final meeting of the committee prior to this Annual Meeting was held February 1st, 1916, when committees were named and arrangements made for this occasion. The program of subjects chosen for consideration we consider timely and appropriate at the present time, and the speakers are among the first in their line of work. We bespeak the earnest consideration of the members to the questions presented.

Another year calls us to the duties of home and farm, during which we shall need to lend our aid to all our worthy agricultural associations. That you all, and all our farmers, may have a prosperous year is the earnest wish of your committee.

Respectfully submitted by the committee,

FRANKLIN DYE,
Secretary.

President Frelinghuysen—Next is the report of the Treasurer, Mr. Darnell.

Treasurer Darnell—Mr. President, I have no report to present at this time, as the money has all been paid direct from the State Treasurer's office during this last year.

President Frelinghuysen—You have heard the report, which is received. The next business is a report by the Committee on Transportation and Freight Rates, Mr. Collins..

Mr. Collins then read the report of the committee, which is as follows:

Report of Committee on Transportation and Freight Rates.

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

GENTLEMEN—The work of your committee in the year past would seem to indicate that transportation conditions in our State are improving, that our people are giving more attention to transportation matters and studying them out for themselves. They are learning that it pays to get posted and keep posted on transportation matters. The matters submitted to your com-

mittee this year have been less in number than in any year since the committee took up its work. During the year the chairman of this committee has attended eleven meetings for the purpose of explaining transportation methods and advising shippers as to routes, packing and classifications. Assistance has been given in two cases before the Public Utilities Commission, and three complaints have been carried before the Interstate Commerce Commission. The matters before the Interstate Commerce Commission are still pending, those before the Public Utilities Commission are settled. The most important of the cases before the State Commissioners was that of the Farmers' Transportation Association of Burlington County against the Pennsylvania Railroad. The conditions of which the Farmers' Association complained were spoken of in the report of this committee last year. The situation was not improved in 1915, when the flow of traffic commenced over the West Jersey and Seashore and the river lines; and, in order to know what to expect and where they stood, the Farmers' Transportation Association filed complaint against the Pennsylvania Railroad and the Adams Express Company. The matter was brought to a hearing before the commissioners, and a large number of shippers was present at the hearing. It seemed from our standpoint that the shippers put up a strong case, showing that their shipments were irregular in reaching Jersey City, and that they were entitled to a regular service. The commissioners seemed to think differently, however, and the complaint was dismissed by the Board with a recommendation to the Pennsylvania Railroad Company that it makes a particular effort to maintain the schedule of the train used by the petitioners. Whether the recommendation had the effect of improving conditions has not been reported.

This committee would recommend to our people to pay more attention to shipping in carload lots. Let the members of a community keep in touch with each other, and, when they are shipping to a common point, make the shipment a carload. In many instances this will result in a substantial saving.

In the shipping of live stock special attention should be given to the rules and regulations of the transportation companies. In the shipment of live stock many things apparently trivial have an effect on the transportation rate. Whether accompanied by an attendant to care for them, whether a value is given, or whether they are to be insured, all have an important bearing, and every detail should be understood before live stock is put aboard the cars.

In receiving shipments, demurrage charges in many instances add to the cost. The length of standing time allowed varies with different classifications, and if a shipment is expected, arrange to clear the car in the required time. The transportation companies claim that they do not want demurrage, but it is a large item in their income nevertheless.

With a view to ascertaining their availability for the transportation of farm produce, a member of your committee made a tour of the two important canals crossing the State last summer. Both traverse fertile sections—the Delaware and Raritan from New Brunswick to Trenton and the Morris from Jersey City to Phillipsburg. After giving the matter considerable

study and interviewing the farmers along both routes, nothing developed that would preclude the use of the canals for transportation of farm products in light power boats. The Delaware and Raritan traverses a comparatively even territory through Middlesex, Somerset and Mercer counties, and in sections of those counties where rail transportation is not convenient. The Morris Canal passes through a more rugged area in Warren and Morris counties, and a more thickly populated in Passaic, Essex and Hudson counties. Its value for transportation to farm interests would not be so great in the three last counties as in the first two, except for the terminals for distribution to the consumers. The Delaware and Raritan Canal is kept in good condition by the Pennsylvania Railroad, by which it is controlled, and considerable traffic passes through it in the large boats each navigating season. The Morris Canal is in bad condition, apparently awaiting the time when it will be abandoned completely. While it is theoretically open for traffic, it is practically closed, and all that shows life about it is the fight for its abandonment. The most important places touched by the Morris Canal are Jersey City, Newark, Bloomfield, Richfield, Paterson, Boonton, Rockaway, Dover, Hackettstown, Washington and Phillipsburg. The length of this canal is eighty miles. As a traffic highway it would drain on an average of eight miles for each side.

The old horse-drawn canal boat of fifty to two hundred tons is out of question for present-day transportation, but the small, modern power boat would meet the demand.

In 1914 and 1915 the Federal Department of Agriculture made a comprehensive investigation in the transportation of farm products by water where the conditions allowed. On the Mississippi and Ohio rivers, and their tributaries, power boats of two tons were operated at eight cents per mile, taking into consideration interest on investment, depreciation in value, labor and fuel. The boats were of light draft, operating in four and a half feet of water, and some of them in less than four feet.

The capacity of the Morris Canal is a seventy-ton boat, eighty-nine feet long, ten and a half feet beam, with a draft when loaded of three feet ten inches. Originally the dimensions of the canal were: width on the bottom, twenty feet; width on the water-line when full, forty feet, and depth five feet. Through neglect these dimensions have become somewhat modified in the past few years, though the original depth in the center has been maintained. The lock limit is about every fifteen minutes. The capacity of the Delaware and Raritan Canal is greater than the Morris. Boats can be operated on either canal at a speed of ten miles per hour without damage to the banks.

The cost of transportation on the Mississippi and Ohio rivers and their tributaries, as ascertained by the department, was from six to eight per cent. of the farm value of the commodity transported. Transportation over our canals in thickly populated districts should not cost any more, if as much.

The convenience of canal transportation is apparent; stops can be made wherever there is occasion to load or unload: at the farm, at the cross-road, or stated places in the town.

One of the main arguments made in favor of the inland waterway along the coast is the value it would be in offering transportation for farm products; the same arguments will apply to the utilization of the two inland waterways already established. Transportation plays a more important part in the high cost of living than it is given credit for. Values at the farm or at the market may vary, but there is no fluctuation in the cost of transportation—it never varies unless upward. The price of the wheat has no effect on the cost of its transportation from Minnesota to Jersey City tidewater.

The use of these canals for transportation of the class that we are interested in is worthy of a more careful investigation than your committee was able to give, and the Morris Canal should not be abandoned until it is apparent that it is completely and absolutely useless for any purpose, not even the transportation of farm products or products to the farm.

All of the large interests in which transportation plays an important part have combined, and have specialists giving their time and attention to solving their transportation problems. When radical changes are contemplated all interests are consulted except the farm interests, and the farm interests are always open to attack on a rising rate schedule.

The time is not far distant when the agricultural interests of the State will require some general organization to look after transportation matters and be on the job all of the time.

Respectfully submitted,

E. R. COLLINS,
J. T. ALLINSON,
W. H. TAVERNER.

President Frelinghuysen—Mr. Collins, you have another committee report, haven't you?

Mr. Collins—Last winter there was organized a State Engineering Conference, and our worthy chairman requested me to represent the State Board of Agriculture at that conference, as engineering happens to be my profession, and I will read you my report.

Mr. Collins then read his report, which is as follows:

Report of State Engineering Conference.

Mr. Joseph S. Frelinghuysen, President State Board of Agriculture:

DEAR SIR—Acting on your request to represent the State Board of Agriculture in the State Engineering Conference, I have attended most of the meetings of that Board since its organization. Briefly, the work of the conference is to systematize the engineering work of the State and to arrange so that any one department may have the use and advantage of any engineering work done by another department, and save the State the expense of having two or three departments cover the same ground.

So far as I have been able to ascertain, there never has been any engineering work done for the State Board of Agriculture. This Board has

never taken up any matters that would require that class of expert work. I had a hope that there might have been engineering work done in other State departments that under the conference would be made available to this Board, but so far nothing has developed.

That the agricultural interests of the State would be benefited by some intelligent engineering work there is no doubt. Other States spend many thousands of dollars for this class of work in reclamation and irrigation, and in solving the problems of farm drainage and sanitation. There are several areas in this State where proper drainage would open for cultivation the most fertile soil in the State, and there are other areas where irrigation is all that is required to make a wonderfully fertile soil available for cultivation. It seems that such matters have never been taken up by our State Board of Agriculture, and it is doubtful if they could be taken up by the Board as it is at present organized.

When the departmental representatives in the engineering conference become more familiar with the work in hand, and the scope and extent of the work of all departments becomes available for review, there is no doubt but that it will be shown that there has been considerable work done by other departments that will be available for use by this Board.

Yours very truly,
E. R. COLLINS.

President Frelinghuysen—The next business is the report of the Secretary of the State Board, Mr. Dye.

Secretary Dye then read his report, which is as follows:

Report of Secretary, 1915.

The year 1915 will be remembered as an exceptionally productive one throughout the entire United States, and the November 8th, 1915, estimates of the U. S. Department of Agriculture, Bureau of Crop Estimates, places New Jersey at 107.1—7.1 above average yield. Although this would seem to indicate an unusually prosperous year for our farmers, the opposite is true. The demand at remunerative prices did not equal the supply, hence a much greater quantity of produce was handled to secure a reasonable return for labor and money expended. Indeed, so low were the prices offered that such desirable produce was left to waste in the field, and much that was taken to market, with our present marketing facilities, did not pay expenses. Much conditions are likely to occur with quickly perishable crops when an excessive yield is produced. This is not necessarily caused by lack of demand—there are consumers enough—it is due rather to the failure of our city authorities to establish effective and cheap means for the distribution of farm produce throughout the cities on its arrival. On this point the *Country Gentleman* of August 28th, 1915, says, under the heading "A Big Harvest Waste":

"The unparalleled glut in the eastern produce markets has spread discouragement among hundreds of vegetable growers. Marketmen have not been able to keep the big receipts moving nor to keep the retail prices low

enough to stimulate consumption sufficiently to take care of the surplus. In Philadelphia, as well as in other large eastern cities, thousands of tons of perfectly good foodstuffs have been wasted, and larger quantities have been left to rot in the field, as the market prices would not pay the cost of harvesting and shipping.

"The general average of prices of crops has been depressed during recent weeks, and while the wheat crop now being harvested is probably the greatest ever grown, only the fact that many farmers are withholding their wheat from market in the hope of getting something over a dollar a bushel for it and the damage due to wet weather has kept the price from declining sharply. Reports on potatoes and other crops to be harvested later show that the yields are heavy and that prices are also weakened.

"Just why it is always assumed that the producer must place his product under the very nose of the consumer in order to have him eat it while it is fresh has never been explained. It would seem reasonable to expect that some of these millions of increased population might be interested enough in feeding themselves to meet the producer half way and develop means of distributing foodstuffs from the primary markets after the producer has delivered them there and paid the charges of transportation. The missing link in food distribution just now appears to be between the receiving market and the consumer; or, in other words, within the city. It is a municipal problem, and one that chiefly concerns the inhabitants of large population centers, as to how best to conserve and distribute foodstuffs when the man on the land has delivered them at the city gate. The newspapers might well urge the city consumer to buy in quantity when the gluts are on.

"It requires only a few experiences with flooded markets to make the average farmer reduce his production to a point that will yield the maximum net return. We have failed to listen to the economists, who tell us that the production of foodstuffs is an industry in which a relatively small margin in the market price over the cost of production, combined with favorable weather conditions, stimulates an immediate increase in total production.

"We don't need bigger crops, but a better utilization of those that we are now producing, and a distribution that prevents enormous wastes and guarantees the producer a reasonable return."

The notion that the farmer "must place his production under the very nose of the consumer" seems to be the view of some writers. The *Newark Eagle,* as quoted in the *Trenton Times* of August 5th, says:

"AFFECTS ALL CLASSES.

"Just now the South Jersey farmers are talking about market problems. They are to discuss the subject at the grange meetings. And that is all it will amount to if the remedy is left to the farmers. If they alone were the sufferers by their torpidity and neglect of their interests, the consumer would have no reason to worry.

"But, unfortunately, all the people are affected in their household economies. They pay unreasonable prices in the markets in seasons when many

thousands of tons of fruit and vegetables are left to rot or are fed to the hogs. The economic loss is also a serious one for the State, the Legislature of which pays no heed, and has for years maintained an Agricultural Board that has never done anything.

"The experience of this season is calculated to stir up the interest of the farmer in remedial legislation. He can be taught only by object lessons, and this year he has got one."

The statement that the "Agricultural Board has never done anything" shows gross ignorance in view of actual work done, and constant efforts being made for further progress. The first Farmers' Exchange, now doing a business of one and a half million dollars a year, was originated and organized by a President of the State Board of Agriculture. From this three other similar organizations in the State have been established. Through the County Boards, also, city markets are being established and are meeting with such success as the city people by their patronage and coöperation determine. Furthermore, the question of marketing has been under discussion at the Farmers' Institutes and other farmers' meetings for years. More to the point, the *Eagle* continues:

"Through legislative action and the aid of the State the New Jersey farmers can be enabled to establish a system of distribution in coöperation with the cities to bring them in immediate contact with the consumer. When this is accomplished there will be no dearth of food in the cities, except at arbitrarily high prices, while food is left to rot on the farms.

"But this question of distribution and food waste should at once be taken up in the cities and thrust upon legislative candidates. It is the livest question at present before the State, and, unlike most public questions, it affects all classes and all interests. It is eminently a human one."

"Legislative action" was proposed in the bill passed last winter.

There are several parties interested in the distribution of farm produce in one or more particulars. The producer stands first. From the products of his farm he must gain a livelihood, and it is to his interest to secure a price for them that will insure him a reasonable profit above cost of production and transportation.

The consumer is interested in buying the necessities of life that come from the farms at as low a price as possible. But (except when the farmer peddles his produce out of his own wagon) there are others who expect to secure a profit by handling these crops. The transportation companies are first, then comes the city dealer, or middleman, next the retailer, and the street fruit stand, and, with all these, the draymen and express companies. It is evident, therefore, that any successful general effort for the quick and comprehensive distribution of farm produce must include most, if not all, the parties named. Such an arrangement cannot be developed in a day.

It will require much thought and careful deliberation, with a knowledge of the facts in each case as they now exist, in order to make a hopeful start. Experience will reveal the defects and necessities of any scheme that may be adopted. With honesty of purpose and experience as a guide, I believe it will be possible to devise a plan of distribution that will be far superior to our present unorganized methods.

Mr. Brand, Chief of Office of Markets and Rural Organization, says, in his edition of November 27th, 1915:

"Under our present system of marketing food products the consumer seldom receives any material benefit from the production of an unusually large crop. While our distributing system seems fairly satisfactory as long as products are handled in car lots, its functions are not properly performed when unusually large quantities of food products have accumulated in the larger markets and need to be passed on to the consumer.

"Wholesale prices are often so depressed as to be ruinous to the producer, while the consumer who buys in small quantities realizes little reduction in price. In other words, our present methods do not give to the consumer the benefits of the unusually low prices which producers receive in seasons of abnormal production."

One object of our Farmers' Exchanges is to direct produce from the congested centers to markets not so well supplied. With this done there is still the absolute need of a capable city distributing agency, whereby fresh country produce may be made advailable to the consumer at a nominal cost for distribution. The so-called high cost of living has been a favorite topic with many writers, and the tendency is and has been to lay the blame for this on the farmer. Mr. John Nicholson, in a recent number of the *New York World,* quotes David Lubin as saying:

"The principal reason why the cost of food is increasing year by year in the United States is that the American farmer is blind, deaf and dumb so far as the organization of his industry is concerned.

"The coalescive tendency of the age; the corporative and coöperative activities in finance, in commerce and in labor, so patently manifest in our day, are, in this country, almost altogether absent in the industry of agriculture.

"No wonder then that the American farmer is commercially lame, commercially dumb, commercially deaf and commercially blind; no wonder then that in the United States the cost of food is increasing year by year and day by day.

"For the great mass of Americans the high cost of living really means the high cost of food, and we are faced with the extraordinary situation that in a country which enjoys unsurpassed facilities for raising food of every kind, most native products are, on the one hand, cheaper than they ever have been, while, on the other hand, food stuffs are dearer than they ever were."

The Department of Agriculture estimates, as a complete contradiction to such statements, as stated by *National Stockman and Farmer,* that farmers' coöperative marketing and purchasing organizations have transacted business amounting to $1,400,000,000 during the past year. If this estimate is anywhere near the facts, agricultural coöperation is not so puny as some economists have supposed, and it establishes the fact that the farmers are alive to their own interests in this line; they are not all idiots. Furthermore, thirteen States now have marketing bureaus.

If the farmer is the cause of the high cost of foodstuffs, as claimed, and if he is getting the benefit of that higher price, why should he trouble himself to organize in order to reduce the cost of foodstuffs to the consumer?

The facts are, however, the farmer is not the cause of high cost of living,

nor is he receiving a proportionate share in any such increase. What is it causes the high cost to the consumer when thousand of tons of perfectly good foodstuffs have been wasted or left to rot in the field because the market prices would not pay even the cost of harvesting and shipping, to say nothing of the cost of production? Such statements as those referred to and credited to Mr. Lubin are misleading to those who do not know, and are very unjust to the farmer.

STEREOTYPED RULES FOR FARMING.

It is impossible for anyone, scientist or experienced up-to-date farmer, to lay down a set of rules for the conduct of all farming affairs throughout a single year. The time and manner of plowing, preparation of soil, time of planting, proper manuring, cultivation, the treatment of orchards and meadows, care of live stock, machinery, tools, implements, etc., which include the work of a single year. Very many inquiries come to us from those who have little or no knowledge of the farming business, asking a series of questions that would require an encyclopedia of agriculture and horticulture to answer, and an inspection of the premises in addition. We try to answer all inquiries directly, or by referring the writers to the proper sources of information if such exist.

Give Nature a Chance.—The first essential in successful farming is a fairly correct and complete knowledge of our soils. Their natural fertility constituents, their adaptability to the crops intended to be produced, and the requirements of soils and crops in supplemental plant food.

Time of planting is another very important point—many crops are reduced in yield owing to the late start given them by the farmer. The wise man says, "There is a time to plant." He is right. A time in distinction from every other time, when the seed should be put into its breeding place and with all the necessary conditions suited to its requirements for reproduction, even to a hundredfold. There is too much belated, careless agricultural work done to insure the full measure of the possibilities of our fields, and for this reason our yields are much lower than they might otherwise be. Let us give nature a fair chance by doing our share in season and in the best manner possible all the way through the season's work.

Knowledge is power, and knowledge of the details of agricultural affairs is absolutely necessary if best results are expected. And wisdom looks to the application of knowledge, both the wisdom of the scientist, of the books, and of practical experience. With the former in possession, the latter, recorded experience, should be a safe guide. This chiefly for the back-to-the-lander.

Farm Profits.—Those who have no practical experience in farming affairs are often misled in their estimates of the profits accruing to the farmer from his season's labors. An item in a local paper a few weeks ago says, "The value of farm crops in the United States this year is upwards of $5,500,000,000. And yet the farmers don't seem to be able to get the notion out of their heads that they are having a hard time of it."

No, and some of our news writers cannot seem to comprehend the fact

that although farm crops may have a gross value of $5,500,000,000 it may have cost the farmers approximately that sum to produce, harvest and market them, during the past year, as the year 1915 was exceptionally productive, and for most crops low prices were received. Of course the farmers had his living as he went along. To those who have sufficient capital and the genius for it, farming is a good business. It has its periods of excellent profits and seasons of depression, and we would have those who contemplate engaging in the business rightly informed as to its possibilities; failing in this, disappointment and loss may follow.

Mr. L. W. Lighty, of Pennsylvania, says he spent a week lately with some (prospective) back-to-the-landers, and here are a few things they repeated many times:

"The farmer has all his fruit, vegetables, poultry and pork at no cost whatever.

"The farmer need pay no rent, has plenty of water at no cost, and his boarding costs him practically nothing.

"The farmer is his own boss, can go and come when he pleases and take off days whenever he likes.

"The farmer is the most independent man in the world. No man may tell him when or how to do, and he works the pace that suits him best. The farmer's garden furnishes the strawberries and the cows the cream, the poultry yard the fried chickens, the sugar bush the maple syrup, and the wheat field the waffles.

"The up-to-date farmer has all the advantages of modern civilization possessed by the city man, and none of the annoyances, inconveniences and expenses the city man is constantly worried with.

"The farmer is monarch of all."

With such an alluring program of life as that who would not be a farmer?

LITERARY ROT.

There's a deal of classic rubbish
In the magazines to-day,
Writ by masters of expression
And rhetorical display.
They prate of agriculturists
Recruited from the slums,
The city's rank incompetents
And Derby-hatted bums.

They would make of drunken brawlers
Peaceful tillers of the soil,
And impress the chronic loafers
With the dignity of toil;
They'd persuade the thug and gambler
To forsake the haunts that charm,
For the ponds of milk and honey
That await them on the farm.

Rural life beneath the surface
Has a sterner phase by far
Than appears to the observer
In a speeding auto car.
The farm has naught to offer
To those who shrink from toil;
Who are useless in the cities
Would be useless to the soil.

As for most successful farmers
Are to the manner born,
And the labor guilds and unions
Laugh our strenuous ways to scorn.
From sun to sun we're toiling,
Through the blazing hours of June;
Not eight hours spent in labor,
And six hours in a saloon.

There are honest, sober toilers,
North and south, and east and west,
Who are living in the cities
Because the city suits them best.
All the people can't be farmers,
Oh, ye theorists intense!
Spice your literary efforts
With a grain of common sense.

—*W. P. Lockhart.*

Farmers' Institutes.—As in previous years the Executive Committee authorized the continuation of our Farmers' Institutes. By arrangements made with Prof. Agee and Prof. Clark, and at Prof. Agee's suggestion, the services of the County Agents or Farm Demonstrators were enlisted in this work, and the combination or coöperation of the different agencies has worked to the advantage of all concerned. Prof. A. L. Clark, under whose personal supervision Institutes have been held, reports that for the months of November and December, 1915, 26 meetings were held and that the interest shown at the meetings was better than that of 1914. Other Institutes are arranged for January and February, 1916.

Field Days.—The first Field Day of the season was held at the farm of the President, Hon. Jos. S. Frelinghuysen, June 19th, 1915. The day was fine, the attendance exceeded expectations, reaching over 1,000 persons, coming from every part of the State, Mr. and Mrs. Frelinghuysen, acting as host and hostess of the occasion, were equal to the demand, the large company being generously served with a satisfying repast. It was a day for farm inspection, as most farmers came to the meeting in their automobiles, they could obtain a good idea of the condition and progress of the farming interests throughout the State as well as that of the President. While the meeting was a

delightful social occasion, it was also practical in that several valuable addresses were made on farm topics and related questions.

The second Field Day was held at the College Farm at New Brunswick, and was well attended. This annual meeting at the College Farm during the crop-growing season is appreciated by our farmers, as it gives them opportunity to inspect the work being carried on there experimentally by the professors in their various lines of investigation, and many object lessons of value are recorded for future reference.

Another Field Day picnic and farm exposition of phenomenal growth and prudent management is the Alcyon Park, Gloucester county, annual picnic, originated and conducted by the Patrons of Husbandry there. For three consecutive days farmers and others from Gloucester and surrounding counties gather here by thousands for social intercourse and friendly greeting, for discussion of the value of different fertilizer combinations, the merits or demerits of farm implements and machinery on exhibition, the best farm stock, and to hear the lectures that are provided.

Agricultural Organizations.—Not so very many years ago organizations for the improvement of agriculture were few, to-day they are legion, and the danger is our ambitions and energies will lose much of their efficiency through divided and overlapping efforts. It would seem that we now need to coördinate the various agencies organized for the improvement of agriculture with a view to coöperation under some general plan whereby the aim of each one shall be the aim of all, and directed to certain definite ends. Marketing, for example, is receiving attention in various places by several organizations and under a variety of plans. The standardization of farm crops is a subject that should be considered. When we can have not only standard weights and measures, but also certain definite fixed grades by and according to which our fruits and vegetables especially shall be marketed, we will have made a great advance in marketing problems. Farm produce shipped by careless growers, ignorant of the rules of packing and grading, cannot be sold until they are inspected, whereas if there were rules of packing and grading conformed to under the name of a responsible growers' organization, and known in the markets as always up to the standard, such produce would claim and receive the preference among buyers. We need a law for this State covering fruits, etc., shipped in from other States. New Jersey is the dumping ground for much inferior produce sent to us from surrounding States, and our retail buyers are not only cheated, but discouraged and disgusted, as are also some of our grocers and fruit and vegetable dealers.

County Boards of Agriculture.—Of these there are twenty-one, one for each county. Where these Boards are kept active their usefulness as agricultural organizations is well demonstrated.

Reports from twelve Secretaries have been received up to date. These reports, some of which are too brief to be comprehensive, indicate to some degree the agricultural conditions in the several counties and the interest manifested in organization and coöperation. Others, a few, are full of valuable information.

A notable example of revival of interest was shown by the farmers of Sussex county in reorganizing their Board on December 1st, 1915. They

filled the old Court House seats and aisles, and after adopting their Constitution and By-Laws, nearly one hundred leading farmers became members of the new Board by paying the annual dues, which was placed at fifty cents. If there is anything in large attendance and enthusiasm, this meeting is prophetic of thorough good work for the future. The new Board and the Farm Bureau have assumed organic coöperation. May success follow their efforts. At the banquet following the organization of the Board Prof. Alva Agee and President Frelinghuysen addressed the assembled farmers.

Farmers' Exchanges.—The first and original Farmers' Exchange was organized in Freehold, Monmouth county, November, 1907. During the eight years of its existence it has transacted a business amounting to $7,952,060.76, and for the year 1915, $1,254,613.49.

Following the parent organization, Exchanges have been organized as follows: South Jersey Farmers' Exchange, home office, Woodstown, N. J.; Burlington County Farmers' Exchange, Mt. Holly, N. J.; Ocean County Farmers' Exchange, Toms River, N. J.; Vineland Farmers' Exchange, Vineland, N. J.

The Secretary-Treasurer of the Burlington County Farmers' Exchange reports a business done for the past year of purchases $152,069.21, of commodities sold, $115,566.19, a total of $267,635.40.

The Secretary states that owing to low prices for farm products the past year the amount of business in sales of farm produce is very low.

Community Farming.—There are some things whereby profits could be increased and expenses reduced—the terms are measurably synonymous—by joint ownership of a neighborhood of farmers. Take, for example, a cold storage plant. How much good fruit and other farm produce could be held until market demands justified shipment, and even for home use. There are many quickly perishable products that might be held for a much longer time for the support and enjoyment of farm families than is possible without cold storage. It is expensive, too, for owners of but a few cows or other choice stock, and who wish to breed the best, to keep and care for choice, well-bred, high-priced males for breeding purposes; stud horses and bulls, especially, come in this class. There are also some kinds of machinery, and the number is increasing. That might well be owned by a community of farmers, each one being responsible for proper use and care—traction engines, threshers and cleaners, ditching machines and such, come under this class.

Our agricultural associations should be organized on the basis of strict honesty and integrity of dealing by each member, and then each for all, and all for each. Thus we would have a community of honest dealing, mutual protection, helpful development and brotherly kindness.

Farm Wages, Milk Prices, Purchased Feeds.—The reports of Secretaries of County Boards relating to farm wages give average for the State, with board per month, $22.25, and without board $38.18. Retail price of milk throughout the State averages $8^5/_7$ cents per quart, approximately 9 cents. Wholesale price received 4½ cents per quart; creamery average price, 4 cents. I still insist that the wholesale price of milk received by the producer, with the present-day restrictions and requirements in its production and marketing, is too low.

The *New York Farmer,* December 30th, 1915, sums the reports made by 600 producers of milk in nine States, showing the average quart cost of producing milk to be 4.9 cents, which, it says, is over a cent more than the average net price per quart for the year.

In this connection it is pertinent to inquire, Is it possible for milk producers to produce on the farm in sufficient quantity those crops which will give him a balanced ration for his dairy animals, thus obviating the added cost of milk feeds. By the report of the State Chemist herewith, it is shown that over $5,000,000 was expended last year for the purchase of such feeds. If all this feed was fed to our 152,000 milk cows, each cow used 1.31 tons, which at $25 per ton reduced her profit to her owners $32.89. Think on these things.

Crop Report.—In making up our estimates of the yields of the several farm crops for the year 1915, we have taken the U. S. Department of Agriculture acreage as given in the "Monthly Crop Report" published under date of December 30, 1915. For the yield per acre we have taken the returns furnished by the Secretaries of the County Boards of Agriculture. In both yield and price our Secretaries are lower in a majority of the crops than the U. S. Department The following Table (I) places the two estimates in comparison, for reference.

TABLE I.

Corn.		*Wheat.*		*Rye.*		*Oats.*		
Yield.	*Price.*	*Yield.*	*Price.*	*Yield.*	*Price.*	*Yield.*	*Price.*	
38	$0.75	20	$1.06	20	$0.92	32½	$0.48	Govmt.
36½	.75	20	1.08	17	.86	30¼	.46	State.
Buckwheat.		*Hay.*		*Potatoes.*		*Sweets.*		
Yield.	*Price.*	*Yield.*	*Price.*	*Yield.*	*Price.*	*Yield.*	*Price.*	
21	$0.83	1.45	$19.00	130	$0.75	155	$0.70	Govmt.
22	.74	1½	18.90	120	.60	140	.66	State.

TABLE II.

	Acreage.	*Yield Per Acre.*	*Total Yield.*	*Price Per Bushel.*	*Total Value.*
Corn, ...	285,000	36½	10,402,500	$0.76½	$7,957,912.50
Wheat, ...	78,000	20	1,560,000	1.08	1,684,800.00
Rye, ...	71,000	17	1,207,000	.86	1,038,020.00
Oats, ...	70,000	30½	2,135,000	.46	982,100.00
Buckwheat, ...	10,000	22	220,000	.74	162,800.00
Hay, ...	361,000	1½ tons.	541,500	18.90 ton.	10,234,350.00
Alfalfa, ...	6,000	2½ tons.	15,000	20.00 ton.	300,000.00
White Potatoes,	93,000	120	11,160,000	.60	6,696,000.00
Sweet Potatoes,	23,000	140	3,220,000	.66	2,125,200.00
Milk, ...					18,114,032.00
Fruits and market garden crops, ...					11,000,000.00
Poultry and eggs, ...					6,030,000.00
Wool, ...					26,255.00
					$66,351,469.50

Total for 1914,	$67,517,997.00
Total for 1915,	66,351,469.50
Total value of all crops reduced by low prices for 1915, .	$1,166,527.50

In Table II we have placed milk and wool same as for 1914, poultry and eggs, $6,030,000, Prof. Lewis' estimate for 1915. Fruit and market garden crops have been reduced $1,000,000, owing to the low prices received for fruit.

The crops thus made up approximate sixty-five and a half million dollars. The estimates given in the U. S. Monthly Crop Report for December, 1915, would increase the above for the State $3,047,817.50, which, if correct, would make the total for the year past $68,541,287.

In Table III the number and value per head and the total value of farm live stock is given, taken from the U. S. Bureau of Crop Estimates, January, 1915.

TABLE III.

Number and value of farm animals in New Jersey January 18, 1916. From Government Live Stock Report.

	Number.	*Value Per Head.*	*Total Value.*
Horses,	92,000	$144.00	$13,248,000
Mules,	4,000	164.00	656,000
Milch cows,	152,000	71.00	10,792,000
Other cattle,	73,000	32.50	2,372,500
Sheep,	20,000	6.40	185,600
Swine,	161,000	12.80	2,060,800
			$29,314,900

Home-Life.—National stability and permanence can be best maintained and defended when the great majority of its citizens own their own homes. Such citizens have more than a formal interest in maintaining national life. A personally-owned home under their government and home-life, with its endearing associations, give strength and ambition to such a man in a much greater degree than is the case with tenant or movable, unanchored population of city or country. From observation in the city I am led to the conclusion that we must look to the country for permanent, family home-life. The city populations are largely migratory. There is a constant all-the-year change of dwelling place by very many, especially among laboring people. So much so that children growing up under such conditions have comparatively little knowledge from personal experience of true home-life; for we seem to be so constituted that the best in our natures is brought out and developed more perfectly when our days are spent in the permanent family home. And if such homes are what they can be, and what they ought to be, the best citizens will be here developed, and the most precious, enduring memories of such a home will abide.

I therefore plead for the permanent country home. Let every farmer as soon as possible own his own farm and develop its possibilities as his own, and if he is blest with children, as every farmer ought to be, their lives with the lives of father and mother become identified, woven in, as it were, with that particular place and those interests and associations which from year to year constitute their life.

Our wealthy citizens have costly edifices which they call home, but much of their time is spent at fashionable resorts and in traveling.

There is no home-life. It is to the people of moderate means, and to the country chiefly, we must look for permanency of home-life, and it does not augur well for the future when any large percentage of our farming population is enrolled under the class of tenant farmers.

Landlordism on a large scale is not in harmony with the best in American agriculture.

The ambitious young farmer, while compelled for lack of sufficient means to own a farm at the start, will as soon as possible get hold of a farm in his own name, and so work with more encouragement and satisfaction as he develops his own farm, and work with his wife and family to build up a farm home; which, all things considered, is the best for family-life, health and happiness.

Report of Feeding Stuffs Inspection.

During the past few years there has been a noticeable improvement in the character and composition of the mixed feeds sold in this State. This improvement can be attributed largely to the coöperation of the feed manufacturers with the various State officials in order that better conditions might be obtained. By this coöperation the State officials have increased their knowledge regarding the manufacture of feeds, and the manufacturers have learned the desires and intentions of the officials to secure feeds that are not misbranded and are accompanied by truthful statements as to the percentage guarantees, as well as the statements of the ingredients contained in the mixtures. It is believed that most of the manufacturers at the present time are endeavoring to fulfill the guarantees made for their various brands of feeds, but there are shipments made from time to time which fall short of the requirements even when the greatest care is being used by the manufacturer. There are, also, some manufacturers who are not so conscientious about the character of their brands, and who undoubtedly make shipments of materials which they know, or should know, are not as claimed. The deficiencies as found in the inspections can be attributed to either of the above causes, but inasmuch as they are found, the necessity of a regular inspection of this class of materials is apparent.

According to actual reports received by the State Chemist, over 200,000 tons of materials used for feeding live stock and poultry (and this does not include such materials as hay or the grains when sold separately) are sold annually in this State. A conservative average of the amount paid per ton for these feeding stuffs may be given as $25, and by the use of this average it is readily shown that the annual feeding stuffs bills amount

to over $5,000,000. The expenditure of this sum of money is another argument for a most rigid inspection.

The results of the last feeding stuff inspection were published in detail in the New Jersey Agricultural Experiment Station's Bulletin No. 283.

This report shows that during the preceding year 491 manufacturers and jobbers registered 2,069 brands of feeding stuffs, 219 of which were found on sale before the registrations were made. The law requires every brand of feeding stuff to be registered by the party responsible for its sale in this State before it is offered for sale, and, consequently, when unregistered brands are found, it is necessary to stop the sale of the same until the requirement has been complied with. This, of course, causes some inconvenience to the party holding the feed, but the only way to avoid it is to be sure before purchasing the material that it has been registered by the party offering it for sale, and, after the shipment has been received, to ascertain whether the guarantee is stated on the packages, and also the name and address of the seller. If any of these statements are missing it would be better not to accept the shipment until the seller had complied with all of the requirements of the law.

In order to make the inspection as thorough as possible, every county in the State was visited by our inspectors, and as a result 1,322 samples, representing the stock of 309 dealers and customers, were received. The total number of samples received included, in some cases, duplicate and sometimes a larger number of some of the brands. At least one sample of every brand, and in some cases additional samples of the brand, was analyzed, and as a result 920 samples were examined. One hundred and fifty-eight samples or 17.2 per cent. did not satisfy the guarantees given, 132 samples were deficient in one nutrient, 24 samples were deficient in two, and 2 samples were deficient in the three nutrients. The deficiencies as found consisted of protein 62, fat 63, and fiber 61.

The results in regard to the ingredients are not summarized in this report on account of the variability of ingredients used in the different brands. A consideration of the ingredients, however, is very important, and before any brand is purchased an examination should be made to know the ingredients claimed, since the source of the claimed content of protein, fat and fiber is as important a question as the quantity of these nutrients claimed.

The feeding stuff law is designed to protect the honest manufacturers as well as the consumers, and in order to secure the maximum results it is necessary that the dealers and consumers ascertain whether the party responsible for the feeding stuff in question has complied with all of the requirements of the law, which include the registration and a statement of the following attached to each package:

1. The name, brand or trade-mark.
2. The name and principal address of the manufacturer or person responsible for placing the commodity in this State.
3. The minimum per centum of crude protein.
4. The minimum per centum of crude fat.
5. The maximum per centum of crude fiber.
6. The specific name of each ingredient used in its manufacture.

If any material is received that does not have attached all of the above information, it should not be accepted and the State Chemist should be notified.

CHAS. S. CATHCART,
State Chemist.

President Frelinghuysen—The next business is an address and report by Dr. T. J. Headlee, State Entomologist.

Dr. Headlee then read his report, which is as follows:

Report of the State Entomologist for 1915.

THOMAS J. HEADLEE, PH.D.

Ten thousand and thirteen cases of plants, vines, shrubs and trees coming into New Jersey from foreign countries have been examined for injurious insects; 164 nurseries have been examined and a considerable percentage of that number re-examined, and 161 nursery certificates have been issued; the sources from which 49 dealers secure nursery stock, which they handle, have been investigated and 49 dealers' certificates have been issued; earnest efforts have been made to place within the reach of the people, who needed it, timely and necessary information relative to threatened outbreaks of the tent caterpillar and orchard plant lice; an infestation of several years standing of the gipsy moth has been apparently stamped out; 2,440 colonies of bees have been examined, 83 of which have shown European and 60 American foul brood; in Salem, Cumberland and Cape May counties, where bees have been carefully inspected for three years, foul brood diseases have been reduced about 50 per cent.

Any adequate effort to prevent the establishment of injurious foreign insects must be directed first of all toward preventing their entrance on incoming nursery stock, which is the principal carrier of such forms. Unfortunately, the volume of stock thus received is so large, amounting in 1915 to 10,013 cases containing approximately 5,000,000 individual plants, received in 828 different shipments at different points in the State, and arriving within a period of about 5 months (2½ in the spring and 2½ in the late fall and early winter), that only a cursory examination of the less important parts can be made.

For many years no attention was paid to incoming foreign stock, but the finding of the winter nests of the brown-tail moth and the egg masses of the gipsy moth led to an examination of the part of it, which was thought likely to bear these pests. Gradually it has not only become plain that all the stock must be looked at, but that the most careful scrutiny must be given. The entomologist has been lead to the conclusion by finding that a considerable number of foreign insects, apparently carried on foreign stock, have obtained a foothold in the State during the last seven or eight years.

A survey of the kinds that have become established in sufficient numbers to be discovered shows 19 species, 14 of which occur outside and 5 in greenhouses only.

Among the outside species may be mentioned the European pine-shoot moth (*Evetria buoliana* Shiff.), which is recognized as seriously injurious to pines; the European mole cricket (*Gryllotalpa gryllotalpa* L.), which is commonly referred to in European writings as a serious pest; *Otiorhynches sulcatus* Fab., which is recognized in northern and middle Europe as a pest of the roots and foliage of strawberry and raspberry, but which is now proving troublesome to rhododendrons; *agrilus viridis* L. Var. *fagi,* now injuring rose stocks; the European pine beetle (*Myelophilus pinipera* L.), which is a recognized pest of Scotch Pine; *Plagiodera versicolor* Laicharting, injuring poplars and willows; a small fly (*Phytomyza aquifolii* Gour.), which ruins the leaves of English holly and of boxwood; the narcissus fly (*Meredon eqeustris* Fab.), which damages bulbs of narcissus, daffodil and amaryllis; the box-leaf miner (*Monarthropalpus buxi* Fab.), which mines out the leaves of boxwood, rendering them white and unsightly; the cottony scale on bamboo (*Antonina crawi* Ckll.); another scale or bamboo (*Leucaspis bambusæ* Kuwana); a scale on Japanese hemlock (*Aspidiotus tsugæ* Marlatt); a mealy bug (*Pseudococcus kraunhiæ* Kuwana) on *Taxus. cuspidate brevifolia.*

Among the greenhouse species there are three scales attacking orchids (*Targionia biformis* Ckll., *Chrysomphalus persicæ* Mack) and a species of white fly (*Aleyrodes* sp.) infesting azaleas from Belgium.

The European mole cricket is the only species that seems likely to develop into a general pest in New Jersey. All others are limited to ornamental plants of one sort or another. However, should the European pine-shoot moth or the European pine beetle change its variety of pine and find the common pines of the State to its liking, large damage would result.

In addition to the establishment of the preceding species, some time within four years an infestation of gipsy moth egg masses came into the State, and the species became established at Rutherford. It seems that this infestation is traceable to foreign stock which came in previous to the time when all incoming stock was examined by us.

In the effort to prevent the establishment of injurious insects coming into New Jersey from other States, much of the nursery stock coming into the State from the brown-tail and gipsy moth infested portions of New England is examined, and the State Plant Pathologist, in return for the examinations of foreign stock for plant diseases, examines a percentage of *all* incoming domestic stock for injurious insects.

The State Entomologist believes that nursery stock entering New Jersey from foreign countries constitutes a sufficient danger of introducing seriously insects to justify a well-conducted quarantine against it, but he does not believe that the State can itself effectually administer such a prohibition. To be really effective, the action would have to be taken by the Federal government. The large nursery interest of the State would not object to such a measure.

Christmas Greens.—For several years the Federal Horticultural Board refused to permit the shipment of Christmas greens from the gipsy moth infested districts of New England into New Jersey and other States. Last year, however, this prohibition was removed and the movement of this sort of

goods permitted, providing they were inspected and passed by the United States Moth Control Service.

The conditions under which these inspections were made preclude, the entomologists understands, adequate examination, and lay the goods open to suspicion as probable carriers of infestation. As a matter of fact, the moth control service has, during the present season, found many egg masses of the gipsy moth on proposed shipments. This material arrives in New Jersey in such quantities that the entomologist's force proves totally inadequate to make the needed inspections.

The State of New York quarantined against the shipments of Christmas green from the gipsy moth infested parts of New England, but New Jersey laws would not permit her to do the same. There is need for a good quarantine section in our present insect control laws.

Inspection of nursery stock grown within the State is an effort to detect the existence of foreign pests as soon as established (the trade in plants, which is carried on by nurserymen, is likely first to introduce the pest into the nursery) and to prevent the dissemination of species found to be established. Every year a considerable amount of infestation is found and cleaned up. During the year just passed 164 nurseries have been examined and 161 have been certificated. Forty-nine dealers, nearly all of whom have had sufficient left-over stock to make examinations of their premises necessary, have been furnished with certificates.

LIST OF NURSERIES CERTIFICATED IN 1915.

(In numerical order to 202, all general not otherwise marked.)

Henry A. Dreer, Inc., Riverton; Bobbink & Atkins, Rutherford; Julius Roehrs Co., Rutherford; Peter Henderson & Co., Jersey City; Charles A. Bennett, Robbinsville; H. C. Steinhoff, West Norwood; K. M. van Gelderen, Long Branch; William Tricker, Arlington; Samuel C. DeCou, Moorestown; Arthur J. Collins, Moorestown; Harold Hornor, Mount Holly; Henry E. Burr, East Orange; James Ambacher, West End; Union County Nurseries, Elizabeth; Guarantee Nurseries, Trenton; Charles Momm & Sons, Irvington; Lager & Hurrell, Summit (greenhouse); Willard H. Rogers, Mount Holly; George H. Peterson, Fair Lawn; George W. Bassett, Hammonton; J. Murray Bassett, Hammonton; Est of Charles Crowell, Hammonton; Knickerbocker Nurseries, Englewood; Wm. O'Hagan, Asbury Park; James M. Ralston, Allenhurst; F. E. Beugelaar, Rutherford; James Clinton, Morris Plains; John DeBuck, Secaucus (greenhouse); Red Towers Nurseries, Hackensack; C. E. Field, Sewell (strawberry); Seabrook Farm Co., Bridgeton (strawberry); Wm. H. Polhemus, Robbinsville (strawberry); Charles L. Stanley, Plainfield; Secaucus Exotic Nursery, Secaucus; Emile N. Savoy, Secaucus (greenhouse); J. B. Duke Farm, Somerville; The Elliott Nursery Co., Princeton Junction; Peter Flaime, Minotola (strawberry); Mrs. N. P. Creely, Burlington (strawberry); M. D. Lupton, Newport (strawberry); Michael N. Borgo, Vineland; John Ryan, Basking Ridge; A. G. Freer, Manasquan; G. Walter Swain, Sea Girt; Hartung Bros., Jersey City; Ellsworth Pedrick, Bridgeton (strawberry); William Bryan, Elberon; Harry B. Edwards, Little Silver (privet); Frank Marra, Little Silver; H. W. Collingwood, Woodcliffe Lake (strawberry); J. E. Kuhns, Cliffwood (berry); Enterprise Nursery Co., Newtonville; F. J. Tomkinson, Pittstown; August Dressel, Plainfield; Walter R. Shoemaker, Swedesboro (strawberry); J. T. Garrison & Sons, Bridgeton (strawberry); Willard B. Kille, Swedesboro (strawberry); W. F. Lacroix, Bueua (lilacs); Dirk de Haas, Plainfield; G. E. Layton, Vineland (privet); Hugo Kind, Hammonton; M. O'Hagan & Son, Asbury Park; Albert Nelson, Allentown; Mrs. W. S. Hertzog, Morris Plains; Smith & Haff, Plainfield; J. D. Lindsley, Mendham; J. F. Noll & Co., Newark; C. H. Hill, Palmyra; Amon Heights Nurseries, Inc., Camden; Frank Koehler, Camden; Leonard J. Smith, Merchantville; Henry Schmidt, Weehawken (greenhouse); W. G. Badgley, Chatham (greenhouse); Peter Henderson & Co., Jersey City Heights (greenhouse); J. H. Fiesser, North Bergen (greenhouse); T. C. Kevitt, Athenia (berry); John Casazza, Vineland (berry); Hammonton Nursery Co., Hammonton; N. Tomasello, Hammonton (berry); Julius Seeley, Hammonton (berry); Joseph di Fabrizio, Hammonton (berry); Benjamin Barrett, Blue Anchor (berry); Arthur Heggan, Waterford (berry); David V. Higgins, Ringoes (peach); Cicero Higgins, Ringoes; Peter V. Drake, Hopewell (peach); Charles Black, Hightstown; George A. Shultz, Jamesburg (peach); Albert Nirk, Nutley; J. E. Turnbull, Nutley (privet); Benjamin Connell, Merchantville; T. E. Steele, Palmyra; John McCleary & Son, Sewell; F. & F. Nurseries, Springfield; North Jersey Nurseries, Millburn; Elizabeth Nursery Co., Elizabeth; J. H. O'Hagan, Little Silver; Mrs. E. P. McColgan,

Red Bank; Wm. S. Rose, Red Bank; George A. Steele, Eatontown; Alexander E. Wetherbee, Hammonton (dealer's); S. P. Dunham & Co., Trenton (dealer's); S. E. Kaufman Co., Trenton (dealer's); John W. Wooton, Arlington (dealer's); Warren Shinn, Woodbury (dealer's); Thomas Creamer, Hammonton (dealer's); N. J. Forestry & Landscaping Co., Hackensack (dealer's); R. V. Crine, Morganville (dealer's); K. Herman Stoye, Eatontown (dealer's); Est. J. C. Williams, Montclair; A. S. Wallace, Montclair; Samuel Brant, Madison (peach); Charles H. Totty, Madison (greenhouse); S. S. Kresge Co., for New Jersey stores (dealer's); James L. Hall, Farmingdale (dealer's); Frank Lenz, Irvington; R. D. Cole, Bridgeton; Thomas Jones, Short Hills (dealer's); A. B. Vanderbeek, Paterson (dealer's); W. M. Howey, Sewell (dealer's); F. W. Woolworth Co., for their New Jersey stores (dealer's); Paul L. Heggan, Waterford (dealer's); Joseph H. Black, Son & Co., Hightstown; K. M. de Waal Malefyt, Ridgewood; John F. Randolph, East Rutherford; F. T. Lange, North Bergen; C. A. Conover & Son, Lebanon (peach); Mrs. Henry S. Yawger, Lebanon (peach); Plainfield Nursery, Scotch Plains; Richard Evans, Jr., Wenonah (dealer's); Wm. H. Morgan, Westmont; Silas Walton, Moorestown (strawberry); Willard Apgar, Fairmount (peach); James Apgar, Fairmount (peach); Howard Philhower, Mountainville (peach); Mansfield Eick, Bissell (peach); Max. Rumprecht, Fort Lee; Garfield Williamson, Ridgefield; John Moore, Little Silver; J. T. Lovett, Little Silver; John Bennett, Atlantic Highlands; Wm. Henry Maule, Inc., Hightstown (dealer's); J. Kaiser Davis, Chester (peach); Mathias Fleming, Califon (peach); John Fleming, Califon (peach); Edwin Allen, New Brunswick; Gulliksen Bros., Hackensack; Charles Bird, Arlington; H. J. Stein, Newark (dealer's); Mrs. E. C. Eaton, Newark (dealer's); Muzzy Bros., Paterson (dealer's); Bound Brook Nursery Co., Bound Brook; Adolph Greenfield, Newark (dealer's); Samuel H. Wilson, Lebanon (peach); J. H. Lindsley, White House (peach); Frank Marienschek, Dunellen (dealer's); Manalapan Nurseries, Englishtown; W. H. Forristel, Plainfield; A. A. Watts, Westfield; Madsen & Christensen, Wood Ridge; E. M. Carman, Englewood; W. A. Manda, Inc., South Orange; F. A. Tomkinson, Hammonton (dealer's); Watkins & Nicholson, Hammonton; Henry Pfeiffer, Cologne; Charles A. Baird, Freehold; Minch Bros., Bridgeton (dealer's); Wm. L. Jones, Nutley (dealer's); The Supply Co., Delanco (dealer's); William Vogt, Jr., Camden (dealer's); E. A. Pierce, Vineland (dealer's); L. W. Gardner, Washington (peach); W. Grant Schoenly, Dayton; Phil. H. Moulter, Trenton (dealer's); W. G. Eisele, West End; Wm. C. Evans, Glassboro (dealer's); S. T. Hillman, Cape May (dealer's); J. & M. Brinkerhoff Co., Hackensack; DeBaun & Co., Wyckoff; S. A. Nadler, Rutherford (greenhouse); Paul Stier, Bayonne (dealer's); James H. Vliet, Gladstone (peach); Jacob E. Apgar, Beatyestown (peach); Mrs. Bernard Rowntree, Oradell; Mrs. Julius Wolff & Sons, Clifton (dealer's); J. R. McIntyre, Madison (dealer's); E. Decker & Son, Orange (dealer's); A. D. Russel Est., Princeton; The Sunnyside Greenhouses, Dover; Wm. Herbstreith, West Nutley; W. S. Perry, Delaware; Samuel E. Blair, Nutley; M. Boks, East Rutherford (dealer's); Caldwell Nurseries, West Caldwell (dealer's); A. L. Reynolds, Madison; Wm. Gotthardt, Jersey City (dealer's); Gustave Freytag, Orange (dealer's); Chester A. Meisky, Elizabeth (dealer's); Carlman Ribsam Est., Trenton; Martin C. Ribsam, Trenton (dealer's); Frank Wieland, Egg Harbor City (berries); Meyer Bros., Paterson (dealer's); Wm. W. Lukens, Princeton (dealer's); Samuel Sward, Newark (dealer's); George B. Macaltioner, Woodstown; Walter M. Sage, Paterson; W. T. Grant Co., Newark (dealer's); J. J. Wilson Seed Co., Newark (dealer's); J. C. Lum, Elizabeth.

Control of Insects Already Established.—During the past year there has been a severe outbreak of the tent caterpillar, of plant lice infesting apples and tomatoes and of white grubs.

The tent caterpillar covered the entire State, but appeared in largest numbers, and did most damage, in the northern part, being especially noticeable in Bergen county. So abundant was this insect that it consumed the foliage of the wild cherry, on which it was hatched, before reaching full growth, and was lead by hunger to migrate through adjacent territory and thus to overrun the plantings which had been protected by spraying or other measures. Especially did this happen in the commuting districts where the built-up territory is interspersed with neglected lands.

Early in the season an account of the situation, including a brief statement of the insect's natural history and of methods to be employed in controlling, was sent to the newspapers of the threatened districts and the County Agricultural Agents were notified. In this way practically all who would have been interested had a chance to learn about it, and many individuals took advantage of the information. Community action was, however, largely lacking.

After the insects had practically completed their work the damage done was of such an extensive and striking nature that many letters were received

calling our attention to a new pest that had recently appeared in the State, and in some cases demanding that something be done about the matter immediately.

Hardly was the tent caterpillar well started before the apple plant lice appeared in immense numbers, and soon began curling the leaves and shriveling the young apples. Early in the season a statement of the danger and of the means of meeting apple plant lice had been published in the papers of the State. Individuals were thus given an opportunity to know of the approaching danger and of the means to be used against it. Many availed themselves of this information and secured protection, but many did not.

Later in the season an extension outbreak of plant lice (*Aphis rumicis* Linn.) on tomatoes occurred and the damage was mainly done before the destructive agent became generally known. Owing to the limited funds our scouting has been of necessity confined to the pests that experience in previous summers has given us reason to expect. These plant lice have been so rarely troublesome that the outbreak was not foreseen and early warnings were consequently not issued.

It is a pleasure to be able to report the entire absence of the army worm as a real pest. In this speries the experted has happened—the year of unusual abundance has been followed by one when the species has been so scarce as not to attract attention.

White grub troubles culminated last year in a condition where, locally, lawns and golf greens were destroyed and strawberry fields ruined. During the last two years the white grub problem in this State has presented features that differ materially from those found elsewhere in the country. The most striking of these features is the occurrence of most of the injury in lawns, golf greens and strawberry patches. In the first two ordinary measures of white grub control are impracticable and in the third they are of limited application only. A careful study of this phase of white grub injury should be undertaken.

Fortunately the vast bulk of the white grubs are now practically fully grown and will do but little feeding next spring before changing to the resting stage, during which the damage from grub to beetle will take place.

Should unfavorable conditions of weather and natural enemies not intervene to prevent, the number of May beetles which emerge from these grubs and emerge during the late spring and early summer of 1917 will be extraordinarily large and the foliage of young shade, and, to some extent, fruit trees, is likely to be consumed by them. Furthermore, lafns, golf greens and grass lands generally, as well as strawberry fields, are likely to receive a very large number of eggs and to be damaged during the summers of 1918 and 1919 by the grubs which hatch from them. Of course the working out of this schedule may be prevented by the destruction of some necessary stage through unfavorable natural conditions, but the people of the State should be aware of the probabilities.

The Gipsy Moth.—In the summer of 1914, about July 1st, a perfect male gipsy moth was captured under an electric street lamp in Rutherford, N. J., by Mr. Marwin H. Mead, of Passaic. The unworn of the specimen indi-

cated that it must have emerged nearby, but a cursory examination of the territory near which the insect was caught failed to reveal its source.

The entomologist took the matter up with the Bureau of Entomology, U. S. Department of Agriculture, and was so fortunate as to secure the services of a group of experienced moth scouts, under the general direction of Mr. A. F. Burgess and Mr. E. M. Worthley. Beginning at the point where the moth was captured, the territory was scouted most carefully in every direction for four miles, and in some cases five. In a block of evergreens covering about one-half of an acre within a few hundred feet of the place where the moth was captured 198 egg masses were found. Nowhere else in the infested territory could infestation be detected or has it since been found.

Most of the masses were composed of still unhatched eggs, but some were soft and old. Indeed, some were so weathered as to indicate that two winters had been passed since they were laid. It seems, therefore, likely that this infestation arrived in the dormant season of 1910–1911.

From its location in the midst of an evergreen block, appearing at the edge only next to a greenhouse in which imported azaleas were stored, it seems obvious that the infestation came in on the evergreen stock or on azaleas from Europe. Judging from the length of time (5 years) the owners claimed to have had the evergreen trees on their property, and from the proximity of the infestation to the greenhouse in which imported azaleas were habitually stored, it seems likely that the azaleas were the means of transportation.

As soon as the infestation was discovered, November 1st, 1914, the entire block in which the infestation had been found (worth about $10,000) was placed under quarantine, and the removal of any plant might be detected. The government scouts painted every egg mass with creosote.

Fearing that some of the eggs might escape the creosote and produce caterpillars, two additional measures of suppression were employed. The first was spraying. On April 22d, 1915, that portion of block known to be infested, and ten rows standing adjacent thereto, were so thoroughly sprayed with arsenate of lead at the rate of 5 pounds to 50 gallons of water that they were white. Eleven days after the treatment was repeated, and after the lapse of another 12 days, the spray was again applied.

The second measure was a sort of fencing in of the infested block for the purpose of destroying crawling caterpillars. The infested part of the block was entirely surrounded by a low fence made of boards 10 feet long by 8 inches wide by 1 inch thick. The boards were laid at full length on the ground end to end and on edge. Their lower edges were buried in the soil and they projected 8 inches above the surface. The upper edges were heavily coated with tree tanglefoot and its stickiness maintained by fresh application as needed.

The infested block was examined practically once each week throughout the fore part of the growing season and very carefully gone over for the egg masses at the close of the summer. At no time were any caterpillars seen and no living egg masses could be found. Scouts from the moth control service again scoured the territory which they had before covered and were unable to find any trace of gipsy moth eggs. This examination was made during the spring of 1915 before shipping started.

After carefully considering the results of this survey in connection with our own observations, we decided that the infestation was stamped out, and deemed it advisable to raise the quarantine, and the block was released on December 22d, 1915.

Knowing that much evergreen and other stock had been in past years received by the large estates in northeastern New Jersey from Europe and from brown-tail and gipsy moth infested areas of New England, it seemed well to scrutinize as many for the presence of these pests as means and time would permit. Accordingly, Mr. G. L. Walters, who had previously aided the State Entomologist as a temporary inspector of nursery stock, was employed and devoted to this work.

Mr. Walters began work on June 1st, and ended July 31st, 1915. He examined the plantings on 29 estates in the vicinity of Gladstone, Bernardsville, Conpent, Morristown, Far Hills, Peapack and Mendham. No traces of gipsy and brown-tail moths were found.

Bee Disease Control.—When the entomologist first took up this question, about three years ago, there seemed to be two methods of approach—one of which was concerned primarily with examining all the bees in a limited but continuous area and destroying all infection found with the utmost practicable celerity—and doing the minimum of inspection work in other parts of the State, while the other involved the inspection of apairies on request and, in addition, those in which there was good reason to suspect the existence of disease.

Inasmuch as the first method seemed more in keeping with the nature of the statute, and at the same time permitted those interested sufficiently to request it, to hape the serfice of an expert bee man, the entomologist adopted it as the better of the two.

The question of what part of the State should be selected for the continuous inspection work then arose. It was felt that of the two factors determinating the success of bee disease control—the ability of the beekeeper and the constant reinfection from outside sources—the former would prove more practicable under present conditions to improve. Accordingly, the counties of Salem, Cumberland and Cape May, being free from the practice of exchanging bees and beekeeping materials with other States, were selected, and in 1913 were carefully gone over. In 1914 only the diseased apairies were re-examined, but in 1915 all bee yards were again covered. The following table, which gives the results, shows that the number of colonies infested with foul brood was 50 per cent. less in 1915 than in 1914, and that the number of yards infested was 17 per cent. less.

Year.	No. yds.	No. yds. infected.	No. col.	No. hives.	No. box hives.	No. inf. Amer. fl. brood.	No. inf. Europe fl. brood.
1913, ...	137	41	793	438	355	...	135
1915, ...	125	34	779	449	330	...	69

It thus seems that careful inspection of a continuous area accompanied with the destruction of infection found, results in a large reduction of the disease.

In addition to the work done in Salem, Cumberland and Cape May counties, inspections were made in many other counties, but it was in the

other counties, of course, impossible to cover the ground with any considerable degree of thoroughness.

Taking the rest of the State as a whole we find, as shown in the following table, a decided reduction in the number of apairies infested and the number of colonies troubled by European foul brood.

Year.	No. yds.	No. yds. infected.	No. col.	No. hives.	No. box hives.	No. col. having Amer. fl. brood.	No. col. having European fl. brood.
1913, ...	94	29	2,062	1,832	230	59	99
1915, ...	103	15	1,515	1,442	73	54	19

The small reduction in American foul brood is due to having discovered a new hotbed of the disease.

As shown by the following table the inspections have revealed the presence of American foul brood in Burlington and Camden counties, which had not hitherto been known to be infected with that form of disease.

	Apairies with American Foul Brood.	*Apairies with European Foul Brood.*
*Atlantic, ...	0	0
†Bergen, ...	44	15
*Burlington, ...	24	8
*Camden, ...	4	1
*Cape May, ...	23	0
*Cumberland, ...	26	2
†Essex, ...	6	7
*Gloucester, ...	0	0
*Hudson, ...	0	2
‡Hunterdon, ...	9	3
‡Mercer, ...	3	0
*Middlesex, ...	13	16
†Monmouth, ...	17	0
‡Morris, ...	17	8
*Ocean, ...	6	0
‡Passaic, ...	13	5
*Salem, ...	10	4
‡Somerset, ...	4	7
‡Sussex, ...	15	17
*Union, ...	12	6
‡Warren, ...	1	2

The statute devoted to bee diseases not enabling the entomologist to prevent the importation of diseased bees and beekeeping materials by the con-

* Counties thoroughly inspected.

† Counties largely inspected.

‡ Counties in which little work has been done.

trol of the normal trade in these goods, a law was passed by the Legislature of 1915, whereby trade of this type could be controlled. It is Chapter 104, Laws of 1915.

In the course of the inspection work as a whole 246 yards were examined, including 2,440 colonies, 83 of which showed European and 60 American foul brood. The number of colonies covered was smaller this year because of the greater distances between and the smaller sizes of the apairies examined, and the holding up of the percentage of the foul brood is to be accounted for by the fact that this year's work involved an unusually large proportion or reinspection of diseased apiaries. The data of the different years are presented in the following table:

Year.	No. yds.	No. col.	No. in hives.	No. box hives.	No. having Amer. fl. brood.	No. having European fl. brood.	No. yds. diseased.
1912, ...	378	3,277	2,922	355	157	381	173
1913, ...	337	2,932	3,226	606	81	237	97
1914, ...	405	4,001	3,199	802	61	147	79
1915, ...	225	2,440	2,107	333	60	83	54

Three queen-rearing apiaries were examined twice during the past season and certificates were issued as follows: Albert G. Hann, Clinton, May 26th; Robert B. Spicer, Wharton, May 17th; Fred Yahn, North Haledon, June 28th; Robert B. Spicer, Wharton, July 20th; Fred. Yahn, North Haledon, August 31st; Albert G. Hann, Clinton, September 3d.

Without doubt the work of the last few years has greatly reduced the brood diseases wherever it has been done, but only 50 per cent. of the total number of colonies has been covered. Without doubt, the greatest obstacle in the way of proper control of bee diseases is the ignorance of the beekeeper; and consequently the greatest single factor in bringing about control is education—education in the methods of better bee husbandry. To this end Mr. Carr has prepared a "Manual of Bee Husbandry" for general distribution.

Bee Inspection.

STATE ENTOMOLOGIST.

It is the business of the State Entomologist under the authority of Chapter 249, Laws of 1903, and its various amendments to prevent the importation and establishment of serious insect pests from other parts of this country and from foreign countries, and to repress injurious insects that are already established within our boundaries.

About 2,500 acres of nursery stock distributed in 190 parcels of various sizes and located at various points in the State are to be examined once each year and 25 per cent. of that number have to be re-examined because of infestation found on first visit and the time necessary to eradicate it.

We have become convinced that much closer inspection of foreign stock than has formerly been practised is necessary, because we have found such insects as the gipsy moth, the European mole cricket and various other less important species coming over and becoming established as a direct result of the inadequate examinations we are able to make.

The amount of time given to the control of outbreaks of insects that are already established is already so small that further reduction is not only undesirable but impracticable.

During the last fiscal year we had $500 additional for the work against the gipsy moth. With this we stamped out the infestation which had been discovered and scouted some of the large estates where ornamental shrubs, vines and trees have for many years been brought in from foreign countries and from the moth infested district of New England.

The money spent in the importation and establishment of injurious insects is insurance. Should anyone of several injurious foreign insects such as the gipsy moth become established, more money would be spent annually to control it than is now spent by the State Entomologist in 15 or 20 years.

Failure to adopt adequate prevention measures in Massachusetts resulted in an expenditure of more than a million dollars per annum for a period of several years in an effort to control the gipsy and brown-tail moths.

An infestation of the gipsy moth in New Jersey was stamped out by the State Entomologist during the last fiscal year, and the brown-tail moth has made its appearance on the eastern end of Long Island.

The appropriation for the control of bee diseases, amounting to $2,000 annually, is used for the purpose of locating cases of bee diseases and educating the beekeeper in methods of curing and preventing its recurrence.

The very existence of the industry in New Jersey is threatened by the prevalence of the brood diseases, and consequently the industry is in a low state of development. That beekeeping has possibilities as a means of livelihood is shown by the experiences of Chas. Root, of Red Bank, who with an investment of a little over three thousand dollars realizes a net return for his labor of a little more than two thousand dollars a year.

Not one-tenth of the beekeeping possibilities of the State are utilized at the present time, and it is expected that the proper expenditure of this appropriation will place the industry on its feet again and introduce it to a period of large development.

Failure to appropriate for this purpose will undoubtedly prove a most serious setback not only to the beekeeper but to the fruit grower, who depends largely on the bee for the proper fertilization of his fruit bloom.

Mr. Rider—Mr. President, may I suggest that we have in Atlantic county a Farm Bureau, it is called "A Department of Farm Demonstration and Vocational Education of Atlantic County," at the head of which is our Farm Demonstrator, Mr. Douglass, who is here to-day, and I move you, sir, that this organization, and Mr. Douglass as representative of it, be admitted to this Board.

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

Mr. Daniel H. Taylor (Monmouth county)—Mr. President, may I refer back to a remark made in Secretary Dye's report?

President Frelinghuysen—You have the Chair's permission.

Mr. Taylor—I notice in his report, Mr. Dye spoke of the dif-

ferent sections of the country taking up the discussion of distribution of farm products, and he said that the Grange was taking it up, and that is true so far as the Grange is concerned. Then he goes along a little further in his report and says that the Monmouth County Farmers' Exchange, which had a million and a half dollars' worth of business, was started by the State Board of Agriculture. I would like to make a correction there. The Monmouth Farmers' Exchange was started by a subordinate Grange in Monmouth county and backed up by all the Granges of the county. The board of directors at the first meeting were all collected from the different Granges, and they have continued such, and it was the Grange that backed it up and brought it up from that time up to the present time. I don't like to see the credit taken away from the Grange.

President Frelinghuysen—The Secretary is instructed to make a record of your historical sequence of events. The State Board of Agriculture is very glad to give credit where it belongs, and it is so intertwined with the Grange that it is not going to raise any conflict as to the pride of authorship.

Mr. Taylor—It had its very beginning in the Granges.

President Frelinghuysen—I think Secretary Dye will be very glad to note the correction.

Secretary Dye—I will note it, of course. I know also, however, that President Denise suggested the idea a year before it was put into effect.

In 1896 he made a motion in the County Board of Agriculture that a committee be appointed to investigate and provide a better method of marketing farmers' produce. A committee was appointed consisting of Messrs. Dennis (now President of the Exchange), Hal Allaire (deceased) and Mr. D. D. Denise. This committee proposed a Constitution and By-laws and reported at next meeting of the Board. The farmers did not immediately concur in the report, capital was required. Later, the matter was presented to the Grange of which Mr. Denise is a member, when he, with some others, put up $30,000. Twelve men put the movement on a solid foundation and by persistent effort, self-sacrifice and faith in the enterprise, carried it on to its present leading position. Honor to whom honor is due. Most of those men, perhaps all of them, were members of a Grange.

Mr. Lippincott—Mr. President, may I be permitted to suggest, we have a new organization in our county, "The Burlington County Farm Bureau." We have one of our Executive Committee here of that Farm Bureau, and I would like to make a

motion that it be admitted as a member of the State Board of Agriculture.

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

President Frelinghuysen—The next matter in order would be the address of Mr. Rider, but—

Mr. Rider—I am on the program next at this meeting, but have very gladly consented to let our President take my place and put me off anywhere he sees fit.

President Frelinghuysen—I have just this to say, that I think that, inasmuch as the President's address is on the program for to-day and that certain extracts from it have been sent to the papers, that it should be given to you to-day if you want to hear it. It will not take long, and I am willing to go now, provided Mr. Rider will give way, and that he takes my place next on the program. If you feel that you would rather adjourn I will postpone it until to-morrow.

Secretary Dye—We are to go on until half-past twelve, according to the program, and have time now.

Vice-President Cox then took the chair.

President Frelinghuysen—Gentlemen, you have listened very attentively to the scientific and learned address of Mr. Dye, and of Dr. Headlee, and they contain matters which are of considerable interest to you. But my work is along administrative lines, and, therefore, in my annual address to-day I want to take up one subject that I consider of great importance to the farmers of New Jersey.

President's Address.

Delegates to the Annual Meeting of the State Board of Agriculture:

I extend to you a warm and cordial welcome as you begin your duties in behalf of the State and the farmers of the State. I trust your deliberations will be profitable to the State and beneficial to yourselves.

To the delegates from the reorganized County Board from the far north Sussex county, I extend my congratulations and express my appreciation for the enthusiastic response to the call from the State Board for greater activity in that county, and to all the other County Boards, Granges and other societies I express our appreciation for the earnest work you have performed in New Jersey this year for the cause of agriculture.

To the North Jersey Agricultural Society, that prosperous body of farmers, which is represented by a delegation for the first time, we greet you and receive you in our midst with a cordial welcome, and will be glad to have your assistance, counsel and advice to help solve the many problems we will be called upon to consider.

Following the established custom which has been observed for many years, the representatives of the New Jersey agricultural interests gather here

to-day from every section of the State, and your delegates to this annual meeting represent almost all of the varied branches of that industry.

This annual meeting has been instituted by law for the purpose of considering questions of importance to New Jersey, realizing that no agency can do more for the State and its welfare and prosperity than by developing its agricultural resources.

This meeting each year assumes that nature of a conference which calls for our best judgment and wisdom in creating a constructive policy for the State; and its deliberations, therefore, should capitalize themselves in some beneficial result that can be carried to a successful conclusion.

The questions that have arisen in my mind are these:

Are we accomplishing for the State what was desired by the Legislature when they placed us in charge of the agricultural interests?

Is there wasted energy anywhere?

Your President is expected in this annual address, each year, to suggest matters that will have your consideration and be discussed. I do not intend to shirk that duty to-day.

I do not believe this organization knows its strength, or fully appreciates some of its opportunities. Here are gathered delegates from every section of New Jersey, representing every branch of agriculture; earnest, thoughtful men from societies powerful and influential in their communities, County Boards of Agriculture from every county, Granges established to encourage and to improve rural life, its members linked together by the strongest ties of association, farmers' clubs and societies, benefiting the conditions in their localities; associations formed for special branches of agriculture; all representing a force and energy which when directed to one common purpose should accomplish satisfactory results. Therefore, the question that I ask is, "Are we employing our energy to the best advantage, and are we coöperating as we should? Perhaps it will be decided at this meeting of the State Board.

Someone will say New Jersey's productiveness has increased wonderfully. In 1900 the agricultural products were valued at approximately $24,000,000, and in 1915 they were valued at $66,500,000.

We may have contributed somewhat towards it, but I should say that our productiveness has increased in spite of our efforts. Wherein are we lacking? Our laws are weak and our organization is not as perfect as it might be. The management of our interests are too disconnected. We hold our annual meeting each year, debate policies, elect a President, Vice-President, Secretary and Executive Committee, and then go home and leave the agricultural matters all to them. But what can they do? They have very little authority, a very small appropriation to carry on the work, a small official staff, no equipment, and the work in charge of a secretary, who is paid a small salary.

The inspection work of the State is carried on by an educational institution. We operate under an old law that has never been broadened to meet the farmers' needs. As new laws have been needed new and expensive commissions have been formed, instead of combining all under one head. The duties properly belonging to the Board of Agriculture have been farmed

out to other departments, and to-day we have a confusing and complex system, expensive and inefficient. A separate commission handles the tuberculosis in animals, and controls the expenditure of $50,000 of the State funds. The Board of Health has charge of, or is supposed to have charge of, the diseases of glanders and anthrax. A live stock commission handles the breeding problem, while the Experiment Station distributes a little serum for hog cholera. A recent outbreak of foot and mouth disease was stopped by the energy of volunteer officials drafted from two departments of the State, and hasty legislation was enacted to meet the unexpected danger.

Every agricultural State except ours has a department of agriculture, in which are grouped the various departments. New Jersey has no department that can meet the needs of the farmers, render them the service it should, or develop the industry. Many of the laws are makeshifts, and the conditions are close to chaotic. We need a department of agriculture, and to accomplish this a complete revision of the present laws is required. Last year I recommended that this be done, and by resolution you empowered the Executive Committee to have such a law prepared, if it was deemed advisable, and certain conditions were imposed which were considered vital to the interests of the farmers.

The matter was considered carefully and prominent agriculturists were consulted, and a bill was prepared in accord with the ideas of the State Board of Agriculture. This bill was introduced by Senator Gaunt. It provided that at an annual meeting, similar to this, that a Board of Agriculture, consisting of eight members, should be elected, two to be elected each year, to serve for four years, at large in the State. This Board was empowered to elect a President, Vice-Prsident, and to employ an expert agriculturalist as Secretary at a salary of five thousand dollars a year, to have general charge of all agricultural work in the State, and to select three bureau chiefs at about three thousand dollars a year.

Now, when this question was talked before you, some shrugged their shoulders and said, "Too much to pay." You know what is paid for experts in our industry, and how necessary it is to have them to carry on the work, and, therefore, we fixed the salaries at what we believed we could pay the present staff of the State, the best men that could be procured, and when we figured what we asked from the Appropriation Committee for this work that embraced all of these various departments, eight or nine of them, and that appropriation provided for all these salaries, the combined appropriation was five thousand dollars less than is now being disbursed in these various departments and by the State Board of Agriculture. So it was a saving.

It was the purpose of the bill to establish three bureaus to be known as the

Bureau of Animal Industry,
Bureau of Land Crops and Markets and
Bureau of Statistics and Inspection.

The bill required that suitable offices should be provided for the department. The old Board of Agriculture and all of the commissions and departments having charge of agricultural matters were consolidated under one

department, and all of the officers and employees now in the service of the present Board were to be retained.

Under this comprehensive plan the control of the State Board and the department, as well as the appointment of all of the officials, would rest directly in the hands of the farmers themselves through the delegates selected from the farmers' organizations throughout the State.

Some criticism was made of the fact that the farmers not members of this organization would not have an opportunity to vote in the matter. That was one criticism I heard, and I answered it in this way, I said, "Any worthy farmer in the State would be welcome to any Pomona Grange, or any worthy citizen or farmer in the State could qualify by joining any County Board of Agriculture, and, therefore, would have his say as to what delegates should represent him in this convention, which would select a State Board of Agriculture, and through them the various officials to be employed in this department."

This principle was a condition demanded by this body, as they believed that the best agency to administer the farmers' interests were the farmers themselves. They felt that the selection in this manner of the Board and the officers was better than by appointment through the Chief Executive. The bill passed both houses of the Legislature, but it was vetoed by Governor Fielder on the ground that it was class legislation, and if it was enacted into law it would be unconstitutional.

The State Board of Agriculture was first organized in 1873, and the members have been chosen in practically the same manner as proposed, yet not until the new bill was vetoed has there been any suggestion that it was not a State organization. The Legislature evidently considered their judgment good when they empowered the farmers themselves to determine the membership of the Board. If Governor Fielder is correct, then every Legislature since 1873 has violated the Constitution of the State when it appropriated money to be disbursed by the State Board of Agriculture.

This bill has been introduced by Senator Gaunt in the present session of the Legislature. It contains the same provisions as did the bill which was vetoed last year. The same method of selecting the members of the Board and the officers are contained in the bill, which embodies your expressed desire. You should determine whether you wish to adhere to this method or whether you wish to leave their appointment to the Governor. The State should not be deprived of the benefits of the legislation by veto or defeat this year.

I have said that the proposed consolidation of the various boards was beneficial legislation. May I mention some of the merits in the scheme. We now have the Experiment Station and the State Board of Agriculture, two agencies that are promoting agriculture in the State. While they are closely linked together and coöperate, their functions, however, are entirely different, one being educational and the other administrative.

The object of the proposed law was to have a department that would have broad powers to administer the State agricultural laws, carry on the related inspection and police work, all through the supervision and direction of a secretary who would be an expert agriculturist. In this way the work that

we are trying to take care of with the means at our command would be handled more efficiently, and all additional effort would make for the development and progress of the industry.

The Bureau of Animal Industry under this law would be similar to the bureau of the same character conducted by the United States as a part of the Department of Agriculture. It would be empowered to quarantine against epidemic, fight and so far as possible prevent the various animal diseases such as hog cholera, anthrax and others relating to farm animals. It would also aim to promote the breeding of all classes of farm animals in the State.

The Bureau of Lands, Crops and Markets would procure information of lands and farms available, schedule same, and promote their development by worthy farmers, and study market conditions and the distribution problems, and to have the State coöperate in every possible way with the farmer in his efforts to find a profitable outlet for his products.

The Bureau of Statistics and Inspection would take charge of the inspection that is now handled by the Experiment Station. It would compile statistics and crop bulletins relating to New Jersey, take care of the nursery inspection and other police work now carried on by the State Experiment Station.

An important provision of the bill made available each year funds to provide premiums to encourage corn contests and agricultural exhibits at fairs and exhibitions at which no admission fee was charged. It was also provided that a study of the rural credit system should be made, and the transportation and educational problems should have due consideration.

Great care was devoted to the preparation of the bill, and favorable comment regarding its provisions were made in every agricultural paper, and in many of the newspapers of the State in the editorial columns. I believe that the measure embraces all the requirements of the State for the protection and development of the farming industry. It is constructive legislation, and I urge you to use every effort to have this measure passed at the present session of the Legislature.

And may I say this: It means that the farmers would have a headquarters in Trenton and would have officials there who would by night and day and each and every hour of the day be looking after the farming intrests and its protection. This sort of bureau has been established by many other States. New Jersey is an agricultural State to a large extent and it would therefore seem to be good business that the State should have here the assistance and coöperation of a Farmers' Department.

I desire to call your attention to the road system of the State and its present condition. We hear much in these days about economy and efficiency, terms which mean much, and which cause us to hope that we may yet find a practical demonstration of the terms in connection with the management of the road department and the repair of the roads. If it could be applied to our road department there would be cause for praise, rather than complaint. The present conditions, however, cause us to wonder if the idea of efficiency and economy is merely an ethereal phantom in the brain machinery of some of our clever statesmen in the Legislature.

Our road system is supported by about one million dollars a year. Added

to this sum is the amount that is raised by local taxation. The farmers say that the roads are getting poorer each year. At one time it was the boast and pride of the State that we had the best roads to be found. It is true that the present condition is due somewhat to the increased burden caused by the automobile traffic, and particularly by the big motor trucks that traverse the main highways with heavy loads.

The entire management of the road system is practically haphazard. The methods in vogue are neither logical or scientific. There is practically no systematic method of road repair in vogue. Roads that are well built and built at a considerable cost are allowed to deteriorate for lack of moderate repair. There is not the coöperation on the part of the State road department and the county authorities that there should be. Under the present policy of building roads our highways are costly. That material may be wasted through carelessness is possible, yet it might readily be determined. No explanation is seemingly ever demanded, while the overburdened taxpayers pay the bill. The farmers are among the heaviest taxpayers, and many of them submit to the injustice without thought as to a possible remedy.

When the automobile law was first enacted the fees for licenses were to be apportioned equally among the counties pro rata according to the mileage of State roads. For several years some of the smaller and financially weaker counties have failed to receive their proper proportion of these funds. Some, in fact, have received practically no assistance.

It is time legislation was enacted to establish a proper system so that road building can continue and our damaged roads be repaired and kept in excellent repair. Other States have a plan that works well, and why should New Jersey not adopt some scheme that will be effective? This is a problem of far-reaching importance to not only the farmers, but to the whole State, and I would ask that it receive your earnest attention.

There are other problems that I might discuss at length. One of them is the matter of distribution for South Jersey products. Some mention has been made of the fact that there is a steamboat line operating from Atlantic City to New York by means of which farm products might easily be shipped. With the completion of the proposed inland waterway it would seem probable that shipments to Atlantic City may be made, and possibly other shipments may be made, by means of this inland waterway to New York and cities within the metropolitan zone. The idea is that Atlantic City might be made a shipping point for produce and merchandise, and that New York buyers could come there to make their purchases, after which shipments would be made by the line of steamers. This subject will be discussed farther by Commissioner Dillon, from New York, who took part in a conference which was held recently at the office of President Marks, of the borough of Manhattan.

If it should be deemed advisable to establish a terminal market at Atlantic City the farmers in the southern part of the State would, of course, enjoy the benefit of better shipping facilities, and its success would afford means for trying something of the same sort in the northern part of the State.

One of the important questions of the year will be the matter of fertilizing the soil, and the scarcity of certain chemicals will cause the farmers of New

Jersey, in common with the farmers of other States, to look into this question with great care. If, as a result of this scarcity, our farmers learn something about soil economy, the lesson will not be in vain. It is a problem worthy of wide discussion and careful consideration. I am sure the question will have the consideration its deserves.

The question of establishing some helpful system of rural credit for the benefit of the farmers is a matter of great importance. The farmer should have some means of financing himself, some scheme whereby he can obtain help on his character and integrity of purpose. You will recall that I spoke at some length regarding this important subject a year ago, and it is receiving the attention of many legislative bodies, and some legislation by Congress is possible at the present session. At least the subject will have consideration, and much information will be collected. It is of vital importance, and should not be ignored in our progressive State.

The importance of the further extension of agricultural instruction and vocational training in our public schools are worthy of careful attention. Measures which are now contemplated to bring about this extension should be carefully considered.

May I recommend that the momentous question that should receive the attention of every farmer in New Jersey, regardless of his party affiliations, is the appeal of the Chief Executive of this Nation to the consideration of the needs for preparedness and defense. He is in a position to know whereof he speaks more than anyone else, and for that, if no other reason, his warning should be heeded. If our civilization and homes are menaced by reason of our defenseless condition, let everyone who calls himself an American support without question the appeal of the President for the endorsement of his policy to prepare for defense.

I have tried to point out to you that it is our duty to prosecute with greater vigor the advancement of agriculture in New Jersey. The door of opportunity is open to us; the fields are fallow before us; the markets are close at hand; let not the advantage pass. It means more prosperity and happiness to all the people and the proud distinction in having done our share for the progress of the commonwealth we all love so well.

On motion, the address was referred to a Committee on the Officers Reports, to be named by the Vice-President.

Vice-President Cox—Is there any further business to come before the Board at this time?

The Board then took a recess until four o'clock this day.

SECOND SESSION.

The afternoon session was called to order by Secretary Dye.

Secretary Dye—The hour has already passed when we were to begin our proceedings, and our officers are not here. Will you put Brother Brown in the chair?

A motion to this effect was carried.

Mr. Brown—The first order of business this afternoon will be an address by Prof. Rider, on the Cranberry Industry.

Mr. Rider then delivered his address, which is as follows:

The Cranberry Industry.

BY A. J. RIDER, HAMMONTON, N. J.

Mr. President and Gentlemen of the New Jersey State Board of Agriculture:

Conscription against my will by our honorable Secretary, to fill an aching void in the program, has placed me in an embarrassing position.

After learning from cold type what he had done, I endeavored to find a substitute, but failed. So I am here to punish him and you, and all I ask is that you take yours sympathetically.

"The Cranberry Industry" is a broad subject, worthy the broad mind which suggested it. But it requires some engineering to bring it into the space between 12 o'clock and dinner time, as that is about the usual hour for the farmer's dinner. A little history may not be uninteresting as to how this modest and retiring vine and fruit came into so much prominence as to be classed as an industry.

Nature gave us the cranberry, among other things so necessary for comfort, health and happiness, but placed it just beyond our reach in the mossy fen over water of uncertain depth. It was left to man to coax it out, and here the industry was born. From the aborigines we first learned of its diatetic and medicinal value and its ability to tickle the appetite of the epicure. Suspicious at first of their highly colored painting of its virtues, we appreciated it to the value of fifty cents per bushel. With these statements proven, its fame began to spread, the supply was inadequate, and prices went a soaring, and here was the white man's opportunity.

It is hardly worth while to quarrel over the question as to whether it was the Eastern or the Jersey Yankee who first succeeded in taming the shrew, and bringing it into the class of staple commodities. Jerseymen must, however, concede this: Eastern Yankees were first to spread the news and give the industry notoriety; not, however, of the most desirable or reliable kind. It came in a book, edited by one B. Eastwood, and published in 1856, which was not devoted to the virtues of the cranberry, but how to get rich growing it. It reads like a fairy tale, with about the same amount of truth in it. Solomon, Rhodes & Co. may have taken their cue from it.

In the preface appears this: "In it any intelligent farmer will find all the knowledge he can require for raising the cranberry." And in the first chapter, this: "Hitherto no reliable instructions have appeared in print, but in the following pages the subject will be so fully treated of, in all its bearings, that any intelligent agriculturist will, by following the hints thrown out, and the directions given, find no difficulty whatever in securing decent crops of this increasingly popular berry." These statements by an amateur, with others of similar misleading character, will provoke a smile from any person who has worked out a commercial success in growing cranberries.

Massachusetts was first to see the possibilities and advantage to the State of this industry, and offered prizes for the best methods of cultivation. In the Appendix of Eastwood's book, one of the contestants said: "As far as my observation extends, there are but few soils in which the cranberry will not flourish. When they will not, the character of the soil may be changed by carting on gravel, loam or sand." Barnum wanted a white elephant, so he painted one. He wanted a whale, so he made one of wood and set it plunging around in an enormous tank of water. When the museum was burned, lots of people were sure they saw barrels of whale oil running down the gutters.

If P. T. was in this contest, he failed to state it.

Another contestant said, "Meadows for cranberries must not be drained." To-day drainage is considered the first requisite for successful cranberry cultivation.

Ten years later, the same author put out another edition of his book, in which he repeated the statement that no reliable information had been printed, and he did not except his own. These things are not quoted for your diversion, but to show you what struggles the industry passed through before touching bottom. How many fortunes were swallowed up in chasing this will-o'-the-wisp on extensive scales will never be known, but they surely went into the millions.

The public are disposed to accept what goes in books as truth. I take it that the wealthy Detroit brewer, who owned a large tract of marsh land on the shores of Lake St. Clair, must have read this book, and had more faith in it than in the writer's opinion. In answer to his request, accompanied by a description of his conditions, I advised him that two essentials were wanting, viz., sand and water. He replied that he could build a railroad to bring the sand and there was plenty of water down below. When his estate was settled, a quarter-of-a-million-dollar hole was left in it, charged to cranberry enterprise.

It will be noted that, originally, and during early experiments, the cranberry industry was rather an adjunct of the farm, or a side line, instead of an occupation by itself. The numerous failures under these conditions taught the fact that good farming lands were not congenial surroundings for the cranberry plant. Its habitat of mossy peat, pure water, and its love of sand, would not accept the new environment. It refused to do business except these friends were at hand.

It so happens that nature has only provided these three requisites to any considerable extent except in about three localities in the United States.

These are Barnstable and Plymouth counties, in Massachusetts; Atlantic, Burlington, Ocean, Cape May and Camden, in New Jersey, and about three counties in Wisconsin.

Of the area of such unimproved lands, New Jersey is supposed to have more than all other States combined, and there appears to be no reason why she should not lead in the enterprise, now that some of the mists have been cleared away.

There was a time when New Jersey did lead. Prof. Geo. H. Cook, State Geologist, said in 1869, "Our fields supply more than half raised in the United States."

How this lead came to be lost, is perhaps most briefly explained by quoting from Jos. J. White's book on Cranberry Culture, published in 1870. He quotes Barclay White, one of the earliest cultivators of Burlington county, as follows: "After producing a crop, one-third rotted on the vines before picking and seventy-five per cent. of the remainder rotted after. Such has been my experience in the cultivation of the cranberry, and unless I can find a remedy for this rotting of the berry, I must abandon the business as unprofitable." Notwithstanding this warning, fortune seekers proceeded to invest large sums in cranberry enterprises, costing from $300 to $1,200 per acre.

These were, of course, encouraged by glowing literature, and helped on by one or more missionaries from Cape Cod, who reaped handsome profits as contractors in constructing these to be gold mines.

Barclay White's trouble found most of them. They grew the berries, but by harvest time they had mostly evaporated. The abandoned wrecks of these enterprises were scattered over South Jersey like the bones of cattle we have seen by the roadside through the bad lands of the South.

Barclay White did not live to find the cause or the remedy for his trouble, but some of those who came into the game later, by persistence, and with confidence as to what could and should be done, succeeded in getting the ear and assistance of scientists, one of whom discovered the cause, and another, some years later, the remedy.

"Honor to whom honor is due." To our own Dr. Byron D. Halsted, of the New Jersey Experiment Station at New Brunswick, belongs the credit of discovering the fungus disease which caused the trouble, and to Dr. C. L. Shear, pathologist of the Department of Agriculture at Washington, the remedy. Cranberry growers are thankful, and the State should show its appreciation of these men whose labors have resulted in adding millions to its property valuations.

I should not mislead you into the belief that this is the only trouble or obstacle that has been met in the development of the cranberry industry in New Jersey. Insects of varieties and kinds too numerous to mention have had to be contended against, and, with frosts, fires, floods, hail storms, etc., etc., the path of the successful cranberry grower is not a flowery one. New enemies and new conditions are continuously arising, which will always cause the industry to be classed as one of the extra hazardous. Still, there is no good reason why New Jersey should not regain and hold its place as leader in cranberry production. It is no inviting field for the investment of capital, except it be under the direction of men skilled in the business, men who love

the work and are willing to give it not only their whole time and constant attention but their best thought and energies. It is no lazy man's job to achieve success in growing cranberries.

Undoubtedly, what has placed Cape Cod in the lead is the fact capital has been placed freely in the hands of men who have demonstrated their ability to work out commercial success in the business. The result has been to transform these two counties into the garden spots of Massachusetts and the establishment of one of the most important industries of the State.

It will be of interest for you to know that the record of the movement of the New Jersey crop for 1915 shows it to be the largest, with one exception, in the history of the business, or 555,000 bushels, or about 42 per cent. of the crop of this country, and which has brought in net returns over one million dollars. This, of course, comes back to the growers, but largely to repay expenditures for labor in harvesting and care of plants, representing an invested capital of some ten millions of dollars.

I cannot leave the subject without telling you what every Jerseyman should know, viz., that the best Cape Cod cranberries are grown in New Jersey, and appreciated by the trade to the extent of fifty cents to one dollar per barrel over the same varieties grown on the Cape. But New Jersey has not until recently been getting proper credit. While these varieties constitute the larger portion of the New Jersey crop, they are quoted as Cape Cods, while Jerseys mean native fruit or mixed varieties.

It came about in this way: Cape growers, with their small yards or patches, were first to select varieties of uniform color and periods of ripening, and New Jersey growers found it more convenient to import these than to select them from their own beds. The longer season and changed climatic conditions appear to have improved the keeping qualities of these varieties, so that now dealers are asking for Jersey-grown Early Black, Howes, &c.

I believe it is generally conceded that the areas of land suited to growing cranberries in Massachusetts have been nearly all taken up, and attention is being especially directed to New Jersey for future extensions of the industry. Two of the largest and most successful growers of Massachusetts have already entered our field and established large plants, Mr. Makepiece at Mays Landing and Weymouth, and Mr. Briggs at Port Norris.

It has been intimated that early cultivators of this fruit did not care to have too much publicity given the business. A veil of secrecy is an encouragement to wildcat investments. The American Cranberry Growers' Association, organized forty-six years ago, has been an open forum for the discussion of the various difficulties and problems that have confronted growers, and in which they have been liberally and ably assisted by both the State and National Departments of Agriculture.

I believe the industry is now established on a permanent basis and promises to add millions to the wealth and prosperity of the State.

Chairman Brown—I am sure we have all been interested in Prof. Rider's valuable address. If there is no objection, it will be made a part of the record. We might like to discuss it, but

time is passing, and we will be obliged to proceed to the next item of business, "The Past Year's Experiments with Potato Diseases," by Dr. Mel. T. Cook.

Dr. Cook then reads his paper, which is as follows:

The Past Year's Experience With Potato Diseases.

MEL. T. COOK.

There are a number of well-recognized diseases of the potato, some of which are the cause of heavy losses and present the most serious and most complicated problems to the potato-growing industry. Most of these diseases are due to fungi, some few to bacteria and some few to other causes. These organisms are influenced by the climatic conditions, by soil and possibly by other factors. Since these factors are different in different parts of the country, and in fact are seldom the same in any one locality for two successive seasons, there is a corresponding difference in the behavior of almost any specific disease in different localities and in the same locality for successive seasons. As an illustration of this, you will no doubt recall that late blight (*Phytopthora infestans*) is usually the most severe disease in the northern States but in some years is of relatively little importance; it is the cause of some losses in the mountainous districts of New Jersey and States farther south; in South Jersey it is of no importance on the growing crops, but seed affected with the fungus is practically worthless. Black leg (*Bacillus phytophthora*) behaves quite differently in Maine and New Jersey. The sleeping sickness or bacterial wilt (*Bacillus solenacearum*) is very severe in the southern States and occasionally the cause of heavy losses in the southern part of New Jersey. The Rhizoctonia is a disease concerning which there is the greatest difference of opinion and is frequently the cause of heavy losses. It is the disease to which I shall give special attention to-day.

The speaker has studied potato diseases in New Jersey for four seasons, 1912, '13, '14 and '15. The black leg has been prevalent every year but appeared to have been somewhat less in 1915 than in previous years. The dry rot was prevalent in 1912, the southern bacterial wilt in 1913, the Rhizoctonia in 1915.

As previously stated, the Rhizoctonia or scurf is the subject of the greatest difference of opinion among both growers and plant pathologists. On the seed potatoes the fungus appears as small black bodies, sometimes referred to as dirt that will wash off. However, it can be easily removed by scratching with the finger nail. Some of you will remember that I called your attention to this disease at the 1913 meeting of the State Board of Agriculture, and stated that it was likely to be the cause of serious losses at any time. The great abundance of these black bodies on the seed potatoes every year, and the failure of the growers to see any evil results, naturally led to the serious doubts as to possibility of any evil results arising from this source. However, the prophesied peril came on us in 1915. The epidemic was most severe in Monmouth and Mercer counties, in the south part of Middlesex

and the north part of Burlington. The first reports coming to the New Jersey Agricultural Experiment Station were concerning the failure of germination. An investigation showed that the germination was so poor on many farms that the crop was plowed out. Many seed pieces did not germinate; many others produced small shoots which did not break through the soil or gave very small worthless plants; many produced small shoots which partially or completely died down from the tips, frequently sending out side shoots which also died; complete dying of the shoots frequently resulted in clusters of small worthless shoots. Many of the plants were small and the first foliage wrinkled.

As the season advanced many of these plants made a fair growth and the new foliage was smooth and normal. Many of the plants showed cankers or lesions characteristic of this disease, but could not always be correlated with the lack of vigor in the plant. Late in the season many of these plants produced large numbers of small potatoes and also aerial potatoes, but there was very little doubt that in some cases this was due to other causes. It is very evident that this disease was the cause of heavy losses, but it is impossible to give any accurate estimate of the amount.

There is no reason to believe that the black bodies or sclerotia were any more abundant than in past years, or that the organism was any more prevalent in the soil. The severity of the disease in 1915 was probably due to climatic conditions, but we do not as yet know just what conditions are favorable or unfavorable for this organism.

In the spring of 1915 we received two lots of seed potatoes affected with this disease from the Maine Agricultural Experiment Station. These potatoes were planted in short rows on the College Farm and gave the following results:

First Lot—Untreated,	22.5 lbs. per row.
First Lot—Corrosive sublimate,	50.6 lbs. per row.
First Lot—Formaldehyde,	35. lbs. per row.
Second Lot—Untreated,	37.8 lbs. per row.

The experimental work with sulfur for the control of the *common scab* has been continued under the patronage of the Union Sulfur Company. The experiments were under the immediate supervision of Mr. H. Clay Lint, and a complete statement of the work will be found in the 1915 Report of the New Jersey Agricultural Experiment Station. The results may be summarized as follows:

(1) Sulfur is apparently more effective in the control of scab when applied to soil on which no cover crop was grown than where a cover crop was grown.

(2) A more effective control of scab is accomplished where sulfur is applied in the spring than when it is applied the preceding fall.

(3) Six hundred pounds of sulfur per acre is more effective in the control of scab than 300 pounds per acre. But the injurious effects, and the high cost of applying more than 600 pounds of sulfur per acre, renders any higher rate application inadvisable.

(4) While there sometimes results a decrease in the yield of potatoes or

an injury to the succeeding crop from the use of sulfur, no permanent injury to the soil has ever resulted.

(5) Small applications made annually are to be preferred to occasional large applications.

(6) Tests on various methods of applying sulfur have shown that the use of sulfur in mixture with the fertilizer is not to be recommended. The benefits of the fertilizer are diminished and the sulfur is ineffective in the control of scab in such mixtures. Broadcasting of the sulfur immediately before or after planting gives much more satisfactory results than any other method used.

(7) Experiments have shown that the type of material used in making the fertilizer influences the efficiency of sulfur in the control of scab.

Sulfur is more effective when used with (*a*) acid phosphate than steamed bone as a source of phosphorus in the fertilizer; (*b*) sulfate of ammonia than nitrate of soda as a source of nitrogen; (*c*) muriate of potash than sulfate of potash as a source of potassium in the fertilizer.

Black leg appeared to be somewhat less prevalent in 1915 than in former years, but since we have no accurate basis for comparison, it is difficult to make a definite statement.

Tip burn was the source of a great deal of uneasiness and was no doubt the cause of considerable loss.

Certain physiological diseases, such as *leaf roll* (and possibly *Mosaic*), were more prevalent than usual, and were the cause of some loss. Comparatively little experimental work has been done with these diseases in this country. However, it is evident that they are the cause of rather heavy losses, and that they can be transmitted in the seed. Thus far we know of no means of controlling these diseases, except the use of healthy seed. The seed problem will be referred to later.

Late in the season our attention was called to *discolorations* in the fibro-vascular regions of the tubers and also to a considerable amount of decay. We finally decided that there was more than one cause involved in these conditions, and this opinion has been confirmed by reports from United States workers, to whom specimens were sent. A considerable amount was due to such organisms as *Fusarium oxysporum* and *F. radicicola,* but there were, no doubt, other causes.

Experimental work with diseased potatoes on the College Farm consisted of experiments with Maine potatoes affected with *powdery scab* (*Spongospera subterranea*), with Rhizoctonia as referred to above, and with diseased potatoes sent to us by New Jersey growers.

Potatoes carrying an abundance of powdery scab were planted in two different kinds of soil. The crop was dug, carefully washed, and every potato examined by both Mr. Lint and myself, but we were unable to find the slightest evidence of the disease. Of course, our experiment of one year is not sufficient for a judgment concerning this disease. However, potatoes sent to other States and planted produced clean crops. Furthermore, United States inspectors found diseased tubers in shipments of Maine seed potatoes in New Jersey and points farther south in the spring of 1915, but failed to find any evidence of the disease in the resulting crop during

the summer and fall of 1915. At this time we are inclined to believe that powdery scab is not likely to prove a serious disease in New Jersey and points farther south.

Experimental work with diseased potatoes sent in by New Jersey farmers indicated that there is a very great difference in seed from different sources, and that it does not pay to use partially decayed seed. The complete results of these experiments with seed affected with Rhizoctonia, powdery scab and other diseases will be published in one of the New Jersey Agricultural Experiment Station Bulletins.

The *spraying* experiments for 1915 were under the immediate supervision of Mr. Lint, and may be summarized as follows:

(1.) The variation in the yield of potatoes is dependent on many factors, such as season, varieties used, character of the seed, etc. Spraying is important in many parts of the country, but the results here have been very diverse. The 1913 experiments with Bordeaux mixtures gave very small increased yields; in the 1914 experiments there was an increase in two out of three tests, in 1915 in one out of four tests.

(2.) No increase of importance has been obtained as a result of spraying American Giants with Bordeaux mixture.

(3.) Spraying with either home-made or commercial Bordeaux mixture will usually prolong the life of the vines from 7 to 10 days, but the increase in yield is not always commensurate with the prolongation of life.

(4.) Second crop potatoes sprayed with Bordeaux mixture (1915) gave an increased yield of 45 bushels per acre and a net profit of $41.00.

(5.) Sulfur-arsenical dusts which were compared with Bordeaux mixture can be applied more quickly and more economically than Bordeaux, but are less effective in prolonging the life of the plants.

The results of the 1913 experiments have been published in the 1913 Report of the New Jersey Agricultural Experiment Station, the results of the 1914 experiments in circular 42 of said Station, and the results of the 1915 experiments will be published in the 1915 Report of said Station.

It is our intention to continue these experiments for several years.

It is very evident that one of the most important problems for the potato grower is that of clean, healthy, vigorous seed. Many of the diseases which reduce the yield can be detected only on the growing crop. Several of the seed-producing States have provisions whereby growers can have their crops inspected at blooming time, again just before the dying of the plants, and again after digging. If the crop reaches an established standard it can be sold under a State certificates as *certified seed*. The grower pays the expense of the inspection, and should, therefore, receive a higher price for his seed than those who do not subject their crops to this supervision. Some certified seed was brought into New Jersey in 1915, and the results in general were better than those grown from ordinary seed, although in some few cases the ordinary seed gave as good results as certified seed. This was to be expected, since some non-certified seed could have been certified if application had been made and the crops properly inspected.

This inspection and certification must not be confused with the United States Government inspection, which was for powdery scab only, and which

has now been abandoned. A great many of our growers purchased United States Government inspected seed in 1915, thinking that they were buying certified seed.

The data at the present time indicates that the purchase of certified seed is a profitable investment. However, before any definite statement can be made it will be necessary to conduct experiments to test out the relative value of different grades of northern seed under control conditions in New Jersey.

Many of our growers, especially those in South Jersey, have followed the practice of using the so-called "second crop" seed. Many of them are thoroughly convinced of the advantages of this practice, but we have very little, if any, reliable data on the subject. This should also be tested by experiments under control conditions.

Some experiments along the lines indicated will be conducted during the coming season on both the College Farm and the new farm in South Jersey. Owing to the lack of funds these experiments cannot be extensive, in fact, not as extensive as they should be when we consider the importance of the potato industry.

It is frequently suggested that all potato seed coming into New Jersey should be inspected. This is impracticable and unsatisfactory.

(1) Some of the most important diseases cannot be detected on the seed, and other diseases would undoubtedly be overlooked; (2) it is impossible to secure competent inspectors for the short period required for the work; (3) the expense would be enormous and the results unsatisfactory.

We would recommend that growers use every possible precaution in the purchase of seed potatoes; that they try out the certified seed; that they treat all seed with corrosive sublimate or formaldehyde, and that the Legislature make ample appropriation for experimental work with potatoes which will give us more definite information concerning this important industry.

Dr. Cook—That is what I have to say upon the potatoes. I want to take just about two minutes for my report; on account of the lateness of the hour, I will not read it, but will hand in the manuscript.

This last year we had four epidemics of plant diseases in the State. One was the fire blight of the pear and apple, the other was the Rhizoctonia of the potato, to which I have referred; another was the mosaic disease of the tomato, and the fourth was the anthracnose disease of the bean.

There is urgent need for experimental work with the potatoes, urgent need for experimental work with the tomato and also with the legume crops. There are many others that are needed, but those are the most important.

The year 1915 was a banner year for plant pathology. It was one of the greatest years I experienced. Not quite so happy for some of the rest of you, but for me it was a glorious year. For,

considering the diseases of our agricultural crops sent to the New Jersey Station, together with those I was able to pick up in going around the State, the total is just exactly two hundred and fourteen diseases for the year 1915, a complete report of which I have handed to the Secretary.

Report of the State Plant Pathologist.

MEL. T. COOK.

The organization of the department for the fiscal year ending November 1st, 1915, was practically the same as during the preceding year.

All of the nurseries were inspected in accordance with Chapter 54, Laws of 1911, and in most cases found to be in good condition. Most of the inspection work was done during the months of July and August. The problem of handling the raspberry nurseries is very annoying and the results very unsatisfactory. In fact, there are very few true raspberry nurseries, but there are a great many growers who sell to growers outside the State and to nurserymen both in and out of the State. It is impossible to give more than a superficial inspection to these plants, either during the growing season or at time of shipment. Although we have given a great deal of attention to this side of the work, we do not feel that it is altogether satisfactory. All berry plants should be inspected at time of shipment by a well-trained inspector. This would require all the time of one man during the shipping seasons.

In order to avoid confusion, the Departments of Entomology and Plant Pathology have used the same numbers for nurserymen's certificates. Therefore, the list of certificates is the same as that given in the report of the State Entomologist.

In 1913, and again in 1914, we coöperated with the Department of Horticulture in distributing peach buds to those nurserymen who requested them. The object of this work was to reduce the amount of "yellows" and "little peach" in the State by giving out buds known to be free from these diseases. The increased amount of work in both departments in 1915 made it impossible for us to continue this practice.

The interstate shipments were so large in the fall of 1914 and spring of 1915 that it was impossible to inspect any considerable amount of the incoming stock. However, the work was done as thoroughly as possible. The diseases found on both interstate and foreign shipments were practically the same as those found during previous years and given in the 1914-15 Annual Report.

Studies by the United States Department of Agriculture and a number of the State agricultural experiment stations, including the New Jersey Station, indicate that the "powdery scab" (*Spongospora subterranea*) of the potato is not likely to prove of any importance in New Jersey. Therefore, the U. S. Government has raised the quarantine on this disease. The quarantine against the potato wart, the white pine blister rust and some other diseases are still in force.

There were four very important epidemics during the year of 1915. They were as follows: (*a*) The "fire blight" of the pear and apple, which was very destructive, especially throughout the southern part of the State; (*b*) the "Rhizoctonia" of the potato, which was the cause of poor stands and greatly reduced yields. (*c*) The "mosaic" of the tomato, which was very severe in many localities of the State and the cause of considerable loss. (*d*) The "anthracnose" of the bean, which was more severe than in past years, and the cause of heavy losses.

Many plant diseases should be studied. The most important are: (*a*) A more comprehensive study of the diseases of the potato and experimental work with northern and home-grown seed. (*b*) The diseases of the tomato, especially the leaf blight (*Septoria lycopersici*), the anthracnose (*Colletotrichum phomoides*), the wilt (*Fusarium lycopersici*) and the mosaic. (*c*) The diseases of the legume crops.

The following publications from the Department of Plant Pathology of the New Jersey Agricultural Experiment Station have been issued during the year:

(1) Circular No. 44, on "Common Diseases of Apples, Pears and Quinces."

(2) Circular No. 45, on "Common Diseases of Peaches, Plums and Cherries."

(3) Circular No. 48, on "Bordeaux Mixture."

A list of the 214 most important diseases of economic plants which have come to our attention during the past year will be published in the Report of the New Jersey Agricultural Experiment Station for 1915.

Vice-President Cox—The address of Prof. Cook will be accepted and be printed in the Proceedings.

We will now take up the question of "The Effect of the Weather on the Yield of Potatoes." This will be presented by J. Warren Smith, Professor of Agricultural Meteorology, United States Department of Agriculture. I now introduce to you Prof. Smith. (Applause.)

Prof. Smith then read his address, which is as follows:

NOTE.—The publication of the paper regarding "The Effect of Weather Upon the Yield of Potatoes" is not approved at this time (April 4, 1916); hence, the manuscript has not been returned.—J. WARREN SMITH, Meteorologist.

Dr. Cook—Mr. Chairman, I should like to take this opportunity to express my appreciation of this paper which we have just heard. The data that has been given there with regard to the development of the potato and also of disease is in accordance with the studies being made by others, and it is just data of that kind that we need so as to be able to answer a good many of the questions which are coming to those of us who are engaged in this study of the work every year. Many of those questions,

as they come to us, we simply cannot answer because we have not the correlated data between the crops and the weather, on the one hand, or between fungus which attacks the crop, and the weather. It is a line of work which I might say was discussed at the recent national meeting of the Plant Pathologists at Columbus, Ohio, this last December, and has been made a subject for special consideration at our next meeting of this national organization in New York city, next December. It is a topic that was discussed and decided to make that the principal topic for our next year's meeting.

Vice-President Cox—The paper has doubtless been interesting to every one of us. It will take the usual course.

If there is no objection the roll of the counties will now be called, and you will present your nominees for the Nominating Committee.

Secretary Dye then called the roll of the counties and the following gentlemen were named from the floor, to serve on the Nominating Committee:

Committee on Nominations—Atlantic, J. L. Purzner; Bergen, F. M. Curtis; Burlington, Henry S. Lippincott; Camden, Benjamin Barrett; Cumberland, R. B. Gilman; Essex, A. W. Fund; Gloucester, Amos Kirby; Hunterdon, Egbert T. Bush; Mercer, Fred Gardner; Middlesex, W. Hendrickson Clark; Monmouth, D. Howard Jones; Morris, S. E. Young; Ocean, R. C. Graham; Passaic, Henry M. Berdan; Salem, Frank Powell; Somerset, J. D. Quick; Sussex, Theodore M. Roe; Union, E. R. Collins; Warren, Ernest Race.

Vice-President Cox—I will also name as the Committee on Officers' Reports, the following: Arthur Lozier, Ridgewood; F. O. Ware, Deerfield; Joseph Camp, Pierces.

Mr. Dye—I have two resolutions which have been handed to me which ought to go into the hands of the committee for their consideration.

Vice-President Cox—The various committees will take these papers. Is there anything further to come before the Board? If not, a recess will be declared until 7:30 o'clock this evening, in this room.

The Board then took a recess until 7:30 P. M.

NIGHT SESSION.

Vice-President Cox—The Board will please be in order. We will take up the regular order reserved for this evening. I note that the first thing on the program is the introduction of new business. Is there any member present who desires to introduce any new business at this time? Are there any resolutions to present?

While you are writing your resolutions, we will pass to the subject "The Progress of Farm Demonstration to Date." That subject will be treated by Prof. Alva Agee, who needs no introduction to this audience. Prof. Agee. (Applause.)

The Progress of Farm Demonstration to Date.

PROF. ALVA AGEE.

Mr. President, ladies and gentlemen—I am glad that you are willing to cheer me on my way. Our work prospers. In an entirely detached way I can say that Farm Demonstration is gaining in the number of its friends in New Jersey.

The work naturally centers at your Agricultural College and Experiment Station, an institution that you support for research and investigation. Our division of Extension in Agriculture and Home Economics has organized its work into projects, as we call them, so that we may use the money that you give us as effectively as possible.

The project that may interest you most is the one that we call County Farm Demonstration, in which an effort is made, as rapidly as is best, to carry into each county, in some degree, our College and Experiment Station by means of a representative located in the county. The number of counties organized in New Jersey is increasing slowly, but as rapidly as we can provide money for the work. There are friends of farm demonstration work in three or four unorganized counties in New Jersey who would push for organization and secure all of the local money needed, if we had the funds from the State to assist in the organization, and if we had the right men to take charge of demonstration work in those counties.

My own thought is that extension work has come to stay, just as the Agricultural College and the Experiment Station have come to stay. It is one of three great divisions in agricultural work, and, if I am right about that, we can afford to take our time in grounding this Extension Work in such a way that serious mistake will not be made.

Within the year two additional counties have been organized. A third county has voted the money to begin the work, and we are seeking the right man for that county. So much in the way of numerical progress.

The work has more than doubled in the year in its efficiency, on account of the number and character of friends that our county work has gained. As some of you know, because I am looking into the faces of some of my friends in this State who come from organized counties, the direction of the work is largely in the hands of the pepole of the county. Possibly I could illustrate this phase by telling you how we proceeded to organize the last county that has gone on our list, which is Cumberland. When the Freeholders made the appropriation and we had the money from the State to meet the appropriation, and we had the right man in view for the county, each Grange in the county, the County Board of Agriculture, the various Horticultural and Poultry Associations, the Public School System and also the Boards of Trade were invited, each one to furnish a representative of its body that would form an advisory committee for Cumberland county; and, when they came together, a representative from nearly every organization within the county, we submitted to them the lines of work that we wished to see carried on in Cumberland county provided they approved. Those projects of the County Demonstrator were considered by the representatives of all the organizations in the county, the advisory committee. They were approved by that committee. And then the local control was turned over almost absolutely to that local body. Why not? They were the representative men of the county. They were the leaders in the Grange, the County Board of Agriculture and the various other associations. They were progressive men who wanted in that county a scientist, a man who would be their agent for the promotion of everything that makes for the betterment of rural life.

Occasionally I meet a man who seems to think that the one purpose of Farm Demonstration is to increase the amount of product that goes upon the market. I can illustrate how we work by taking another county. One project of the County Demonstrator for Monmouth county this year involved thirty demonstrations, or something near thirty demonstrations, with varying amounts of potash to learn whether crops could not be produced at less cost, whether the amount of potash formerly used was not in excess. And, so far as the one year goes, the demonstration was such a success that the editor of one of our leading agricultural papers at a dinner at Freehold recently spoke of it as the demonstration most widely known in the United States. Another item in Monmouth county is that of an organization for the marketing of perishable stuff, vegetables. The people themselves, leading market men, formed a committee a year ago and have been studying the question with our help, the Extension Division bringing in experts from other parts of the country who were interested in marketing, to tell of their efforts, and these practical growers of Monmouth county considering together a scheme which they believe is going to work for coöperative selling of most perishable stuff. Now, I don't know that it will work. What I am trying to show you is that the Farm Demonstrator is the agent of the progressive men of the county in starting a movement along a line that men would like to have it go. They want a demonstration in that kind of marketing, and are organizing locally for it. They want to try it out and they have someone who is in a position to help them to render a service to the county.

It is true that Farm Demonstration work is concerned most directly with production. Let us illustrate again. In Cape May county a considerable item of income is received from the tomato crop, and the blight is a serious drawback. The Farm Demonstrator of Cape May county, with a Ford machine, equipped himself with a sprayer that could be carried on the rear of the machine and went from one demonstration plot to another during the summer with this outfit, applying the spray material himself because he wanted to know that it was done right. The result is that some commercial growers this year, notwithstanding the fact that sulphate of copper is to-day selling for twenty cents a pound, are ordering a half ton of sulphate of copper to continue this work with the tomato.

I mention this to show the practical character of the work that is being done, and the fact that it is work that the progressive men of that county want done and not something which I may imagine would be a good thing. In some other county the work may be different, but it is just as practical. Some time may be given to the assistance of pupils in the schools that are interested in agriculture. Some time may be given to the assistance of rural ministers who would like to build up in their churches a stronger interest in community life. Anything that the best men of the county want done is work with which their Farm Demonstrator may be concerned.

I must not say too much about the one project. We cannot do much in demonstration work unless we are doing that which commends itself to the leading men in New Jersey, the men like yourselves, who believe in rural life, the men who are interested in progress, the men who make the County Board, the Grange, the horticultural and other rural associations, and we must be your servants or we should quit, because failure would be our lot.

Other projects within the Division of Extension are carried on by specialists. We have a specialist in horticulture who conducts pruning and spraying demonstrations, and has some model orchards in charge. A specialist in poultry husbandry assists owners of farm flocks and others, outlining projects for the improvement of their lines of work. There is a specialist in market gardening, another in agronomy, etc. We are appointing a Boys' Club Leader, who will be in charge of Corn Clubs, and all that sort of thing, the desire being to do the work in counties that are not organized by the Y. M. C. A. that efficient Y. M. C. A. Secretaries are doing in the counties that they have organized. We are working with them.

Most popular of all, I reckon, is our work in Home Economics. It is amazing what interest the women and girls in our farm homes have in the new science, that has been developed, that is as serviceable to them as our science is to us on the farms. If there is any word of which you and I are heartily sick, it is the word "uplift," and if there is anything that nettles me, it is for some person to refer to us and to our attitude as that of uplift. You and I are country folk, country bred, and we know the stock from which we come, and are willing to stand upon our record. But the farm wife and daughter have just as good a right to the assistance that science can give as the farmer has. Farm Women Clubs and Girls' Clubs are being formed just as rapidly as the specialists in our department are able to meet the demand.

Mr. President, this is a report of progress, and the joy in it all to me, if I may just say one personal word in conclusion, is the fact that it brings me in personal touch with many hundreds in the various counties of New Jersey who are directly and vitally interested in rural life, and who know that in rural life they can have self-direction, stand up and be counted, and are not submerged. They are individuals who stand out just a bit, willing to do something for others, in the Grange, in the County Board, in Associations. They are serving in Farm Demonstration work, and if we go wisely, slowly, surely, every county will come to the point where it will want its representative, its agent, its practical scientist who will be concerned with the things that they want to see pushed. I hope that you will be willing some time in the future to allow me to take a few minutes again reporting progress, and that I can say that we have added three or four more counties to our organized list, and have added to our number of specialists, every one of whom must be full of the spirit of service, or he will have no business in extension work. (Applause.)

We will now pass along and take up the other question of the evening. The subject is, "Means of Attracting and Increasing Useful Insectivorous Birds." This subject will be treated by Prof. Edward Howe Forbush, State Ornithologist, of Massachusetts, whom I now introduce to you. Prof. Forbush. (Applause.)

Prof. Forbush's Address.

Mr. President, ladies and gentlemen—Birds stand to-day among the noblest products of life upon this planet. Some of their organs and functions are much superior in many ways to those of man. This seems remarkable, when we consider the accepted belief that the bird of to-day probably has developed through the ages in direct descent from the slow, crawling, cold-blooded reptile, one of the lowest in the order of vertebrates, into a form of life with greater muscular power and activity and hotter blood than man himself.

Birds are the only creatures which share with man the joys of flight and song, and it is believed that birds had been flying for millions of years before man appeared on earth. To-day we are just beginning to learn to fly by machinery and most of us have not flown yet.

It is now believed that birds are necessary to our welfare not only because of the joy they bring us, but also for the good they do in holding destructive insects and other pests in check.

Unfortunately the bird life of the world seems to be more disturbed by the advance of civilization than any other class of life. Shaler says that there are scores of species that seem to be on the very verge of extinction, and that it is probable, except for stringent protection, most of those which do not, like the English sparrow, adopt man and his works, will be wiped from the face of the earth. This is particularly true of the migratory species, for in their wanderings they will be exposed not only to the destructive

weapons and machinery of man, but also to other adverse conditions that are to be established by him in the time to come.

Considering the danger which menaces birds by reason of the progress of civilization, it behooves us to take especial care of these creatures.

Birds are super-animals. They are the most active of all vertebrates; their circulation and respiration are the most rapid and the temperature of the blood the highest among animals. Their great activity, with the consequent rapid waste of tissues, calls for a tremendous amount of food. Their digestive processes are tremendously active and swift. It is a poor bird that, in its wild state, will not consume in one day an amount of food equal to one-half its own weight. The young, because of their rapid growth, require a still larger proportion of food. Treadwell found in investigating the food of the young robin, that a robin just ready to leave the nest required each day one-half its own weight of beef to keep it alive, or fourteen feet in length of caterpillers or earthworms.

The young of birds grow with tremendous rapidity. The time that most of the smaller insectivorous birds stay in the nest, from the hour of hatching until the hour of flight, is only from one to three weeks. Some broods of young birds consume in one day a thousand or more insects.

Somebody has said that the way to a man's heart is through his stomach, and that saying applies with still greater force to birds, but they require not only food, they need shelter and they must be made to feel at home.

On the north side of my farmhouse at Wareham, Mass., is a thicket which, on its south side, next the house, furnishes shelter from the cold winds in winter and along its edge we piled some heaps of brush. In the brush heaps we threw hayseed gathered from the barn floor. It is well to cover such a brush heap with pine boughs to keep out the snow. A pile of brush in the front yard would be an excellent means to protect the birds; you could run vines over it, grow bushes around it, and make the heap quite ornamental. And there you would have a place where birds would always find a safe retreat, shelter and food and in time they might come to nest there.

In going over the different means of protecting birds, I wish first to call your attention to the fact that it is not necessary to pay out good hard-earned money to attract them. A dry-goods box, opening to the south, with some chaff or hayseed thrown into it from the barn floor, brought the seed-eating birds up under our windows where we could care for them. Anyone can do that, and if the box is raised upon posts, so as to be out of reach of the cat, you have as good a feeding stand for birds as anybody has. Where you can grow Japanese millet you will find that millet seed makes a splendid food for birds. In autumn we tied to branches of trees some bones from the cooking pot, some with shreds of meat attached and others split open to expose the marrow, and we tied up also some bits of beef fat or suet, gradually moving them nearer and nearer the house. The birds found them and followed them.

My youngest boy was fond of drawing birds. Outside a kitchen window he set up a little bush and tied on the bush some scraps of beef fat. Soon chickadees came from trees in the orchard and in the woods, and they grad-

ually learned to come to the window so that he could make drawings of them as they fed on the suet.

Gradually as we took down the bones and the suet at a distance and moved them and the feeding box close to the house where we could watch and protect the birds, chickadees, nuthatches, creepers, woodpeckers, jays, sparrows, warblers and even bobwhites and pheasants came near to partake of our bounty.

My eldest boy decided that he would like to have a birds' Christmas tree on a window shelf. The shelf is merely a wide board, and it presents the simplest manner of attracting many kinds of birds to the window. If snow comes in the night you can reach out of the window and brush the snow off in the morning and put a little more chaff or any other food on the shelf. You can tie bits of suet on the tree here and there, and thus provide for all the birds. Sometimes we had as many as fifteen or sixteen birds about or on that tree on winter mornings, and many more feeding in or about the box.

A window box can be arranged with glass sides extending right into the room, but the window shelf is a most attractive thing. Sand or grit of any kind will be appreciated by the birds.

To-day there are a great many different kinds of baskets and receptacles for suet made to put on the trees. The one shown in the illustration is very effective, but a bit of wire netting will do as well. If we continue this suet feeding into the summer we find that certain birds will come and nest with us because of the suet.

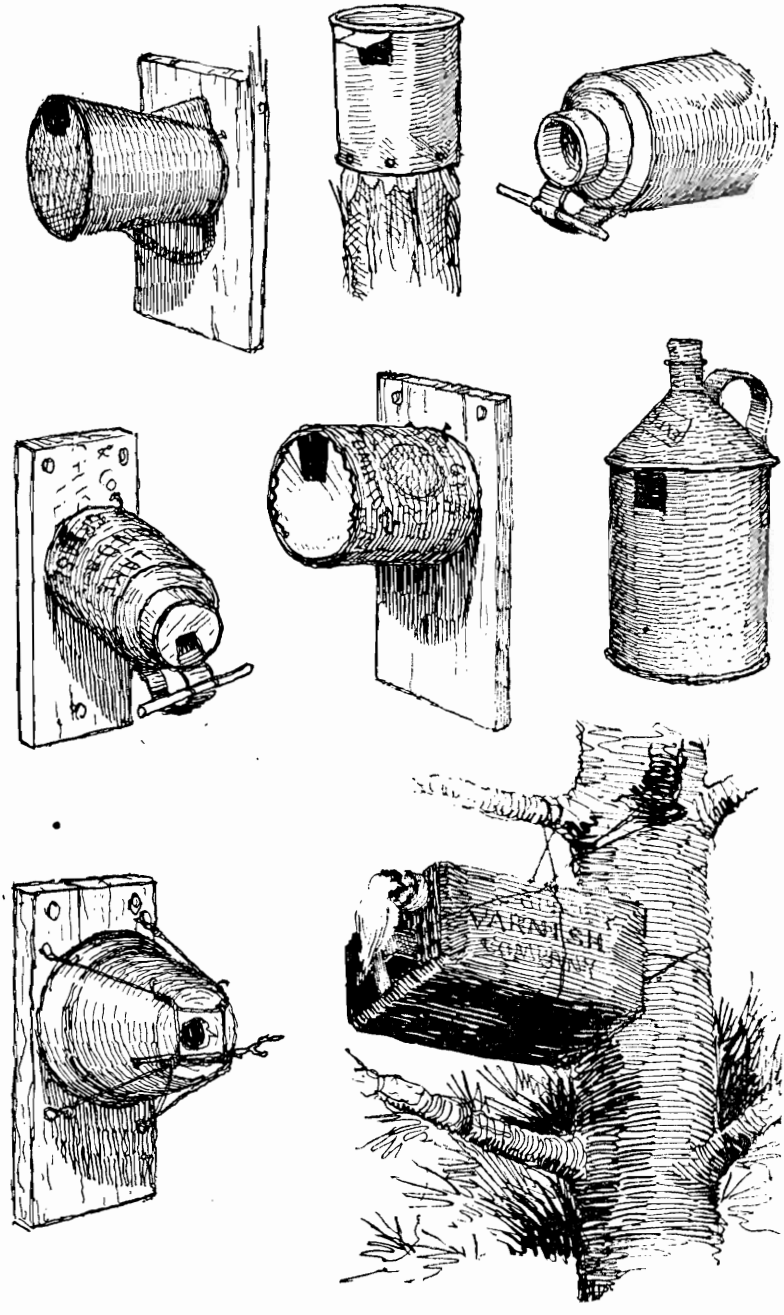
We have now what we call the weather-cock feeding house, which swings with the wind, and this, though not a necessity, is the best kind of feeding house, if you can attract the birds to it, as the food never blows out and the snow cannot blow in. It has a hopper which feeds down the seed, so that it is always accessible to the birds.

In summer we can do something to attract the birds. I have known some people to raise meal-worms with which to feed them. I have often seen thrashers and blackbirds come to feed on the oats and small grain thrown out around the house. The following list of foods will attract many species of birds: Cracked walnuts and beechnuts, doughnut crumbs, bread crumbs, sunflower seeds, and fat.

The humming birds require deep flowers. These little birds feed on the insects of the flower as well as on the nectar, and they are useful not only in carrying the pollen to the flowers, but also in destroying insects on many plants.

There is another plan which attracts the birds, and that is to plant a variety of wild flowers and plants, especially the fruiting species. The greater diversity of vegetation we have the greater number of different species of birds will come.

We can furnish birds water in a dry time where there is no running water. Birds will come for water alone, and if the food is there also they will come for both. If both are placed high out of the reach of the cat you may attract a large number of birds. A pan of water placed on a shelf on top of a post with a shelving stone set in it, so as to give a varying depth of water from half an inch to three inches, will give excellent bathing



Old cans, ets., utilized as nesting boxes. They must be put up in the shade.

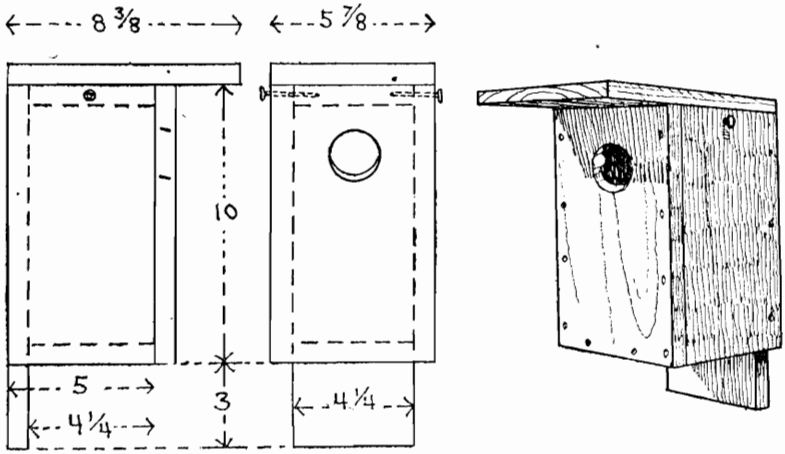
accommodations, but it should be set in the shade and filled with fresh water at least once each day.

We may put out on the trees strings and straws for nesting materials. Oftentimes that decides the bird to come and make its nest. In a dry time a pan of mud will sometimes assist the robins, phœbes and swallows in their nest building.

It is imperative also to provide nesting places for those birds which normally nest in hollow trees. Nowadays we are cleaning up our trees, there are fewer hollow limbs than formerly, and there is nothing that will increase certain species of birds like providing nesting places for them.

In Germany there has been invented a plan of making nesting boxes in imitation of the woodpecker's hole, and they are found in Europe to be very attractive to birds, but in this country they are not essential.

Almost anything will make a birdhouse. We used a lot of old tin cans. All these were taken by birds or squirrels, except an old tin teakettle. They did not seem to care for that, or else it was put in the wrong place. A tomato can will do, with a hole cut the right size, the edges turned down, and a little hole in the bottom so that the rain will run out. It should be put up in the shade lest the sun roast the young birds. A box was picked up back of the barn and a hole one and one-half inches in diameter cut in it for the bluebirds, and they took it the next day.



Details of ware nesting box for swallows and bluebirds.

Then we made an owl box. I went out one day in the grove, a pine grove about sixty years old, and there picked up sixteen elongated balls of fur. I took them into the house, showed them to my prospective son-in-law, and asked him what they were. He said, "Those are mice croquettes á la owl." He had been studying biology in Clark University, and he knew what they were, but you would not find much nourishment in those croquettes. I once had a horned owl which I kept for a while in a cage. He was very modest. He would never eat when anyone was looking, but if you put a

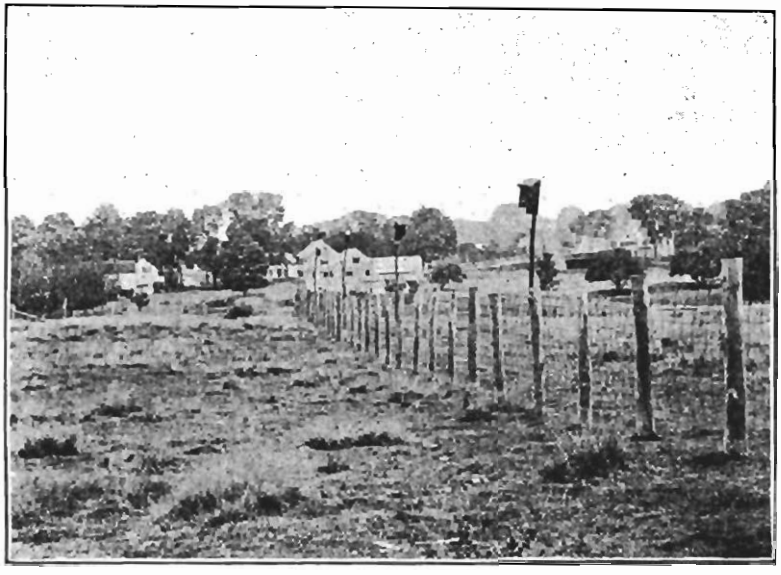
rat, alive or dead, into his cage, and went away for a minute or two and then came back, you would find him standing there just the same, with the rat's tail hanging out of the left side of his mouth and the rat inside. I believe that owl was left-handed. The owls do not Fletcherize at all. They tear the food to pieces if necessary, but they swallow it whole if they can, and then the stomach digests all the soft parts complete and clean, polishes up the bones, and winds the bones and the fur around, with the fur outside, and the whole thing is thrown up out of the mouth. That is what I found on the ground. We found in those little balls of fur the bones of thirty-four of the mice that eat the bark of our fruit trees, and I said, "We must keep owls here." So we put up a box in the grove and the very next night there was a little screech owl in the entrance. One day I climbed up and looked in, and there was the nest all built and the mother bird sitting on her eggs. All that summer those owls stayed there. They killed only one or two small birds, but they destroyed several blue jays and quantities of mice and noxious insects, and the next year we had more small birds than ever before. The climbing mice formerly had destroyed the birds' eggs, so by killing blue jays and mice these owls protected the small birds to a certain extent. So long as we kept those owls we never had a fruit tree troubled by mice.

I went to a neighbor's one day and he said to me, "A pair of chickadees are looking my house all over. What do they want?" I said, "Probably they were reared in a nesting box at my house, and they are looking for a bird house here." I went to the dump and picked up a two-quart tin can, put a wooden plug in its mouth with a hole through it large enough for the birds to enter, and fastened it up in a tree, and these chickadees took it in twenty minutes. Later my neighbor put up other cans and they were all used sooner or later by birds or squirrels. There was in a little box a chickadee's nest at my kitchen window, made entirely of cotton that we put in. The birds merely dug a hole in the cotton, put in one feather, and there was the nest; and soon the mother bird was sitting on the eggs.

Now, what I want to call your attention to is this: by putting up boxes we increased those chickadees so that where the first year we had one nest and one brood of five, the third year we had three nests and two broods in each nest, with from seven to nine in each brood, and the result to our trees was something remarkable. We did not have to spray our trees about the house for ten years while we protected the birds there. People will tell you that the birds will not eat hairy caterpillars. We rarely found many caterpillar nests in our orchard. One summer there there was one left and we thought the birds were not going to take it, but later we found that the birds had taken the caterpillars out and they were nearly all eaten or dead on the ground. The birds kill a good many by tearing out a portion of the inside and eating it. But you must have birds enough, or they will not get them.

A friend nailed on the side of a building an old straw hat with a hole in it. A wren found it, went in and built its nest. Even roofing felt will make nesting boxes. The main thing is to make the entrance hole not over an inch and a half in diameter for smaller birds up to the size of a bluebird, and for larger birds two inches or two and a half inches.

A friend living in the suburbs came to me one day and said, "I have been trying for three years to get bluebirds to come and nest with me, but I cannot do it." I told him how to make a box and instructed him to put it on a post on the fence back of his place, not very far from the trees. He did so and within a week bluebirds settled there. The shape and size of the box is not so important as the way it is put up. You must put up nesting boxes in a way to protect the birds from their enemies. Put them on *poles* in preference to trees and in the *open* rather than in woods. Stick up a little pole six or eight feet long on top of a post of the wire fence in the pasture and put your box on that. The reason that birds prefer a box on a post is that they are not nearly so likely to be attacked by cats, squirrels and other enemies of birds, particularly on a barbed wire fence. A stone wall or a rail fence makes a path for the squirrel, the weasel and the cat, but a wire fence is something they do not care much to travel on. If you can get rid of the enemies then boxes on trees will attract many birds.



Successful nesting boxes on wire fence in pasture.

At my request my friend, William P. Wharton, of Groton, Mass., who had little success with nesting boxes on trees, tried putting them on poles on his wire fences, and the second year most of them were occupied by birds.

I have tried out this year a form of box that has been very successful. It is very cheaply made by Mr. E. C. Ware, of Wareham, Mass., and one of its strongest recommendations is that the cover can be taken off very quickly. There are two nails, one on either side, pushed through the sides of the box into a crosspiece fastened under the cover, and they are set into large holes so that they may be easily pulled out with the fingers and you can lift the

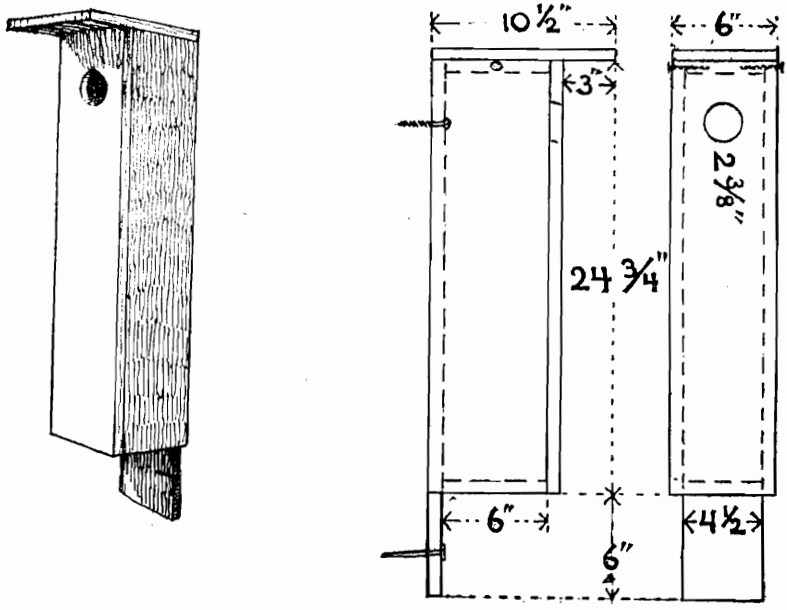
top right off. If the English sparrows get in we take out, twice a month, all the eggs of the sparrows, and generally they do not lay there more than once if you take out the eggs after a full set has been laid. They soon tire of it and leave. We believe this to be better than removing their nests. After the sparrows have left native birds come and occupy the boxes.

A census taken July 4th revealed in the 25 boxes on poles 20 occupied by swallows' nests, 3 bluebirds' and 1 sparrow's. Six young swallows died in the nest, 4 were killed by English sparrows, and the rest got out safely, so far as we know. The number produced was about 90. Three families of bluebirds were reared. One nest was robbed, apparently by boys, and a second brood was reared in another box.

About 126 birds were raised on an area of about eight acres, where prior to 1914 not one bird of any of these species was reared or could have been reared, for there were no nesting places for them. The great majority of them were reared on five acres in the open. Only 10 were raised in the 50 boxes in the woods, and these were in nests near the borders.

Another thing I want to call your attention to here is a row of stakes driven in the field. A stake driven here and there makes a watch tower for the birds. From such a vantage point they can fly down and pick up every insect that moves in the grass. Those stakes saved my place from the army worm two years ago. A half mile away the worms were very destructive, but the birds were all busy picking them out of my fields and the worms did no harm there.

People will tell you "You must get a European box or something resembling a hollow log for the flicker." Writers advise this but it is not necessary. I



Details of ware nesting box for flickers.

have had this year around my house three board boxes occupied by flickers and their broods. I never knew anybody to have so many right where you could see them from the windows. In those boxes we first made entrance holes, about two and a half inches in diameter, and we put in the bottom three or four inches of either ground cork or coarse sawdust and loam mixed. The flicker makes no nest and must have some place to lay its eggs where they will not roll around. If he accepts your box, unless you put something into it for the eggs to rest in he will begin to hack the box to pieces to get chips for a bed for the eggs.

It is a splendid thing to have martins. Martins are really the only birds for which we find it necessary to have large many-roomed nesting boxes. This house shown in the illustration contained over sixty young birds the last time I saw it. I watched these martins for three or four days, and I never saw such a great variety of destructive insects in my life as came to that martin box in the mouths of those birds. Their bouths and beaks were filled and every few seconds a martin lit on that box with insects for its young. They must have cleaned up millions of insects from the surrounding country.

Martins require a box on a high pole, but bluebirds and swallows sometimes will nest in boxes placed high up on the walls or roofs of buildings, where they are safe from cats, squirrels and snakes.

There are few enemies of birds so destructive as the domestic cat. It is not that one cat kills so many birds, although one pet cat was known to kill fifty-eight in one year, and another was known to destroy sixty-eight birds' nests in one summer. But it is because there are so many cats and because they are allowed to spread over the country and run wild. I have investigated this matter pretty thoroughly and I find in New England, from New York City clear through to the Maine woods, there are many thousands of house cats in woods as well as in the cities and towns. Most of the cats living in the woods have run wild.

Squirrels are almost as destructive as cats if they become too numerous. The red squirrel destroys the young and eggs of birds and the grey squirrel is destructive also. I believe that the grey squirrel is even worse than the red in regard to bird houses. They are continually molesting the birds in nesting boxes. We must not allow squirrels to increase too fast. The grey squirrel has two broods every year, the red squirred only one, and that is why, unless the grey squirrel is kept down, it will increase too fast.

The value of putting up bird houses and nesting boxes can hardly be overestimated. The birds that use them are all insect eaters. They rarely, if ever, trouble fruit or crops and by providing nesting boxes their numbers may be enormously increased.

Tree swallows and flickers come to their nests with their throats stuffed with insects. Bluebirds, wrens and chickadees carry insects to the young in their bills so that one can easily see them. The utility of these birds is so plainly to be seen that all farmers should provide accommodations for them.

The Department of Agriculture tells us that we have on the average in the northeastern States about two birds to the acre. We can easily have many more on our farms. A friend of mine has put out more than a hundred bird houses on his cranberry bog, and I inquired the other day what effect it had. He has had them there now for several years and they are nearly all occupied by birds, and he says that since the birds came he has never had any trouble with any insect of any kind on that cranberry bog. I am trying the same thing on my cranberry bog and eventually shall be able to report the result of the experiment.

The effect produced by protecting birds is the same here or abroad. The Baron Von Berlepsch, of Thruringia, has been so successful in attracting birds that thousands of them are colonized on his estate. One year there came a tremendous eruption of caterpillars and in all the region round about every tree was bare. But the Baron's great estate looked the same as ever. It stood out like a great oasis in the barren countryside. His trees were saved because there were so many birds that the caterpillar could make no impression whatever on that place. Since that happened the German Government has taken up his methods and is protecting birds in the government forests.

We must teach our children to take an interest in protecting the birds. If we could get the children to take an interest in the living birds, to feed them and put up bird houses, the whole problem of bird protection would be solved. Many of us are coming fast to the sunset of life and if we are to help in this matter we must begin now, for soon the night is coming when man's work is done. (Applause.)

Secretary Dye—Mr. Sunday said in a recent sermon that every young bird is worth its weight in gold. I understood him to say that if the birds were exterminated in four years the human race would go. What is the proportion, do you know about that?

Prof. Forbush—It is not quite so simple as that. It is a very difficult matter for a man to make accurate figures on a question of that kind. But we know that where the birds have been swept off great destruction has occurred to the crops, because of the consequent increase of insect pests. For instance, in 1895, I received a letter from J. O. Clercy, Secretary of the Society of Natural Sciences at Ekaterinburg, Russian Siberia, in which he said that the birds of that region had been killed off for their plumage and that a great increase of insect pests had resulted which had produced a famine in the country. The birds being gone, the insects had increased and eaten up all the crops. The people could not find food and they had to have help from people in other parts of the world. Since then the State has passed a law protecting the birds, but they come back very slowly. Only two years ago in France the same thing happened

to a less extent. The country people were killing the birds, and there came a great wail from the farmers, the crops being injured or destroyed, and the government appointed a commission to look into it. The commission found that the main cause of the trouble was the tremendously large number of birds killed, and they urged the teachers and the clergy to see that the children and the older people were taught that the native birds should be protected and that the laws to that effect should be enforced.

It is said that if all the birds were to be killed that everything grown would be eaten up, and we should have to live on fish. But no one can tell exactly what the result would be. We know what has happened in many cases, however.

Vice-President Cox—Are there any other questions?

Mr. Lippincott—Does not the Professor think that the chickadees do a great deal of good in the orchard in the extermination of insects?

Prof. Forbush—Yes. The chickadee is very valuable, not only in the orchard but in the woods.

Mr. Lippincott—He is considered to be one of the most valuable?

Prof. Forbush—Yes. Of course, we can spray our trees in the orchard, but we cannot spray all the trees in all the woods. We are absolutely dependent upon the birds and other natural enemies of insects which work to keep down the insects in our woods.

Vice-President Cox—Is there anything further? If not, you will bear in mind that the session to-morrow morning will begin at half-past nine, and we would like to have all the delegates present promptly. We will have the second roll call of the list of delegates to-morrow morning, one of the first things of the session, so that we can get you properly listed up for the Committee on Credentials.

Mr. Curtis—Mr. Chairman, I move you, sir, that we tender a vote of thanks to Prof. Forbush for his interesting lecture delivered this evening.

This motion was duly seconded, and carried by a standing vote. Vice-President Cox then tendered the thanks of the Board to the Professor, and the Board adjourned, to meet to-morrow morning at 9:30 A. M.

SECOND DAY—MORNING SESSION.

Vice-President Cox—I am sure we have found much instruction and pleasure in Prof. Agee's address. It will be printed in the minutes with the Proceedings. The Board will please be in order. The meeting will be opened this morning by prayer by the Rev. Melville E. Snyder, Ph.D., Superintendent of the Trenton District, New Jersey Annual Conference of the Methodist Episcopal Church.

Rev. Mr. Snyder then offered prayer.

Vice-President Cox—Is there any unfinished business to come before the Board this morning? If there is no unfinished business, is there any new business? Under the head of resolutions? This is the time allotted for the introduction of resolutions.

Several resolutions were presented and referred to the Committee on Resolutions.

Mr. Woodruff (Union county)—Mr. Chairman, I should like to make a short statement, if it is in order, on behalf of the starling bird.

Vice-President Cox—Mr. Woodruff has the floor.

Mr. Woodruff—I have no resolution to offer on this, but I would like to make the statement. Last night, listening to the bird man, my memory went back to my childhood, and I recollect the little houses my father put up on sticks and some on trees, and he taught us kindness in taking care of birds. But in Union county we are troubled very much with the starling bird. The bird attacks the peaches of the finer quality on our place, and apples, and generally selects good fruit, fruit that has no worms in it, and the bird digs a hole anywhere from as large as a ten-cent piece to as large as a quarter, and as the season advances he is very active in destroying the best apples. I mention this to find out if such has been the experience with the members from other parts of our State.

I know nothing about any legislation that has been passed in regard to the starling, and before offering a resolution to the meeting I ask for information in regard to this.

Vice-President Cox—This seems to be hardly the time for any discussion. The Chair suggests that a resolution be prepared and presented, at which time it may elicit some discussion. Are there any other resolutions to be introduced this morning?

Several more resolutions were presented, and referred to the Committee on Resolutions.

Secretary Dye read the report of the Tuberculosis Commission, which is as follows:

Report of the Commission on Tuberculosis in Animals. January 1st, 1915—January 1st, 1916.

The two lines of work entrusted to the commission have been faithfully carried on during the year past. The additional work of handling the foot and mouth disease placed in charge of the commission terminated May 8th, 1915, when, we trust, the last case was disposed of. Report covering that outbreak, with condensed details follows:

The continued invasion of our dairy animals by tuberculosis calls for serious consideration by all dairymen. Reports from other States show that the disease is general. Can't there be some system of breeding and care inaugurated that would reduce this scourge to a minimum, and possibly entirely eradicate it? Breeding from absolutely healthy animals followed up by constant watchfulness, using the only known means of detecting its presence from time to time, and, withal, buildings constructed and arranged according to the most approved plans for the conservation of the health of the animals and their product. There are some such dairy establishments now in operation; and it would be a great help if, while we are seeking improvement in the direction indicated, the records of some of such dairies could be furnished the State for a series of years. They would prove or disprove the value of such experiments. We should not be satisfied with present conditions, notwithstanding the progress already made by our State through the work of this commission in reducing the disease throughout the State. We are gaining ground. When the commission began its work general ignorance as to the disease, its character, and its influence in the cow and her product prevailed, and the disease was widespread—it is not so now. Most owners of dairy animals have a fairly good idea of the disease and of its injurious effects, they are guarding against it, coöperating with the State in its eradication. The following tables give details of importations, tests, etc., submitted to the commission by Mr. Chas. McNabb, Chief Inspector, on January 1st, 1916:

DATE, JANUARY 1ST, 1915–JANUARY 1ST, 1916.

REPORT OF CHAS. M'NABB, CHIEF INSPECTOR TO COMMISSION ON TUBERCULOSIS IN ANIMALS.

District.	*No. of Imported Cattle Tested* BEFORE *Entering State.*	*No. of Cattle Imported and Tested* AFTER *Entering State.*
1st—Dr. William H. Lowe, Inspector, ...	4,275	2,154
2d—Dr. W. Gray, Inspector, ...	472	1,031
3d—H. B. Richman, Inspector, ...	10	1,543
5th—Dr. H. H. Bair, Inspector, ...	1,705	1,201
Total, ...	6,462	5,929

District.	*No. of Imported Reacting Cattle Slaughtered.*	*Appraisements of Native Cattle Slaughtered.*
1st—Dr. William H. Lowe, Inspector, ...	64	58 Head, $2,752 00
2d—Dr. W. Gray, Inspector, ...	68	278 " 11,715 00
3d—H. B. Richman, Inspector, ...	33	53 " 2,275 00
5th—Dr. H. H. Bair, Inspector, ...	75	267 " 12,421 00
Total, ...	240	656 Head, $29,163 00

District.	*Amount Received from Meat and Hides Sold Slaughtered Under Inspection.*	*Amount Received from Shippers of Imported Cattle for Testing*
1st—Dr. William H. Lowe, Inspector, ..	$565 00	$1,730 00
2d—Dr. W. Gray, Inspector, ...	1,168 57	631 00
3d—H. B. Richman, Inspector, ...	787 54	950 00
5th—Dr. H. H. Bair, Inspector, ...	2,926 68	790 00
Total, ...	$5,447 79	$4,101 00

Remarks.—Domestic Cattle.

Number of herds tuberculin tested, ...	144
Number of animals in above herds, ...	3,363
Number of animals condemned in above herds, ...	436
Number of herds physically examined, ...	186
Number of animals in above herds, ...	4,178
Number of animals condemned on physical examination, ...	228

On account of New Jersey being quarantined for foot and mouth disease, the importation of cattle is about 5,000 less than in former years.

FOOT AND MOUTH DISEASE, 1914–1915.

On November 8th, 1914, New Jersey received its first outbreak of foot and mouth disease at North Bergen, Hudson county, in a herd of 25 cattle owned by Theodore Weber.

The development of this disease in our State found us unprepared to handle it. Ordinarily, the State Board of Health handles outbreaks of this character, but they were without adequate funds to cope with it, for it is expensive business. Realizing the necessity of prompt and efficient action, President Joseph S. Frelinghuysen, of the Commission on Tuberculosis in Animals, directed the Chief Inspector of the commission to proceed in investigating and stamping out the disease, and offered $50,000 from his private fund until it could be decided from what source the money would be available. Meanwhile, the Commission on Tuberculosis in Animals, the State Board of Health, the Attorney-General and the Governor were in conference as to securing the

money necessary to handle the outbreak, and the proper authority to do so. It was finally decided that the Commission on Tuberculosis in Animals was the one to do it, and the only one having available funds. Accordingly, we began the task committed to us by opening an office in the Federal Building, Jersey City, and placing Dr. Wm. H. Lowe in charge to carry out our directions, who worked in unison with the Government officials, who coöperated with the Commission on Tuberculosis in Animals in all matters pertaining to the spread of the epidemic by placing a large force of veterinarians in the field for the purpose of quickly inspecting all herds in the State to which animals had been added from infected States during the thirty days previous. This work continued up to May 8th, 1915, when the last case was disposed of.

The extent of the work in this State is as follows:

Counties invaded,	8
Herds affected,	50
Number of owners,	49
Number of premises,	49
Number of cattle slaughtered,	1,301
Number of swine slaughtered,	815
Number of sheep slaughtered,	9
Number of goats slaughtered,	8

Amount of money expended:

Appraisement of cattle and swine,	$61,681 83
Veterinarians' expense,	3,362 31
Traveling expenses of inspectors,	1,019 58
Stenographic services,	878 47
Labor,	602 72
Supplies,	626 24
Appraisers,	50 00
Rental of typewriter,	33 00
Telegraph,	8 02
Telephone,	193 97
Printing,	48 00
Property destroyed,	185 14
Total amount expended,	$88,689 28

Vice-President Cox—Do you want to discuss this report of the Tuberculosis Commission?

Mr. DeCamp—I move that it be received and placed in the hands of the Excutive Committee for printing and action.

Vice-President Cox—If there is no objection the report will be received and placed in the hands of the Executive Committee, and presented to the printer.

During the press of business yesterday, the change of the program and all the other things, there was one important part of

the day's business that was dropped out of sight, and that part I want to restate now, and at this time I take great pleasure in introducing to you the worthy Master of the New Jersey State Grange, who will now address you. Senator Gaunt. (Applause.)

Senator Gaunt's Address.

Mr. President, for a number years it has been my privilege to report to this body the condition of the New Jersey State Grange, and, as I have said often before, it is a pleasure to report that that organization is very much alive and is doing active service for the farmers of New Jersey.

I was intensely interested last evening in the report of Prof. Agee in reference to Farm Demonstration. You who were here will remember that Prof. Agee laid great stress on the fact that in every county of the State where the Grange was organized and in good working order they have very little trouble in starting the work of Farm Demonstration. I think he made the statement that prominent members of Pomona Granges and County Boards of Agriculture were on the advisory committee in each of those counties.

That is conclusive evidence that the organization is looked upon by the farmers of their respective communities and the Experiment Station officials, the College officials and the State Board of Agriculture, as a valuable asset in this network of organizations in the State of New Jersey.

Our course has been a conservative one. We have not started out to revolutionize or reform every thing there was in sight. But we have endeavored to be intensely practical in every line of endeavor that we have advocated or have taken action upon. And it seems to me that the future course for this organization should be governed largely by the past. That is my idea of it, and it seems to me that if we do that we will not be getting away from the line that will be of the most benefit to the agricultural interests of the State.

We have been admonished or informed on several occasions that, this being a secret organization, we should not have a very prominent part in the affairs of the State. You will remember that criticism was directed to the agricultural bills last year, because of the fact that the Grange was a secret organization, and it was intimated on the floor of both houses that they should not be a part of this reorganization scheme of the State Board of Agriculture. It seems to me that those arguments were not well founded. We believe that an organization of approximately twenty thousand members, who stand practically hand in hand with these other organizations, and as those who are familiar with the past history for the past twenty-five years or more, realize the fact that it has been these organized farmers that have been gotten together. The Grange was the nucleus around which they were assembled. And it has been these people in the various counties of the State that have made it possible for us to have such a splendid organization of the different farm organizations that we have at the present time in the State.

As an illustration of what the State Grange is able to accomplish, or what it is doing, we seem to be getting considerable publicity. That is, not the individuals. It is the organization.

Judging from the amount of legislation that the representatives from every county of this State have been able to place on the books in the past few years, which have been constructive to advance the cause of agriculture, it would seem to be the very best of evidence why the organization should be perpetuated and be made stronger.

And it is always a pleasure to coöperate with the Agricultural College, the Experiment Station, the Horticultural Society, the State Board of Agriculture, the Farm Bureaus and the Department of Farm Demonstration. In fact, most of these organizations have been made possible because of the fact that this great national organization, known as the Order of Patrons of Husbandry, came into existence fifty years ago the fourth of this coming December. It was on the floor of those national meetings in the past half century that the resolutions were first introduced and adopted urging the bringing about of most of these propositions. And I am of the opinion that it has been the one great constructive force that has been able to promote agriculture in not only in New Jersey, but in every other State in this Union where the organization exists, and that is in some thirty-three or thirty-four States.

Now, my friends, the record of the past we should all of us be proud of, and it is our duty as farmers to coöperate and to encourage the advancement and the improvement of the agricultural interests through organization, and my notion is that if we all of us do our duty we will find less to complain about, less to find fault with, if we will all of us remember that we all owe a duty to the agricultural interests, and, in order to gain what we would like to have, it must come through organized effort.

I might take up your time in telling you that the Grange is going to be very much alive and very much before the people of the State the coming year. As was demonstrated yesterday the Grange, perhaps, is involved in Senate Bill No. 20, where eight or ten thousand people came to Trenton from every county in the State. It is going to be very much before the people of the State in Senate Bill No. 21. It will be very much before the State in Senate Bills Nos. 87, 88 and 89.

It will be very much before the State in Assemblyman Robert's bill to revise the Seed Laws of this State that were placed on the books through the influence of the State Grange, but it has been demonstrated that they need amending and their powers broadened.

The bill Assemblyman Roberts has introduced was prepared by the State Seed Analyst, in coöperation with Dr. Lipman. It is a practical proposition and was on the calendar for third reading last Monday evening, but he received a telegram from some seed houses that they would like a hearing.

There will also be hearings next Monday morning on Bills Nos. 87, 88 and 89. An open hearing in the Senate Chamber. We would be glad to see all present who are interested in this very great and important question of public roads.

I have been for the past year, as Chairman of the Joint Committee, investigating and trying to work out a practical solution of the road problems of the State. For the past two months we have been holding sessions of that committee, perhaps two or three times a week, and have given our very best

thought to working out a bill that will be intensely practical and intensely businesslike. That it will meet with opposition goes without saying. Perhaps it will be opposed by some individuals who are afraid that some things will be taken from them that ought to be taken from them. I am informed that some of the engineers are opposing the proposition. I am informed that some committees of boards of freeholders will oppose it. That we expect. A proposition that interferes with some things that ought to be interefered with always arouses a protest. Therefore we have given it our best thoughts and we have been absolutely fearless and conscientious in the preparation of the bill and we propose to stand by it. It may need amendment, there may be some little errors. The bill never was introduced in a legislative body that was perfect. It will never be made perfect but by use and by working out a few years. We oftentimes see when a bill has been working a few years where error has been made.

I think the gentleman from Union or Morris county introduced a resolution in reference to Employers' Liability. I think that he will find that there are some six or seven bills. There is a hearing either Monday afternoon or Tuesday. If you will look at the bulletin as you go out in the hall you will find it.

I might say for the benefit of the farmers here present, with reference to those bills, you all know what the law is now in reference to the Workingman's Compensation. If one of your workmen should be injured you are to pay fifty per cent of the wage he was receiving, provided that ten dollars a week is the maximum and five the minimum.

This bill will provide that if you have one of your workmen injured that you will have to pay sixty-six and two-thirds per cent. of the wage that he was receiving, and that it will not be for four hundred weeks, or eight hundred weeks, or any number of weeks. It will be, as I remember the provisions, practically for life. And you will find also a provision in that act, as I remember, reading the report of the commission, that you will also be compelled to take out insurance, which will be compulsory insurance under those bills.

Now, if you are in favor of those bills, don't come to the hearings and don't say a word about it, but if you are opposed to those bills it seems to me that it is up to the farmers of this State to make their position known.

I think there is nothing further, Mr. President, that I can report or that I ought to report on at this time, because I realize that there are others to take the place now. I see Dr. Lipman has arrived and Prof. Cook, and I am sure that you will be more intensely interested in what they say than you will be in what I say.

In closing, I want to again pledge my hearty coöperation as to matters in the State Grange, and with us, the membership of the New Jersey State Grange, the State Board of Agriculture, the Horticultural Society, the Department at New Brunswick, both the Agricultural College and the Experiment Station, and all the other departments that are working for the best interests of the agricultural folk in the State of New Jersey, are all one. I thank you. (Applause.)

Vice-President Cox—The report will be received and become a part of the record.

I notice that the train has arrived and Dr. Lipman is here, and he will present the Fertilizer Problem of New Jersey. I now present to you Dr. J. G. Lipman, who will address you. Dr. Lipman. (Applause.)

Dr. Lipman's Address.

Mr. President—In common with other States in the East, in the South and Southwest, we are facing a rather puzzling agricultural problem, brought about by abnormal conditions abroad.

We, in New Jersey, have come to depend on commercial fertilizers for maintaining the fertility of our soils and for producing crops in keeping with market and labor conditions.

In 1880 the Agricultural Experiment Station took over the analysis of samples of commercial fertilizers sold in the State of New Jersey. Until then the State Board of Agriculture was responsible for this work. Even after the Experiment Station was established there was, and there has been, a very close union between the Experiment Station and this Board. And the chemist of the Experiment Station was also the State Chemist, that is, the chemist of the State Board of Agriculture.

In 1880 the fertilizer trade of our State represented a few thousand tons of fertilizer, approximately five or six thousand tons. In 1915 the consumption of fertilizer in the State had increased to about 165,000 tons, and the value of commercial fertilizer sold in New Jersey had increased to nearly five million dollars.

Evidently, then, commercial fertilizers have come to represent a very important item in the agricultural enterprises of the State. Evidently any condition which would disturb materially the value and the supply of commercial plant food, would disturb the agricultural activities of New Jersey. And, indeed, these new conditions which have arisen, have disturbed the agricultural activities in the State, and the farmers of New Jersey are now confronted, as I said a moment ago, by a very puzzling problem.

It happens that there has been a direct influence on the fertilizer situation in our State because of the war in Europe. You know that we have depended in the past on Europe for supplying to us one of the three constituents of complete fertilizers. I am referring to potash. The United States, before the outbreak of hostilities in Europe, were importing about twelve to fifteen million dollars' worth of potash from Europe. To be sure, not all of it was imported for agricultural consumption, but most of it was, and New Jersey was spending at the rate of nearly a half million dollars per annum on potash imported from Europe.

Because of the development of intensive methods of farming in certain sections of the State the high yields have come to depend, to a great extent, on the presence of potash in mixed fertilizers. Since the outbreak of the war the supply has been cut down, practically eliminated. The fact is, that

at present potash is beyond the reach of the farmer. Some of it is still available. We may buy some muriate of potash if we choose to pay five or six hundred dollars per ton.

The fertilizer companies are offering, as you know, mixed fertilizers containing, in this State, one per cent. of potash. I have a letter in my pocket from one of the leading fertilizer companies in which I am advised that the brands that will be most in demand in the State this spring will be the 4–10–0. That means a fertilizer containing four per cent. of nitrogen, ten per cent. of phosphoric acid, and no potash; 5–10–0, 5–8–0, and also 3–9–1 and 4–9–1. These would represent the better grades of mixed fertilizers. The lower grades would be represented by materials having a formula of 1–8–1; 1½–10–1. But in no case are they offering any fertilizer containing more than one per cent. of potash. I am referring to one particular company. There are other companies which may offer a somewhat larger proportion of potash. They are offering this potash to purchasers at twenty-five cents a pound. That means that this potash, if sold as straight muriate of potash, would bring $250 per ton, and I know that one of the large fertilizer companies recently was offered $500 a ton for five hundred tons of muriate of potash which they have and they refused to sell it. Nevertheless they are selling it or offering it for sale in mixed goods at $250 a ton.

Now, they are not doing that for the sake of the farmer directly. They are doing it for maintaining their own reputation, because they have advertised that they would sell fertilizer of a certain composition, and in their own interest they propose to carry out the promise.

But, at that, the potash available, in the proportion offered, would cost twenty-five cents a pound. So that the war has directly influenced not only the supply of potash, but it has influenced also the cost of potash.

But, indirectly, it has influenced the cost of phosphoric acid, and it has also influenced the cost of nitrogen, and everything has gone up, so that the farmers of this State and adjoining States are confronted by the question of the much greater cost of plant food, as well as by the question of how to meet an abnormal situation.

Before I go on to suggest methods which the farmer of this State might follow in meeting this abnormal situation, I want to point out that, in so far as the nitrogen is concerned, nitrate of soda is much higher in price. It is fifty per cent. higher in price than it was before the outbreak of the war, because of the demand for nitrate in the matter of explosives. I know that the du Ponts, representing only a single company, are taking nitrate of soda now at the rate of 50,000 tons per month, or, at the rate of 600,000 tons per annum. But they are only one of the companies manufacturing explosives. There are others which are also using large quantities of nitrate, but you will observe that the amount taken by this single company represents as much as was consumed in the entire United States before the outbreak of the war.

In the case of phosphoric acid, we depend on sulphuric acid for dissolving and making available the phosphate rock of Tennessee and Florida, and other Southern States. You know, also, that sulphuric acid is used largely in the making of explosives, and, therefore, the abnormal demand which has been created for sulphuric acid has led to the accumulation of large stocks of

phosphate rock in Southern States, and there is no sulphuric acid available in sufficient quantity and at a low price for converting ground rock into acid phosphate. As a result, acid phosphate has gone up in price, and will be much more costly in the spring than it has been in the past years. For the moment I do not recall what the quotations on acid phosphate may be. I take it about $15 or $16, perhaps more. It may be considerably more before the first of April.

Plant food, then, costs more, and may cost still more. Hence it is time for the farmers of the State to decide what they are going to do, what they are going to buy, how much they are going to buy and how much they can afford to pay for it in connection with growing different crops.

I want to call your attention to the fact that we can depend on the soil itself for a large proportion of the plant food which our crops are to use. We can often draw on the soil for a relatively larger supply of plant food than in former years. In the first place, we have accumulated, in some instances, a surplus of phosphoric acid. In the second place, we have in most of our soils a large amount of potash which, if it can be made available, would surely permit us to meet the present difficulty without making the cost of farming prohibitive.

I want to take up, then, in the first place, the consideration of the farm resources—the soil resources as they are—and to suggest how we may utilize these soil resources to a much larger extent so as to reduce the need for the purchase of plant food.

In the first place, then, we should depend at present on those of our fields which are in a higher state of fertility. If you have on your farm fields that are in better condition, I would suggest that, for the money crops, you give preference to those particular fields, and use the rest of your land for crops which are not as important from the standpoint of income. Give preference, so far as you can, to the soils which you know are in better condition of fertility. There is, to judge by our experience, a considerable latitude which farmers may exercise.

In the second place, farmers should use such methods as would increase the amount of plant food that would become available out of the soil itself. And that, I believe, we have not appreciated as thoroughly in the past ten years as we might have. I do not mean to preach, of course, soil robbery. What I mean to say is, that certain of our soils contain very large amounts of plant food, and that we can utilize this plant food, if it be made available, profitably and legitimately, without running the risk of permanently lowering the productive capacity of the land.

If you look over the analyses of most of the soils of New Jersey you will find that in middle and northern New Jersey most of the land, even the poorest of the land, contains one and a quarter per cent. potash. The red-shale soils of central New Jersey contain one and three-quarters to two and a quarter per cent. of potash. You will find that the soils of the Highlands, some of the soils of the Kittatinny Valley, contain as much as three per cent. of potash. We found one subsoil in Sussex county that contained five per cent. of potash. And, when we use potash fertilizer on those soils, it is not because the soil itself has no potash, nor because there is danger of exhaust-

ing the soil potash, but because the supply in the soil does not become available fast enough to give us a large crop of the type which responds to potash feritilizer. Corn we know is one of the crops which responds to potash fertilizer. Potatoes and tomatoes are other crops. We use the potash in commercial fertilizer, in nearly all cases, not because of the danger of depleting the soil of potash, but because the soil potash does not become available fast enough.

And even in the medium soils of Mercer, of Burlington or of Monmouth county, the supply of potash is usually up to one and a half per cent.

The sandy loams seldom contain less than one and a quarter per cent., and the light soils of Atlantic, Cape May, Cumberland, Gloucester and Camden counties very seldom contain less than one per cent. of potash.

Now, if you take the acre weight of land to a depth of ten inches, at three million pounds one per cent. will mean fifteen tons of potash per acre in the poor, sandy soil. You will therefore find a large supply in all but the very poorest and lightest of the sands of the seaboard. There is a great deal of reserve in most soils. And there is very slight danger, indeed, of exhausting the soil potash.

It is quite different in the case of nitrogen. As you well know, it is also quite different in the case of phosphoric acid. There it would not take very many years of cropping without restoring any nitrogen or phosphoric acid, to deplete the soil of its available phosphoric acid and nitrogen and to lower its ability in a very material way to produce profitable crops.

So, from the standpoint of potash we are quite safe. We are on sound ground, and we are justified in giving up the purchase of potash, provided we can make the soil potash available. And this is the first point which I want to take up for consideration, and to suggest practical ways of increasing the availability of the soil potash.

The first of the methods, of course, is tillage. Plant food in the soil becomes available as the soil is stirred and exposed to the air. And the more thorough the tillage the greater the amount of plant food that becomes available. You may recall, some of you, the writings of Jethro Tull, an old book that was published some time in the eighteenth century—I don't recall the exact date. Tull was the father of so-called horse-hoeing husbandry. He believed that soil fertility depended on thorough tillage to make the particles of soil so fine that they could be used by the plants. He believed that plant food represented very finely divided soil particles, and it was the purpose of tillage to break up the soil particles to so fine a state that it could be directly taken up by the plants. To-day, of course, we realize that plant food, in order to be available, must be in a solution, must be dissolved in water. His opinion was that it was merely a case of very fine division. To demonstrate that his theory was correct he grew wheat year after year on the same land, and by practicing the theory of tillage he showed that the thirteenth crop of wheat which he grew on his farm in England was just as good as the first crop. But, had he started to demonstrate his theory on a very light, sandy soil, he would have realized in the second or third year that his theory was not correct. He worked with a soil that had a great reserve of plant food.

Now, in so far as potash is concerned, most of our soils have a great reserve of this constituent, and tillage is one of the most effective means for making available that potash. Hence in a year of scarcity like this we should not underestimate the value of thorough tillage, the exposing the soil material to the air, so that the aereating processes may go on and potash, as well as phosphoric acid and nitrogen and lime, may become available. Thorough tillage is one of the most effective means for meeting the present situation.

The second practical means which we may employ to increase the supply of available potash in the soil would be the use of such materials which in themselves do not furnish potash, but which react with the potash compounds in the soil to make them soluble. What are these? Lime has been suggested as an indirect manure for potash. You will find that chemists in the East and in the Middle West differ on this point. They will admit that the use of lime does increase the amount of available potash in the soil, but many of them will tell you—Dr. Brooks, for instance, of the Massachusetts Experiment Station, or Dr. Woods, of the Maine Station—that in their experiments lime, if it increases the amount of available potash in the soil, does so not because it acts directly on the potash compounds, but because it stimulates the decomposition of soil humus and in the fermentation of the soil humus; the gases and vegetable acids produced act on the potash compounds and increase the supply of available potash rather than the direct action of the lime.

Land plaster has been suggested, and land plaster in a measure is effective for increasing the supply of available soil potash, but in a limited way.

Salts of soda have been suggested as a means, as the most effective means, of increasing the supply of available potash. Nitrate of soda, as you know, is bought for the sake of the nitrogen which it contains; but the soda in the nitrate of soda does react with insoluble potash compounds in the soil and increases the supply of available potash. But no one who knows what the cost of nitrate of soda is would buy it for the sake of its action on the potash compounds in the soil. Nitrate of soda is bought primarily for the sake of its nitrogen, and if you have to buy nitrogen you might give preference to nitrate of soda, because of all the compounds of nitrogen which you could purchase to-day it is the most effective for increasing the supply of available potash; but, primarily, it should be bought only when nitrogen is needed, not because potash may be needed. The abilitiy of nitrate of soda to release soil potash is incidental. I could not advise anyone to use nitrate of soda primarily because of its ability to increase the supply of available potash.

On the other hand, common salt, which is another compound of soda, chloride of soda as it is called, is a material which is available in large quantities. We have to consider, of course, that thousands of tons will have to be available to meet the present emergency, and we could not recommend any material unless it were available in large amounts and at a low price. Common salt may be had delivered, at most points in New Jersey, for five or six dollars a ton, in some instances for a little less, and in some instances for a little more. If a hundred pounds of common salt will react thoroughly with insoluble soil potash, it would make available more than a hundred

pounds of this constituent. A hundred pounds of common salt, if it were enabled to react and make vailable an equivalent amount of potash, would make available eighty pounds of potash. That is, if the change could go on to completion. It does not go on to that extent. But, if all of the salt could react with soil potash, a hundred pounds of it would make available eighty pounds of potash.

For practical purposes, nevertheless, we can use from one hundred up to three hundred pounds, depending on the grade of salt, to increase very materially the supply of soil potash. And, at the present time, all of us who have been studying the problem agree that there is no means that we might suggest as effective as that of applying common salt to increase the supply of potash available to the crop. This practice will, I believe, meet the emergency, and provide for an adequate supply of potash in all but the very lightest of our soils. If time permit, before the end of this meeting, I should be glad to discuss sources and perhaps freight rates and other matters pertaining to the use of salt.

In the second place, we should remember that we have not been as careful in the past in conserving the home fertility as we should be. The most valuable portion of potash in animal manures, as you know, is in the liquid manure. It is in a water soluble condition. We have not conserved farm manures as carefully as we should. The average cow will produce about ten tons of manure per annum if bedding is used freely and generously. The production is practically equivalent to one ton per month. The average horse or mule is estimated to produce about five tons of manure per annum, and if bedding is generously used it means about half a ton of manure per month per animal. How much of that fertility, the nitrogen and the potash, have we been using in the past? How much have we conserved? There has been a great deal of carelessness and a great deal of loss because of the fact that the plant food in commercial fertilizer has been rather abundant and cheap, and we have preferred to depend upon that.

Since the farmers of this country have been confronted by the potash problem, chemists have been studying sources of potash, and among other matters they have turned their attention to the greensand marls of New Jersey. You know that the best grades of greensand marl contain five or six per cent. of potash and up to five per cent. of phosphoric acid. There has been some talk about opening up the old pits. Now, we have not been able to find any pits that have really been opened, and have not been able to find any extensive use of greensand marl in the State. One of our soil specialists made, a few days ago, a trip through Monmouth county, and collected, I think, in all about a dozen samples of marl. The farmers were quite willing to give him the information and to point out the old marl pits to him.

But there might be confusion about the value and the place of greensand marl under existing conditions in farm economy. You will find, if you look up the old records, as analysis showed, that the marls which gave good results were high in phosphoric acid. And I doubt myself whether we could to-day use greensand marl effectively as a source of potash. We might, where the haul is short, still use, under the present higher cost of phosphoric

acid, the better grades of marl as we find them in the vicinity of Deal, Squankum, Mullica Hill, or Pemberton. These high phosphoric acid marls we might use as a source of phosphoric acid. I doubt whether, as a source of potash, in their raw state, they will give results that will be at all gratifying.

I had a letter recently from a physician who owns land near Mullica Hill. He wrote me that he has an offer from a company in the South for several hundred tons of marl per week. This company has presumably a process for treating it which makes the potash available.

I have been asked to answer the following question: "Could we not do something to make the potash in greensand marl available? Suppose I took freshly burned lime and mixed it with marl and let the lime slake in contact with the greensand marl, how much of the potash would become available?" I could not tell him. Because, so far as I know, this experiment has never been made. Now, ordinarily, the potash in greensand marl does not become available readily. It is possible this method might be a practical method on the farm if we had freshly burned lime to mix with it in certain proportions. It is possible that this might be profitable.

But, to come back to the question of conserving the home resources, apart from marl and apart from manure, we have a lot of waste material which we are not utilizing and which we should utilize in view of the fact that straw and cornstalks carry a relatively large proportion of potash. We are not utilizing the muck and peat which in many places is valuable for composting with manure. And I believe that, where labor conditions will at all permit, we can still find the old method of preparing composts and using them a profitable method, and I am willing to predict that as the agriculture of New Jersey develops, and as our methods of soil treatment progress, we are going back more and more to the compost heap that was so important a part of the farm enterprises of fifty years ago, which is still so important a part of the agriculture of Europe and parts of the Orient.

Then, one word about the fertilizer mixtures which are at present available and which we might buy. In the first place, as I stated, it would hardly be advisable for anyone to buy one per cent. potash goods. If you are hesitating between 4–8–1 and 4–8–0, I would advise you to buy 4–8–0. I would not advise anyone to pay twenty-five cents a pound for potash in one per cent. goods, because I do not believe that he would obtain an adequate return for his investment. I do not believe it would do much good, and I do not believe that the money would be well spent. Leave potash out of consideration. Don't attempt to buy it under the present conditions. But you have to buy phosphoric acid and nitrogen, and in buying phosphoric acid and nitrogen buy as little as may be necessary without endangering the crop returns. That is, depend more on the home resources, manure and green manure. Of course, it is too late now to provide green manure for the coming season. That has either been provided for or can no longer be provided for in the present season. Use manure in so far as possible, and use as much phosphoric acid as you can use profitably. Don't attempt to use phosphoric acid to replace the potash. In other words, some farmers may take the stand, as they did in the past season, and say,

"Here I cannot use any potash, it is not obtainable. Therefore, I will use nitrogen and phosphoric acid instead. I have used two tons of fertilizer, and now potash is not obtainable; therefore, I will use the same amount as before without the potash." Now, that would hardly be a profitable practice. That is, phosphoric acid is not a substitute for potash, neither is nitrogen a substitute for potash. And if your soil will produce two hundred bushels of potatoes per acre under the given climatic conditions with potash as the limiting factor, if you cannot produce more than two hundred bushels because there is no more potash in the soil for more than the two hundred bushels, the addition of an extra amount of nitrogen and phosphoric acid is not going to increase your crop yield.

I want to be certain that you understand that the use of one kind of plant food for another is not going to increase the yields, and would be likely to be money not well spent under the existing prices of fertilizer materials.

My time is up, and I shall be at your service. I shall be here all day in case you want to ask questions that I may answer. (Applause.)

Vice-President Cox—The address of Dr. Lipman will be received and become a part of the minutes of the State Board. Do you wish to discuss that question at this time?

Mr. Taylor—I would like to ask the Doctor in reference to the salt on the orchard. At the meeting of the Horticultural Society at Freehold he spoke about the same subject, and I acted a good deal on that lecture, and, taking an apple orchard that has got a good coat of cowpeas to plow under and the soil in pretty fair condition, I bought some salt and a carload of phosphoric acid and put it on that orchard. My intention was to put in about five hundred pounds to the acre on the orchard. What is the Doctor's opinion about that?

Dr. Lipman—It would do no harm, especially at this time of the year. I think three hundred pounds would be sufficient to use. Five hundred pounds would be more than enough.

Mr. Taylor—And about three hundred pounds of phosphoric acid?

Dr. Lipman—About three to four hundred pounds of acid phosphate.

Mr. Taylor—I took it up with our Monmouth County Exchange. They looked it up. You made a statement about the price of salt at various places, you say from five dollars up to ten. We found it from eight to ten dollars, the eight-dollar salt was a very clear, clean, nice grade of salt. The five-dollar salt that we found is a coarse, lumpy salt, and dirty, and I preferred the eight-dollar salt. There was very little difference between the eight-dollar salt and the ten-dollar salt in appearance. I am

just speaking from the view of prices. The five-dollar salt I would not want on that account, because it is not available to put on with the machine; it is not fine enough.

Dr. Lipman—The mechanical condition, of course, is important. But I understand the International Salt Company, whose offices are at Scranton, Pennsylvania, and at Watkins, New York, offer to sell salt which is nine-nine per cent. pure, practically table salt, at $2.50. I have a letter from the Worcester Salt Company, 71 Murray street, New York City, who have their salt works also in Central New York. They say they sell their agricultural salt, which is just as good as any, so far as salt is concerned, at $2.25 a ton. The freight rate from their works to New Jersey would range from $2.50, I think, to $3.70, for the nearest towns in North Jersey about $2.75, so that that would be a price of about $4.75 to $4.80 delivered, and in South Jersey it would be about $6.00 a ton delivered at the station siding.

Mr. Cresse—There is lots of salt meadow in our lower Cape May region, and I would like to ask whether it would be practical to dig ditches through our meadow and drain the meadows on our lands for the salt that is in them. Would it pay to do it?

Dr. Lipman—The amount of salt found in fresh salt-meadow muck would be relatively small, but it would pay to use it, nevertheless, because of the nitrogen, and, to some extent, the salt. But I would recommend that you compost these sods before you apply them to the soil. In the course of ditching, as you know, in these salt meadows, in connection with the eliminating of mosquito-breeding areas, there is a great deal of sod taken out. The specifications provide for ditches thirty inches deep. The sods, which are ten inches wide and thirty inches long, are put by the side of the ditch, about two feet from the ditch. These sods might be collected and used. Of course, the farmers in South Jersey years ago objected to the ditching of the meadows. Now they are anxious to have them ditched, because they know the meadow that is ditched comes right up in the yield of hay. A short time ago a gentleman spoke to me in the hall and said, "How can I get the Mosquito Extermination Commission in Atlantic County to ditch my meadow?" Dr. Headlee tells me the salt marsh that had not been ditched, or ditched less than three years ago, averages about three-quarters ton a year of hay, an the meadow that has been ditched three years or more averages three tons of hay per acre. So that, of course it is a profitable thing to do for the hay itself. But if you use the sod, the composting it with manure will give much better returns.

A Member—The Experiment Station has issued a bulletin in which they speak of the advantage of using legumes in correlation with corn and taking up the insoluble potash from the soil. To what extent would that be profitable for New Jersey?

Dr. Lipman—The practice of green manuring, as you know, is a rather common practice in New Jersey to-day. Growers in Mercer, Burlington and Monmouth have been using crimson clover and wheat. They also use cowpeas and soybeans as green manures. They admit that but for the practice of using green manures they would not have kept up the yields. There are fields in Monmouth county that have not received any manure for years; nevertheless, green manures and commercial fertilizers have not only provided for maintaining the fertility, but have provided for increasing the fertility. There are records of farms in Europe covering a period of a hundred years, or more, that have not received any manure, but have been maintained by means of green manures, and fertility has been increased rather than decreased.

The Member—I mean planting soybeans in the row with corn?

Dr. Lipman—We have done more or less work on this point. There is a factor there which should be considered to avoid misunderstanding.

In the growing of corn the water factor is apt to be the controlling one, for, this season, in some of our experiments, the planting of soybeans in the corn reduced the yield. Of course we had a beautiful crop of green manure on the land, and the soil was in better shape, but from the standpoint of total yield per acre, where moisture is the controlling factor, we have come to the conclusion that it would be better to grow the soybeans by themselves and the corn by itself and mix them up by putting them in the silo, rather than to attempt to grow them on the same land. That is, if you are after the largest returns per acre. We have some experiments where we have larger yields of corn and soybeans, but a number of other experiments, especially in the lighter soils, where soybeans reduced the yield because of the extra draft on the soil moisture.

A Member—I would like to ask the Doctor what is the effect of the use of salt hay as to potash?

Dr. Lipman—Do I understand you to mean the use of salt hay as a fertilizer?

The Member—The use of plowing under the old-meadow hay?

Dr. Lipman—That has been done with profit in Salem county.

The meadow hay thus used gave excellent results largely on account of organic matter and some mineral matter in the soil.

The Member—Will it add much potash?

Dr. Lipman—Yes, considerable quantities of potash. I think you would find about one and a half per cent. of potash, which would be equivalent to thirty pounds per ton. I consider this a very good practice where refuse hay is available.

Mr. Woodruff (Union county)—How much salt would you put to the acre in peach trees, the peaches being more sensitive than apples?

Dr. Lipman—I should use a hundred and fifty, possibly two hundred, pounds per acre.

A Member—Do you think it would not hurt them?

Dr. Lipman—No, I don't think it would.

Retrospect and Prospect in Dairy Management.

DR. H. E. COOK.

The milk business of this country has had a most interesting history. As a commercial enterprise it is less than a half century old. Some of us remember when Orange county, New York, set the pace for fine butter in New York City, and it was my first experience in the butter business in 1876 to buy 100 Orange county butter-pails for a Lewis county product, and to find that the price jumped two cents a pound above the same butter in Welsh tubs.

Milk has been produced chiefly upon land that had been reduced in its crop growing or upon lands that originally could not produce crops for the market without rapid depletion.

As the fertility disappeared from the farms the dairy cow was ushered in as the only means of conservation until the country was dotted with dairies producing manure as an essential product and milk as a by-product, with the natural consequence that milk and milk products were sold at a price below the cost of production. It is a fundamental rule of economics that the market price of by-products has no relationship to the cost of the raw material from which the by-products are obtained. Of course it was idle to think of milk or any other by-product under similar conditions becoming a high-priced commodity, or even having a profitable relationship to the cost of production. From this dilemma we have not yet fully recovered. There is, however, light ahead, and it seems to me possible to-day to adopt a sane and businesslike policy of price and market control.

Coincident with the demand for more farm-made fertilizer came the cheap feeds from the West and South, first whole grains and then by-products of grains and cotton seed. Some of us very wisely discussed the fine balancing of rations to a point where pretty nearly everything grown on the home farm was eliminated, and an exact scientific ration was compounded that

would get the last pound of milk from the cow and the last dollar from the farmer. Steadily but surely were we getting away from the methods of our fathers, when the farm was the unit of measure to a time when the milk business was measured by the feed dealer and the transportation company. During this time railroad stocks and milk stocks went up, while farm values went down. Then the great city milk trade began to develop and farmers could not afford to raise their own cows, and so about the only thing the old farm furnished for a forty-quart can of milk was a barn and a place for the cows to run. In other words, we were in the manufacturing business instead of farming. Of coure it was not profitable, and farm owners moved off as rapidly as possible and rented the farm. The poor old farms then had two families instead of one to support and the village had more misfits. In order to correct this evil we began to develop a spirit of boycott and to wage a war on the men who bought our milk instead of developing a spirit of coöperation. A quarter century hence, when the history of the dairy business is being written, there will be a shade of wonder at the short-sighted unworkable methods that have prevailed during the two decades just past, for increasing the price of milk. Methods which have cost the dairymen thousands of dollars, always leading them further into trouble and further away from the only real possible solution.

What is the solution?

We passed the first epoch when we learned to grow crops without stable manure. To-day we know that there is not a single reason why a cow, horse or pig should be kept on a farm to increase crop production. A great deal of mystery surrounds a manure pile. It is nothing but plants finely divided and mixed with water and bacteria, losing 25 per cent. of the original fertilizing value found in the plants to the animal that consumes these plant. The fertility is also in a very soluble form, and subject to losses in the handling. Manure contains nothing not found in the original plants from which it was made. We do not need to put plants through animals to get manure unless there is a direct profit from the milk. In other words, cultivation, legumes, lime and chemicals properly used will distance the average dairy farmer out of sight. Of course manure is good and I want it, but only as it comes from the keeping of cows for the profitable production of milk. The plan of solution which I believe the only one is to make the farm the unit of business and the dairy an adjunct to it, instead of making the dairy the central figure with the farm as an attaché. Let us be farmers first and dairymen afterwards. There is no more fundamental problem in the realm of agriculture than this.

Our manufacturing plants are too big and we are constantly getting out of raw material, and when we buy we pay the asking price, which is always high. We must get away from the notion that a dairy farmer's prosperity will necessarily be measured by the number of cows he owns. Crop production always has been the basis of successful farming and it always will be. The successful farmer must be a seller and not a buyer.

Not only should the farm produce the feeds but it should also produce all of the stock required. Let us discard the finely balanced ration and grow only such varieties of corn as are adapted to our farms, from which each

year seed can be selected, and that will mean on about 75 per cent. of the farms in New York plain old-fashioned flint corn. I wish it were possible to reduce further the size of the stalk and increase the size of the ears. Then couple with this barley and oats as grain (not as hay), using the straw for roughage, and the grain for concentrates, mixing it with two to three pounds of cotton-seed meal daily per cow. Cut down the cows to the carrying capacity of the farm, including the growth of the young stock needed. It will be easy then to control milk prices and also to have herds free from tuberculosis, abortion and other communicable disease.

We must wake up, men, to the seriousness of bovine tuberculosis and contagious abortion. These diseases are a menace to the business and we must bestir ourselves. Both can be controlled by freeing the animals from the specific germs and then keeping out infection by rational sanitation and quarantine. The ambition of men in this country has been to trade. The trader has been the moneymaker, and so you and I have been exploited by the trader, the feed dealer and the cow trader. It is such a mixup that communicable disease stalks abroad in the land and city consumers are alarmed, and I don't blame them. Sanitation and the rearing of our own stock will solve this trouble.

It is easy to understand that I am pleading to make the farm the main business instead of the dairy. I am pleading for the right to have the farm products sold to the cow at full market values and nothing else. If the dairy cow is a low bidder we have no more right to use her for a market than for a low human bidder to be the recipient.

It is nonsense to sell our products at half value to the dairy cow and then ask the dealer to come to our rescue and dig us out of the pit of error by paying more than market prices for our product.

We often hear the proclamation that dairymen are going out of the business because it is not profitable, and we say, what a pity! No saner thing can happen than to have a lot of them go out of business. I think it would be safer if each dairy lost 25 per cent. of its cows rather than to have 25 per cent. of the dairymen go out.

Dairying is the safest farm business and should be a stabilizer for every man, not as his only business, but as an anchor sheet.

Now for the sale of our product let us gather with the dealers, consumers and transportation companies and learn of each other's troubles and get a common point of view. My own experience has been that most men will be fair if fairly dealt with, and that coöperation will get more and farther for us than warfare.

New standards are being set for quality, and no matter what you think or I think, a new conception of milk purity is abroad in the land, and the cleaner it is the more the consumers will be willing to pay for it. I am speaking as a dairyman and not as a school teacher, because we are bottling an average of nearly 800 quarts of certified daily of our own production.

As rapidly as the market will take it the higher quality of milk now known as certified should be produced. The profits are not large at present prices, but they are more remunerative than the prices for market milk. Logically, then, our plan should be to test each cow and let go those of lowest pro-

duction until we reach the capacity of the farm to feed them. Grow ripe corn silage with the largest possible amount of grain, sow barley and oats for concentrated feeds, and grow clovers and alfalfa for roughage to be fed with straw. Any man can adjust his rotation to make these crops balance, and then when a surplus begins to accumulate have something to sell besides milk.

We are doubling and twisting ourselves to increase the amount of a commodity in the market that already is congested and then scrapping with the dealers because they will not pay more than market prices.

When we have worked out these local farm problems and have become masters of the farm there will come a sense of the relationship of parts and we shall be ready to coöperate and to understand that the transportation and handling companies have their problems, and when they are convinced that we have worked out our own salvation they will sense that we know what business difficulties are and all parties will say, let us reason together. There will come to the milk producer the long arm of the lever. We have boasted in New York of our large milk production when at least 33 per cent. of it was produced from feeds grown outside the State, while our milk production was going up in the 90's our farm values were going down. Let Wisconsin produce more milk if she wants to do so, and let us begin a campaign to rebuild our farms.

If it had been true that stable manure was worth what it cost we should find our dairy farms the most productive and selling for the highest prices in our State, which we know is not the case.

I am not speaking of the organized pure-bred live-stock breeders. Maybe they can afford to be large purchasers of feeds. The relationship between land values in the two cases is entirely different.

While this readjustment is going on milk will increase in price, land values will enhance, we shall become interested in farming instead of transportation, and what we have will be ours.

Vice-President Cox—We have time just at this point to receive the report of the Committee on Nominations, if they are ready with their report.

Mr. Purzner—Mr. President, your Committee on the Nominations of Officers beg to make the following report:

By a unanimous vote we recommend that the present officers of the New Jersey State Board of Agriculture be re-elected for the ensuing year. They are as follows:

For President—Hon. Joseph Frelinghuysen.

For Vice-President—John T. Cox.

For Secretary—Franklin Dye.

For Treasurer—J. Harvey Darnell.

For Executive Committee—George E. DeCamp, A. J. Rider, Theodore Brown.

Vice-President Cox—As many as favor the adoption of this report will vote "Aye."

On a vote, the report was unanimously adopted.

Vice-President Cox—I declare the nominees presented by the committee elected as officers of this Board for the ensuing year. (Applause.)

Cries of "Speech by the President and Vice-President."

Vice-President Cox—The President is called upon for a speech.

President Frelinghuysen—Mr. Vice-President and companion in misery: I should like to have that committee as an agent in some of my business or political activities, because I think when it comes to log rolling, they are the last word. Any committee that is appointed to nominate a list of officers and presents a report that they are elected, gets me. (Applause.)

However, I realize that they feel that the able and efficient officers and Executive Committee who have guided the destinies and affairs of this Board of Agriculture for the past year, with the exception of the gentleman who is speaking, were so efficient and able that they felt they should be re-elected for another year. I feel that my re-election, however, was an accident.

I want just to say this word: I think that the Board of Agriculture of New Jersey, as I said yesterday, can be made one of the greatest agencies to promote the agricultural industries of the State. If the Legislature adjourned to-morrow and passed no other bill except the law reorganizing the Road Department of this State and giving us a good road system and road repair system, and a Department of Agriculture in Trenton, it would do more for the future progress of this State than all the other measures that they could enact. (Applause.) And I say to you, gentlemen, I accept this honor for another year, which I do with the greater reluctance because I realize that in this Board of Agriculture and in the Granges and in the Societies and County Boards that compose it there are men better able to hold this position than I. I do it, because I feel that in a measure in my humble and modest way I may help on this work during the coming year, and I pledge you with all the sincerity that I possess that I will bend every effort to bring about an improvement and betterment of conditions that exist in agriculture in New Jersey to-day.

I feel that we need, in New Jersey, laws, and authority under law and government, with needed appropriations, and a department that we can work through, where the men and staff of that department will come at nine o'clock in the morning and leave at five o'clock, with able, efficient service of that staff that will be working every hour of the day to promote and enlarge and increase the industry of agriculture in New Jersey. (Ap-

plause.) And, until you have that, until you have a business office here in the State capitol at Trenton where almost every industry is represented, until you have that, you are not properly equipped in the State to carry on the cause of agriculture within its borders. (Applause.)

Vice-President Cox—I understand the Committee on Resolutions is ready to report something. But the Secretary has a word he wants to say in response to the call for his remarks.

Secretary Dye—If anyone ought to express his appreciation it seems to me it is the Secretary, for his re-election. I have been on the job now, as Secretary, twenty-nine years, and Treasurer one year, and if the proposed agricultural bill is to become a law, perhaps it is all right that Dye should be in office when the old Board dies out. But it won't die. I really look upon this change as the putting in of more vigor and blood. We are putting new sinews in and we will get more effort and better effort, like putting new scions in when we are top-working a good, vigorous apple tree—we put the new scions in and get more fruit and better fruit. So I am in hopes that this new bill, if it becomes a law, will be like grafting that which is better on the old which has been good, and whatever we can do to further the interests of agriculture while we are still on this Board and in office we shall be glad to do in coöperation with the others. (Applause.)

Vice-President Cox—We will now hear from the Committee on Resolutions.

Mr. Bush—Mr. President, the committee performed the duties assigned to them and now wish to make the following report:

Resolution Number One:

"Resolved, That the New Jersey State Board of Agriculture, in annual session assembled, endorse the bill for the reorganization of the State Board of Agriculture introduced in the Senate by Hon. G. W. F. Gaunt, known as Senate Bill No. 21, and respectfully ask for the passage of the same."

The committee report this resolution favorably, and it is unanimously signed by the committee.

Vice-President Cox—The report of the committee on this resolution is favorable. What do you wish to do with the report? Are you ready to vote upon it?

Mr. Fred. Lippincott—I move that the report be accepted and the resolution referred to the Executive Committee for attention to cause the bill to be passed.

President Frelinghuysen—May I ask a point of information? Has this Road question been debated in this body?

Vice-President Cox—It has not.

President Frelinghuysen—If you have any opportunity to-day I would suggest that a half an hour be set aside to debate it, so that these farmers from the various localities of the State who have had some experience may express their feeling on this measure.

Vice-President Cox—This resolution is on the reorganization bill.

President Frelinghuysen—I beg your pardon.

Vice-President Cox—Are you ready to vote upon this question? As many as favor it, will please vote "Aye."

The resolution was unanimously adopted.

Mr. Bush (for the committee):

Resolution Number Two:

Resolution was passed at the annual meeting of the Morris County Board of Agriculture, held on Saturday, December 11th, 1915, as follows:

"The County Board of Agriculture is unanimously opposed to the Liability Law as it affects farm labor and domestic servants, and urges the legislative committee and the representatives of the Legislature from Morris county to do all in their power to relieve the farmers from this burden by amending the present law to that effect."

The committee report without recommendation, feeling that this important matter should be left for full discussion and final decision by the body as a whole. (Signed by the full committee.)

Vice-President Cox—What will you do with the report of the committee? Are you ready to vote upon the question?

Mr. Fithian—Mr. Chairman, I have nothing to say, except that it would ruin most of the young farmers in our section if the law was ever forced on them, and put judgments over on them, as has been done in several places. One of our men was killed by a horse, and in another case a man was hurt by his own carelessness, and the farmer would be done for. Personally, I have been at a great deal of expense and have had to have my help insured in a company, which means a large expense on my farm. I pay fifty dollars a year, all the time, to have those people insured, and this is certainly a burden for some people to carry.

Vice-President Cox—Are you ready to vote upon the resolution? As many as favor its adoption will vote "Aye."

A vote being taken, the resolution was unanimously adopted.

Mr. Bush (for the committee):

Resolution Number Three:

"Resolved, That there be a general reduction in all automobile licenses."

The committee report unfavorably.

Mr. Brown—I move that the report of the committee be concurred in.

This motion was duly seconded.

Vice-President Cox—The report of the committee is before the Board. They recommend an adverse vote upon this proposition. The adoption of the report is practically an adverse vote on a reduction of automobile licenses, or, in other words, a rejection of the resolution. As many as favor the adoption of the report of the committee, which is a vote against the resolution, will vote "Aye."

A vote being taken, the report of the committee was adopted.

Mr. Bush (for the committee):

Resolution Number Four:

Resolution offered by the Atlantic County Board of Agriculture:

"WHEREAS, In the past, various outbreaks of hog cholera and other contagious diseases of domestic animals have ravaged sections of our State, causing heavy losses to owners and endangering the lives of all stock in the vicinity, we, the Atlantic County Board of Agriculture, hereby

"*Resolve,* That the State Board of Health be requested to take the steps necessary to secure the enactment of a State law requiring—

"*First.* That every owner of domestic animals in this State be compelled by law to immediately report to the State Board of Health, or to the office of Farm Demonstration, the first case of any contagious or infectious disease developing among his animals.

"*Second.* That by the authority of the State Board of Health a strict quarantine be placed on the premises where the disease exists, forbidding any neighbor to visit the infected premises and forbidding any persons from the infected premises to enter premises not affected by disease; *provided,* that if the owner's regular business, such as selling produce at a local market, takes him off the farm, he may be permitted to continue this business after complying with all other conditions herein mentioned.

"*Third.* That the owner, under the direction of the authorities of the State Board of Health, take such steps as may be necessary for the control and eradication of the disease; such as calling in a veterinarian, complying immediately should he order the disinfection of the premises and the inoculation of sick or well animals, and killing the animal, if necessary, to prevent the spread of the disease.

"*Fourth.* That the owner be forbidden to sell animals from any premises on which he has reason to believe contagious or infectious disease exists.

"*Fifth.* That any person violating any or all of these conditions shall be subject to fine or imprisonment."

The committee report adversely, feeling that some of the provisions of the resolution are already covered by law, and that others are so framed as to involve unnecessary hardship on the part of the owner of live stock. (Signed by all of the committee.)

Vice-President Cox—You have heard the report of the committee, which is an adverse report.

President Frelinghuysen—In supporting the report of the committee, I wish also to add that this problem, which the Atlantic Board of Agriculture calls to the attention of the State Board to-day, is one of the problems that the present agricultural law is attempting to meet by creating a Bureau of Animal Industry and a Department at Trenton. Nothing so effectively illustrates the need of a department as this resolution. At the present time the State Board of Health have, I think, $2,500 appropriated each year, to quarantine and take care of epidemics in farm stock. That includes, of course, hog cholera, as well as glanders, anthrax, foot and mouth and all diseases relative to farm stock.

Now, when the foot and mouth disease broke out in the State of New Jersey, this $2,500 had practically all been spent, and there was no provision in law and no authority whereby further quarantine could be accomplished. And yet, there were four or five places in the State of New Jersey where this dread disease had shown itself. And here we were in the State of New Jersey, with our herds threatened and no department and no money and no equipment to bring about a quarantine to stop the epidemic. But, fortunately, in the law which provided for the creation of the Tuberculosis Commission there was a clause which said that the commission could coöperate with the United States Bureau of Animal Industry to eradicate contagious diseases, and, by reason of that clause, we got a ruling from the Attorney-General which allowed us to use our funds (we had some $50,000), and go in and quarantine and kill these cattle and pay the farmers for their loss and exterminate the disease.

Now, in hog cholera the Experiment Station is distributing a little serum; but the Board of Health, without enough inspectors, without enough help, cannot cover this. They cannot meet an epidemic of hog cholera, and we want this agricultural law so that the Department in Trenton will be armed with enough authority not only in quarantine, but will have sufficient funds to stop an epidemic of this character.

Therefore, in supporting this adverse report, I feel like adding to it that already provision is being made in law by the introduction of Senate Bill No. 21.

Vice-President Cox—Are there any further remarks? If not, as many as favor the adoption of the report, which is an adverse report, will vote "Aye."

A vote being taken, the report of the committee was adopted.

Mr. Bush (for the committee):

Resolution Number Five:

A resolution passed by the Atlantic County Board of Agriculture, at their meeting held December 18th, 1915:

"WHEREAS, There are so many rear-end collisions caused by automobiles running into wagons from the rear, which have no lights at all, or a white light, lots of which could be avoided if wagons would show a red light in the rear; be it

"*Resolved,* That we ask the State Board of Agriculture to use its influence to have a law passed making it compulsory for all vehicles to show a red light at night in the rear, which can be seen at least two hundred (200) feet back of the vehicle."

The committee report this resolution favorably. We understand, Mr. President, that this simply changes from "light" to "red light." That is all that it does.

Vice-President Cox—The report of the committee on this resolution is a favorable report. Are you ready to vote upon it?

A Member—Isn't that already thoroughly covered by a bill passed two years ago providing that every man that drives a wagon or horse vehicle must carry a light in the rear?

Vice-President Cox—The red light was not a part of the provision.

Mr. Taylor—I always understood it so.

Mr. Bush—Mr. President, we were uncertain. I will say when the law first went into effect I went and bought lanterns for our wagons, and we had lanterns with a red light, thinking that was the right thing to do. It was. But I did not know it was compulsory to have a red light. And we have been using red lights ever since. And when we came to look at this we said, "That is already covered by the law, is it not?" And some said, "I don't know, I guess it is." So we sent for Senator Gaunt and he said, "No; that it was covered by the word "light," not "red light."

Mr. Fithian—I think one light will be enough. It means just so much more expense. It means a dozen more lanterns to be bothered with to keep them in condition for use whenever a light is wanted. I don't see why one is not enough.

Mr. Taylor—If you have a lantern on each side of your wagon, and have a red light in the rear of you wagon, does not that cover it?

Vice-President Cox—Yes.

Vice-President Cox—Are you ready to vote upon the question? As many as favor the adoption of the report of the committee, which is favorable to a red light on the rear of the vehicle, will vote "Aye."

A vote being taken, the report was unanimously adopted.

Vice-President Cox—The motion is carried to have the law amended.

Resolution Number Six:

Resolution was passed at the annual meeting of the Morris County Board of Agriculture held on Saturday, December 11th, 1915, as follows:

"The County Board of Agriculture is unanimously opposed to the Liability Law, as it effects farm labor and domestic servants, and urges the legislative committee and the representatives of the Legislature from Morris county to do all in their power to relieve the farmers from this burden by amending the present law to that effect."

The committee being in sympathy with the purpose of this resolution, and desiring full discussion of the matter, report favorably.

A Member—Is not that resolution the same as the number two read by the committee?

Mr. Bush (for the committee)—Yes, it is the same. We took the same action each time. I withdraw the report on resolution number six.

Mr. Bush (for the committee):

Resolution Number Seven:

"WHEREAS, The present Federal statute, which requires that all flour which is a mixture of wheat products and corn products shall be controlled by the Internal Revenue Department and pay a special tax to the United States Government, is an unfair discrimination against corn and the growers thereof, and is not necessary to protect the consumer as the present food laws, both Federal and State, insure adequate protection by virture of honest labelling; and as a flour composed of wheat products and corn products is a wholesome and nutritious food; and as the repeal of this Federal statute would have a tendency to reduct the cost of living by rendering attractive to miller the marketing, under proper control, of a mixed flour at a less price than that necessarily demanded for wheat flour; therefore, be it

"*Resolved,* That it is the sense of the New Jersey State Board of Agriculture that the Federal statute referred to should be repealed at the next session of Congress; and be it further

"*Resolved,* That the Secretary of this Board use all honorable means to influence members of Congress to vote for the repeal of this discriminatory tax on corn."

The committee report favorably on this resolution.

It is possible that the Board will want to look into and see what this comes from. I think Secretary Dye can give us a little information of the reason of this resolution. As you will notice, it is a resolution to remove the Federal tax on mixed corn and wheat products, not to interfere with proper labelling at all, but simply to remove the Federal tax which they claim is a discrimination against corn, and the committee reports favorably on the resolution.

Vice-President Cox—The report of the committee is a favorable report. As many as favor the report of the committee will vote "Aye."

A vote being taken, the report of the committee was unanimously adopted.

Vice-President Cox—That concludes the report of the Committee on Resolutions at the present time. What is the further pleasure of the Board?

Senator Gaunt—Mr. President, I was not here when the report of the Committee on Resolutions came in covering the resolution in reference to the Compensation Act. I think I stated this morning that we have two bills introduced in the Legislature this year on that subject which will increase from fifty per cent. to sixty-six and two-thirds per cent. the compensation and practically provide for unlimited payments. I don't know what action the Board took on it, or whether it took any action in reference to the proposition. I did not hear the report.

Vice-President Cox—I would suggest that the report of the Committee on Resolutions be read for Senator Gaunt's benefit.

Mr. Bush—The committee report without recommendation, feeling that this important matter should be left for full discussion and final decision by the body as a whole. There was no recommendation.

Vice-President Cox—Does the Board want to do anything with this resolution?

A Member—I think we should send a representative to the hearing anyway, perhaps a committee.

President Frelinghuysen—As I understand the situation it is this: that we have simply approved the report of the committee on this resolution. The report of the committee was that the resolution be reported without recommendation. So the matter stands before this body absolutely null and void. No action. That is the position of this resolution at the present time.

Vice-President Cox—I am asking you now if you want to take action?

President Frelinghuysen—It is up to the introducer of the resolution. I think if he wishes to push his resolution, he should move its adoption.

A Member—I suggest, as the mover of that resolution, that we vote to adopt it. If we do not want the law as it is we should vote for the resolution to change it, as we are all represented here as farmers. We all know that the farmer has not much advantage from this Liability Law; if he owns a horse that may be restless and sends the man out to drive him for a

load of coal and the man stops in the hotel to get warmed up in the winter time, or to get cooled off in the summer time, why, he is liable to run into an automobile, and it will cost me a thousand dollars if he does damage for that amount of money, and I have no interest in the man. I have been told since I have been here, that the Liability Law, if it was tested, would possibly be found unconstitutional, as it gives one party redress and the other none. It seems to me that if the farmer is sued by his employee for liability and he gets a hundred dollars a year or two and a half dollars a week, whatever it may be, for his life-time, I was wondering how many farmers there are in the Board, if they are sued by three or four different employees on their farms which is worth ten thousand dollars, and have to pay year after year two hundred and fifty to five hundred dollars, how long they would stay in business? It seems to me that the law can only have the effect of driving the farmer out of business. It seems so to me. I don't think we would want to farm fifty or a hundred or a hundred and fifty acres of land and be obliged to pay someone that we could not afford, and who we cannot force to do a day's work, four or five hundred dollars a year for a liability that we have nothing to do with. Now, it seems to me that there ought to be a way to amend that law. I would suggest that the proper way would be to eliminate the farmers of Morris county from all liability whatever. If I am informed right, in New York State, the farmers are exempt under their law. I have been told by some it would be special legislation in New Jersey. It seems to me that the Legislature of New Jersey possibly might be as intelligent as some of the members of the Legislature of New York State, and they could pass a law providing for the relief of the farmer from liability acts. I think it is up to the farmers to ask the Legislature to do something to relieve the farmers.

President Frelinghuysen—Mr. President, I was in the Legislature when this Workmen's Compensation Law was enacted. It was enacted in compliance with a report and legislation formulated by an investigating committee, a committee appointed by the previous Legislature, consisting of, I think it was, the President of the Senate, the Speaker of the House of Assembly, a labor representative and a representative of the capital; and when the bill was introduced and passed, it included not only the farmers but also domestic servants. I think a protest was made at that time, when it was passed.

Now, the question is whether it is in keeping with the policy of the State to reward with insurance, laborers universally, or

whether there can be certain exceptions made. I know that some of the States except farm laborers and domestic servants. It is generally supposed, in those lines, that wherever there is an earning power or an increment earned by reason of business, that part of the tax on those earnings shall be remuneration or insurance to those who produce that earning power.

Now, upon what basis of reason can you ask for an exemption of farm labor? I will say this, that in a factory, or within the four walls of a factory or business, or even a milk route, or something of that kind, the owner has control. But on the farm where the laborers are not under his supervision, that the farmer himself cannot control the acts of his employees. Another reason why farm laborers should be exempt is the fact that the farmers are the producing class of the country, they are producing food, they make living possible, and it is well known that consideration in sumptuary laws is paid to them, and it is almost a recognized thing by the Federal government and by the State government, and, therefore, it would seem to be reasonable, that if this law was an unjust tax, which I think it is, that they should be exempted from its operation. I am paying this year $150, I think it is, for insurance against this law, and only a week ago a man came to my office with a claim in the fact that his foot was injured three years ago, or two years ago, on the farm. Well, when he was discharged he walked off the farm in a perfectly able way, in fact, with some celerity, because I think he was assisted by the foreman. Nevertheless, there was nothing the matter with his foot. But, under this law, he is now making a claim against me.

The point is just this: we are willing as farmers to submit to any general law that is for the uplift or the benefit of labor, but the question we want to ask ourselves is, does it apply to the farmers? Should farmers and domestic servants be included in it and stand that unjust burden?

I don't want to take a decided stand on this now. I think we ought to look into the question and consider it. But I am very much in sympathy with the resolution, not only for Morris county, but for the whole State of New Jersey. The question is whether this additional burden should be imposed upon the farmers of New Jersey, and, as the gentleman well said, one loss under such a law for a farmer's worker would put any man who was working for his living, struggling day after day to make a living on his farm—one loss under this law would put him out of business, and his family and his children would be made paupers.

Prof. Rider—Mr. President, I have had some experience in the matter that has been referred to and I want to cite one reason why the farmer should be exempt from this law. The factory man, the man who runs a manufacturing establishment, is the man who adds to the cost of his products whatever it costs to produce them. The cost of that insurance is added to the cost of his product and added to the price. Now, farming is the only kind of business, I believe, in this country, where the producer does not set the price. The price is set at the other end. The farmer has not got any "come back" like the manufacturer has.

Therefore, I say, it is an unjust thing to the farmer to pay this tax and a burden upon him, and I believe, just as has been said here, it would put lots of farmers out of business if such a law was enacted.

I had a little experience. About a year ago one of my Italian employees, on account of his own carelessness, permitted a hole to be made in the floor by running a truck over the floor, and he knew that hole was there, but, whether he did it purposely or not, he stepped down in that hole and injured his leg, and came back with a claim of several hundred dollars' liability. He had some friends, one of his native countrymen in Philadelphia, who told him he had a big claim, and to put it in the hands of a lawyer who was ready to prosecute the thing, and notified us they had a claim for several hundred dollars. I at once appealed to the padrone who had furnished this man to work for me and told him that he had better see this friend and see why he made such a claim and what the reason was for it. He had never been to see me at all about it. In fact I did not know the thing had occurred at all. At any rate, I was away from home one day, and this man came down to see me and came with a friend. It was a stormy day and they got a carriage, and he was helped out of the carriage by the man and another man, two men, one on each side, and was hardly able to walk, and he said the physician had told him he was injured internally, etc. But I did not happen to be home. I was glad I was not home, because I at once went up to the city and found out from my padrone that this man had got in connection with some people in Philadelphia and that they had come down with him to make this claim and present himself to me to show how much he was injured. And I got the inside of the story and found that it was a put up job. So I was away from home the next day, and they wanted to know when I would be at home and they would see me, and they were told I would be home, to come there the next morning, so

he went to an Italian hotel and stayed that night. The next morning I had gone away before he came, and I had gone to the city in the meantime and had a little conference with people who knew something about the circumstances, and I came back on the train, and I had learned the name of this party who had been so influential and instrumental in bringing him down and making the claim. And as I got off the train this man met me. I said, "You are so and so, are you?" "Yes, sir." I said, "The next train leaves here in just a half an hour, and if you do not take that train I will have you arrested for blackmail." He took the train and went away. About a half an hour later I reached my home and this man came hobbling down to the house and wanted an interview with me. I saw him and talked to him about it. I said, "Why didn't you tell me this thing occurred, instead of going to a lawyer?" He said he did not do that, somebody came to him and wanted him to make a claim, that he ought to have fifty or a hundred dollars damages. I said, "If you had come to me, and there had been any actual injury, it would have been adjusted at once. I would have done the right thing by you. But, when you are trying to make me trouble, I cannot do anything for you. I am done with you. Get out." And he walked down the street just as well as I could walk. He did not need any supports on either side, either.

So you see there is a chance for a great injustice being done the farmer in that way. I move that the resolution be adopted.

Vice-President Cox—The motion is that the resolution be adopted. Are you ready to vote upon it?

Mr. Bush—May I say, Mr. President, the committee now have exactly what we were fishing for. We wanted this matter discussed. That is the reason we reported it as we did.

Senator Gaunt—This law was passed, as the President of the State Board said, while he was in the Legislature. He will bear me out when I say that some of us did everything we possibly could at that time to have the farmers exempt. For three or four years I have secured the passage of bills in the Senate exempting farmers from the provisions of this act. When they got over here (the Assembly), they never got out of the committee and never had a chance to be voted on.

I don't remember about New York, but last year, in Pennsylvania, they prevented the farmers being included, as I understand.

In the Pennsylvania law the farmer is not included, but in Pennsylvania I understand the farmer is not in very much better shape than we are here, even though they were not included. The same as they are in the Iowa proposition.

As I stated this morning, this is the result of the Workmen's Compensation Commission, and they introduced in the Senate bills 25, 26, 27, 28, 29, 30, and 31. One of those bills provides that instead of the compensation being fifty per cent. that the rate shall be sixty-six and two-thirds per cent., and as I remember it, from the discussion that has been going on among the members, it practically means life for serious injuries, and it means also that every individual who employes labor must become insured. It is compulsory insurance. Those are some of the provisions.

I have just been out to the bulletin board and find that a hearing will be given on those bills Monday, February 14th, at two o'clock, in the Senate Chamber, and the representatives here from every county in the State may as well take notice that there will be an opportunity for them to be heard on those bills on Monday afternoon, February 14th, at two o'clock. You had better be prepared at that time if you desire a hearing on those bills, and possibly be ready with an amendment.

Mr. Taylor—I would like to ask Senator Gaunt, is this gotten up by the insurance companies?

Senator Gaunt—This is gotten up by this Employers' Liability Commission or Workmen's Compensation Commission. You are aware of the fact that there is such a commission, composed of gentlemen of this State.

President Frelinghuysen—There seems to be some misunderstanding. I do not believe any of those compensation acts have ever been inspired by insurance companies. I think some of them have benefited by it. The inspiration is from the laboring men themselves, and this commission is a commission which is supposed to know about and to bring about certain improved and advantageous conditions for labor. I think you will find that is the inception of it. I am not in that kind of insurance business, although I am in the insurance business. And I know this, I know that it has been an indeterminate quantity, the compensation insurance, and quite a number of companies have lost considerable money, until they have recently raised their rates. Now, I believe it is quite profitable.

I do not think that is the question. I think the question is whether it is a square deal on the farmers of the State to impose this additional burden on them. Should we not fight it in the endeavor to be relieved? That is the point. It seems to me that our farmers are in a position to claim exemption more than any other class of manufacturing business, and if we can determine

that and prove our case then we stand a good show and have them eliminated in the future.

A Member—I think we should urge our Senators and Members of the Assembly to do everything in their power to relieve the farmers from this law when it comes up, either on the floor or in the committee. If the farmers of the State want something done to relieve them from paying possibly a few hundred dollars on account of insurance, here is the opportunity.

A Member—Those laws are gotten up and pushed by somebody, and now we should assert ourselves and show that we are interested. They have had that liability in the old country long before we thought of having them over here, but I have talked to many about it over here and they all seem to think it can be thrown out. If we are to have that plan, let us go back to the plan that was advocated some years ago. Let the workingmen help to pay a part of the insurance. In Europe they have got those laws, but the workingman pays two-thirds of the insurance and the employer pays one-third, and if there is an accident the insurance company pays the employee. Now, if we cannot exempt the farm laborer, as it is claimed we cannot do it legally, let us get busy and let them pay in proportion.

Mr. Brown—I just want to call your attention to the fact that the New Jersey compensation law is unfair in its provisions. It creates a liability that is greater than the assets of more than one-half of the employers of the State, and for that reason it does not guarantee employees by that much (snapping his fingers). It is unfair and ineffectual. It should be repealed and start over again, and an honest workingmen's insurance law, in which, as the gentlemen said over there, the employee should pay a part, is enacted. (Applause.)

Mr. Woodruff—Many of the delegates present, I believe, would find it impossible for them to meet with the committee on February 14th. Would it not be a good thing to have the delegates sign a petition to be presented by our committee to the committee of the Legislature?

Vive-President Cox—Are you ready to vote upon this question?

President Frelinghuysen—Mr. President, objection is all right as far as it goes, in the shape of a petition, but is it effective?

Vice-President Cox—You want to put boots to them.

President Frelinghuysen—Yes, sir. Nothing is so effective as the personal appearance before that committee—the face and voice of the farmers. You can do it two ways. You can do it by a town meeting, invite everybody, every farmer, every Grange

of New Jersey, and everybody. Or, you can do it by a delegation from this Board, or all of the Boards, or you can do it by the Executive Committee, or you can do it through counsel. It seems to me that a general call through the Granges, through the State Board of Agriculture and all the societies and farmers allied together, if you chose to meet here and protest against that law and ask that an amendment be inserted in that law relieving the farmer of this burden, that that would do it. No one can refute the argument that Mr. Brown has just made. It is short and to the point, and I should like to have the committee asked to answer the argument as a practical proposition. Therefore you should make your protest by your mouths. Those who cannot come may send a petition, but it seems to be a matter for personal protest.

Secretary Dye—Why don't you send some intelligent farmers to the Legislature to guard your interests? Who are you voting for every fall?

Mr. Crane—Mr. President, it would not be possible for me to be here probably next week, but I know the farmers in our vicinity feel that this law is an unjust burden as it is now, and to add to the burden as it is proposed would be still more unjust.

Mr. Cresse—I think it would be a grand thing if we could all get down here to that hearing, but it seems to me that we should adopt a resolution that is the voice of this assembly of farmers, that they do not want any such thing as that. You must remember that it is a most unimportant class of people that work for the farmers; lots of them will come for that purpose, to get compensation and then have the farmer look after them, and all that will be done at our expense. Can't they be made to pay for the protection?

A Member—Can an amendment of that kind be made?

Vice-President Cox—An amendment could be made at any time.

A Member—I would like to offer an amendment that a committee of three be appointed to take charge of this matter on behalf of the State Board of Agriculture and look up the law and be prepared at the hearing to present the farmers' views of the case, and have some other people there to help back them up as much as possible, as many as they can get to come.

This amendment was duly seconded.

Vice-President Cox—As many as favor the adoption of the amendment will vote "Aye."

The amendment, on a vote, was carried.

Vice-President Cox—As many as favor the adoption of the resolution, as amended, will vote "Aye."

The resolution, as amended, was, on a vote, carried.

Vice-President Cox—The resolution is adopted.

The Board then took a recess until 2 o'clock this day.

AFTERNOON SESSION.

President Frelinghuysen—The Board will be in order. The next business will be the report of the Credentials Committee.

Mr. Rogers—Mr. President, the Committee on Credentials have examined all the credentials in their possession and find them all correct and all the delegates entitled to their expenses, except one delegate from Hudson county who has not presented his credentials.

President Frelinghuysen—What is the name of the gentleman? President Loughran?

Mr. Rogers—Yes, that is it.

President Frelinghuysen—I can vouch for Mr. Loughran. I know that he is a member of the Hudson County Board of Agriculture, that he was here last year, and I think you can take his word for it that he is a delegate from that Board.

Mr. Rogers—It meets with the approval of the Chairman.

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

A Member—I move that it be accepted.

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

A Member—I have placed a resolution in the hands of the Secretary in reference to the success of Mr. Barclay in his agricultural work, and I move you that the resolution be adopted.

President Frelinghuysen—The Secretary will read the resolution.

Secretary Dye read the resolution, as follows:

WHEREAS, New Jersey, known as "The Garden State," stands in her agricultural products, according to statistics from the Federal Department of Agriculture, 7.1 per cent. above the average yield for the entire country; and

WHEREAS, This fact has been emphasized in a most pleasing manner by the award of the first prize in the National Apple Exhibit, held in Rochester, New York during the week of January 31, 1916, to John Barclay, of Middlesex county; and

WHEREAS, This exhibit is the leading event among horticulturists of this country, and is open to the world; and as this sweepstake prize was won over the strongest competition coming from the great Canada apple-growing section, from the world renowned Hood River district, and from many Eastern and Western States; and

WHEREAS, In spite of this strong rivalry the honor of this coveted prize has come to New Jersey through the persistent, intelligent, scientific demonstration of the resources of this State, by Mr. Barclay; therefore, be it

Resolved, That this State Board of Agriculture congratulates Mr. John Barclay, of Cranbury, New Jersey, upon his most gratifying success, and commends his efforts to the horticulturists of the State.

Resolved, That this resolution become a part of the journal of this day and a copy be sent to Mr. Barclay.

Mr. Allinson—I move the adoption of the resolution.

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

President Frelinghuysen—In this program this afternoon we are limited in our schedule, and some of the members desire, after the speech or the paper of the Road Commissioner, to discuss the road question and offer a resolution. Therefore, if there is no objection, the Chairman will take the opportunity of limiting the discussion as follows: Mr. Blake will be limited to twenty minutes; Commissioner Emerson will be limited to thirty minutes; Dr. Butterfield will be limited to twenty minutes, before the Road Commissioner's address. This is the time allotted to these gentlemen, and it involves a change in the schedule. Is there any objection? The Chair hearing none, that will be the order.

Mr. Butterfield—Mr. President, I don't need twenty minutes. I shall only need ten minutes.

President Frelinghuysen—Dr. Butterfield, we will be very glad to hear you in ten or twenty minutes. That is the time set for you.

The next number on the program is by Mr. H. A. Emerson, who will discuss, in the place of Commissioner John J. Dillon, the Commissioner of Markets, "Marketing Problems of New York." It gives me great pleasure to introduce to this audience Mr. H. A. Emerson.

Mr. Emerson's Address.

Mr. President and Gentlemen: It is unnecessary for me to tell you that the Commissioner's office is glad to be represented at this meeting. You, of course, realize that our office is not a selfish office. It is the State Department of Foods and Markets for the State of New York. The State of New Jersey is quite as much interested in our office as anyone in the State

of New York, and we are quite as much interested in the State of New Jersey and many other States from which our food supplies are drawn.

As all roads in the old world lead to London, so all the food warehouses in the United States lead to New York City, with their surplus products brought there for our ten million of people in the city and in the adjoining suburbs, many of them in your own State. We have the great outlet. An outlet that can expand quickly as the price goes down, and the question at home and the question abroad is, How can we best use the New York market? How can we reach that market? And, is there a possibility of our obtaining better results from the New York market?

You are anxious to know what has the State Department done, and, perhaps you are anxious to know why the State of New York saw fit to establish a special department to look into this food question and to handle its markets. We have had some serious troubles, ending in murder, in the handling of foodstuffs in New York City during the past two years.

Conditions were not what we believed they should be and the Legislature appointed William Church Osborne as a committee to investigate those conditions, and he reported a waste between the docks and the consumer in the handling expense and the overhead expenses which amounted to a hundred and twenty million dollars annually, with the producer protesting because of the low prices and the consumer paying the high prices.

For this reason the Commission was appointed. Mr. John J. Dillon, a man of large experience and long experience in New York City and on farmers' properties in New York State, having been born there, was appointed Commissioner. He had not had a great deal of practical experience in the business, but he went to work, and everyone—and he has some enemies, as most men have that do things—everyone found, and even his enemies, said he was honest. That was about the only thing Lincoln had to begin with. The State has seen fit to limit our department to an appropriation of fifteen thousand dollars. Six thousand dollars of it would belong to the Commissioner. He is a man of large means and said, "I will take no salary. I will give my salary, six thousand dollars, in the interest of the department, to carry on the work."

The first thing the Commissioner did after we was in office: The so-called bread trust decided, since everybody was talking about the high prices, that it was a splendid time for them to cut down the size of the loaf of bread and to raise the price of bread one cent per loaf on the five-cent size. There are consumed in and about New York City two million loaves of bread daily of this size.

Mr. Dillon notified the Attorney-General's office that he believed that it was unnecessary to raise the price of bread, that he had information that led him to believe that contracts had been made for wheat long before the rise in price had come, and that this was simply a subterfuge and that they were really raising the price of bread to make more money and cutting down the size of the loaf for the same reason.

The Attorney-General's office appointed Mr. F. H. Becker, a splendid young man in the office, one of the assistant Attorney-Generals, to handle this case. For some reason or other, the Attorney-General's office retained me to assist

him in that matter. After a two weeks' investigation the so-called bread trust came to us and wanted to know if it would not be possible for us to shut up and keep the stuff out of the newspapers, which we were furnishing so freely as copy; that it was very unpleasant to them, and if we would let the thing drop right where it was they would increase the size of the loaf of bread three ounces and would reduce the price to the old price, and that they never, no never, again, would attempt to raise the price of bread. That was all Commissioner Dillon was after. Mr. Becker asked him if he was satisfied. He said he was gratified. The price of bread went down to five cents, the loaf went up to the standard where it had been, and people have been saving in Greater New York and suburbs twenty thousand dollars daily.

The next move the Commissioner's office made was when the trade papers began publishing the fact that out in Oregon and Washington where the apples grew that they were being allowed very little for them here compared with some eastern fruit not nearly so good, in our judgment, in fact we found they brought from a dollar to $1.35 a bushel for those apples, with fifty cents freight rate and ten cents icing charge against them. Those districts were advising the buyers to be very careful about it, and New York State apples at $1.50 a barrel seemed too low for those in comparison. It did not seem right to the Commissioner and it did not seem right to anybody. So he retained me to see if we could not make an effort to bring about some change in the apple business. I have been connected with the auction business in New York for a number of years, and have been in the food distributing business for thirty years in that great mart, Chicago.

I told the Commissioner that I thought the one thing necessary was publicity. If we could organize some sales up in the country, right at first hand, there would be some buying. The Commissioner goes and publishes an interview in the *Rural New Yorker,* with the statement that in his judgment, on the advice of people who have had large experience, that A. grade apples would be worth $2.75 a barrel this year and the B. grade $2.25 f. o. b. shipping station. This greatly displeased many buyers, speculators and operators and some commission men.

In order to show that this was not theory, we organized a grand combination apple sale, selling the apples in the orchard. We went to Poughkeepsie, and went to Mr. Teeter's orchard, where he had about 7,500 barrels hanging on the trees, and asked him if he would not like to offer for sale by the State his apples, and have the State advertise them far and wide for buyers to bid on the apples f. o. b. his station, he doing the picking. After a few moments' conversation he asked if he would have an opportunity to put a limit on the price. We told him he had one bid under the laws of the State of New York. This pleased him. He accepted our proposition, and we went over to see some of his neighbors, and that afternoon we collected together thirty thousand barrels, and the next day we went over across the river and brought in Mr. DeYoe's farm and organized another combination sale. The sales were to take place in ten days, and they were advertised far and wide. It is only fair to say that there was but one paper that did not publish the advertisement. We got a pretty good crowd. Mr. Teeter was a careful,

conservative man, and he talked the matter over with his family and friends and they decided that $3.25 a barrel was about the right price for A. grade apples, and the best bid was $3.12½. Before the auction, the best bid Mr. Teeter had was $2 a barrel. That was quite a difference on 7,500 barrels. At the sale of the apples at Mr. Eyler's the A. grade brought $3.25 a barrel. He did not sell so many, but that set the price. The next day they sold at $3.15 A. and B. from a large orchard, right there at the orchard, and he was greatly pleased. Then he sold his sister's orchard at $3.05. He sold quite a few apples there at that sale, much better than the day before. The sale ten days later was at Syracuse, and we sold Mr. Hitchings' apples, A. grade at $3.40 a barrel, f. o. b., and then Mr. Knapp's orchard at $3.40, and we sold other apples down as low as $2.85 and $3.00, inferior goods compared with the Knapp orchard and the Hitchings orchard. Many apples in our State are inferior to those two orchards. Immediately following this, we sold Mr. Kelow's, one of the finest men in the business, I believe—he had an orchard near to Mr. Teeter—at $3.30. Just the same fruit that they were not bid over $2 for previous to the auction sale.

There were four million barrels taken in New York State this year from a conservative estimate, and the auction operations are bringing one dollar more to-day for those than they were bringing before. That is four million dollars for the farmers in the State of New York.

Then Mr. Dillon made arrangements with a company to finance for us any business we could obtain. The State charged three per cent. for doing the business for the people who loaned the money, and he asked them if they would charge five per cent., and give us two per cent., for the State had given us a very inadequate appropriation. They agreed to do this, and as a result we have been charging the growers five per cent. and paying out three per cent., and getting two per cent. back in the treasury as a result. We had but $15,000 to start with in the Department, and we had $11,000 out of the $15,000 left last Saturday nigrt, which is a very fair showing for a State Department.

The farmers up in our country did not count on obtaining this price for the apples. Now, the law of supply and demand regulates the price of apples.

The year before last what happened? There was no Department of Foods and Markets, and there was one million barrels less apples, and $1.50 a barrel less in price. The law of supply and demand must have had a kink in it. It did not work very well for the farmers.

As for the consumer, a year ago at this time apples had been very low through January and into February. Then they commenced to advance in price through March and April, and they ran the price up to $5 and $6 a barrel wholesale in New York City. What do they sell at this year? Anybody can tell. We have had a fairly good market throughout the fall. In December we had a break, but there has been no time this year when we have not gotten for cider apples as good a price as the farmers received for their very best A-grade apples the year previous.

We were able to make arrangements with some of the large Exchange stores in our State to sell those goods at from seventeen to twenty-five per cent. above the wholesale auction price, direct to the consumer. That left the consumer buying his apples at a very reasonable advance over the wholesale auction price.

The wholesale auction price was the basis for the sale of apples in all the States in the fall. It does not matter where, that price was published and everybody knew that that had been paid for apples. In Virginia and Canada, they said, we base our price on your price. They got more for their apples over there than we got, and I am glad they got more money, but they based the price on the standard that we had set.

The consumer in New York City this year has been able to buy cheaper than he did the year previous, when the farmer only got about half as much money.

How was that brought about? It was with these arrangements and with the publicity which the papers of New York City gave us. They have treated us royally. Without our spending a single cent with them, they have given us column after column of news matter, and as a result have kept the public pretty well informed of what the wholesale price was and what the retail price should be, and then where they could get the retail price such as we mentioned.

Acker, Merrall & Condit, one of the largest concerns in the city, did not hesitate to agree with us to sell the goods twenty per cent. above the auction price. That was close enough for their work and that gave the consumer his apples, we figured, thirty-five per cent. less than he paid the year previous, when the farmer only got about half as much as he got this year. There are no farmers complaining about it, and there are no consumers complaining about it when they pay thirty-five per cent. less for a million barrels of apples.

What was the result of these sales by the State? It has encouraged the apple business in our State and out of our State. I will tell you one result. Mr. Teeter's two sons and his daughter are not anxious to leave the farm. When we figure up what seventy-five hundred barrels of apples mean in round money at $3.30 a barrel, you realize that there is a very nice income on the one item of apples on the Teeter farm. Over on Mr. Hitchings' farm we found four splendid young Cornell men, his sons, and a splendid young daughter in the house. Do you think, with the apples in the orchard at $3.40 a barrel for four or five thousand barrels, they would leave home? Not by any means. They are right there, picking apples, looking after the trees and spraying and enjoying themselves in the hard work. That is one of the objects of our department. We want to bring a fair value to these Eastern farm lands. The only way you can bring value to these farm lands is to bring up the value of the produce you grow on them. The only way we can encourage you to supply the great city of New York and the other cities we have to supply is to give you a fair return for your investment in your farm and for your labors, and your fruit, and we don't believe you have been getting that, and that is why we think this Commission should exist and why we should have many changes in the New York market.

We blush with shame when we tell you that yesterday sixty-three concerns connected with the live poultry business in New York City marched up before the judge and pleaded guilty. We blush with shame when we tell you that within the year two of our leading men in the live poultry business in New York City have been in the penitentiary serving time. We

blush with shame when we tell you that on the docks in New York City such frauds, such crooked frauds, existed in the egg business that the dealers pleaded guilty in the United States Court, and the court took in over a hundred thousand dollars in one day from our richest, most prosperous, so-called commission men, in the egg business. We think it is time this should be changed. This is, we think, a period of economy, efficiency and honesty.

You next will want to know, is it more economical to sell these goods at auction at the dock? I will tell you very quickly; one of our auctioneers sells eight carloads daily. You gentlemen who visit New York City often know it perhaps better than I know, and know that it takes a most excellent salesman on Washington street to sell from one to two carloads daily. We feel that highly perishable goods are never any better than when they leave the farm. Those goods seem to begin to deteriorate about the moment they leave the farm, and sometimes when you get to the auction sales you can hardly realize that the stuff was so bad that it would not bring freight charges.

When it comes into the auction market we receive it on any one of the docks or piers coming into the city. The railroad company furnishes us these piers free of rent. That Desbrosses street pier would rent for three hundred thousand dollars annually, and the New York Central Railroad furnishes that to our department free of charge for their cars. The Erie Railroad furnished Pier 30 to the California people to sell their goods on at auction, free of charge. That is quite a nice little bonus to us, but it helps them to get the freight. There is no charity with the railroads. It is simply showing good business methods of getting business. The Lehigh Valley helps fix us up on their pier in the same way. The Pennsylvania Railroad built an auction room on their pier, Pier 29, and are anxious to have us sell there. The Baltimore and Ohio Railroad are anxious to have us use their pier in New York, and we are ready to use it. Who are we doing it for? We are doing it for you folks. We are imitating the smartest people who created the largest coöperative fruit exchange in the world, the Southern California Fruit Exchange. Twenty-five years ago the commission men were handling all their business. The auction people took it away, and to take it away they had to make better returns. At the end of ten years the auction companies had secured seventy-five per cent. of the business; at the end of fifteen years the auction companies had secured ninety-eight per cent. of the business, and to-day they have a hundred per cent. The people out in California are just as particular as you are, and no better. They say they want the net result. There is no love in this business. It is a matter of dollars and cents with them, and they have taken all their business away from the commission men and given it to the auction system. What is their contract? For five years they sell their fruit for 1⅝, no haulage; in the second five years for two per cent., no haulage. All the goods sold in New York are hauled by the auction company to avoid confusion and to avoid stealing and to insure the delivery of the product to the people who buy them. Who pays that? The big general-store people. Our customers and patrons are generally such people, and

the Italians and the Greeks. Many hundreds buy for all their people. We have three or four hundred people to handle at a time, and if there were more they would kill one another.

We have a system. Sometimes they come in and get a bargain, and then they come back without invitation; and when it is a bad bargain, we invite them to come back for their money where they lost it. That is the way we keep the crowd coming. Those fellows do a pretty lively business. They are doing business every day. When we were collecting money up there we sold a few boxes of oranges and resold them until we raised seven thousand dollars for the poor people.

We centralize this buying power, and one man does as much selling as a hundred men in a private way. We are doing the business at five per cent., and in the future we will do it for two per cent., for we are not there to make money. We should be supported by the State, but, so long as the State don't see fit to support us, we are going to live anyway, and if we are not supported by the State we will live on the farmers just like everybody does. We expect to reduce this price to you just as soon as we can, for we believe the less expense there is between the manufacturr and the consumer the more likely there is to be a settlement of this question.

We are down here asking for more goods to-day and you show us your calloused hands and show us your hard-worked farms, and say, "When we figure up what we get for these goods we are not getting now the cost of production, why should we go ahead and produce more?" You have had a splendid education along the line of production. The educational work being done by the Cornell College of our State is marvelous. The farm dairy work is splendid. But why sell these goods if we cannot sell them to advantage? Are we here simply to supply transportation companies with tonnage and commission men with earnings? The commission men sold the goods and charged you five per cent., and your freight has been another five or ten per cent., and at the best it is costing you, without any shrinkage or unfair dealing, costing twenty-five or thirty per cent., including cartage, to have your goods sold, with the California people having their goods sold by the same people and getting better service for two per cent. Are the Jersey people and the New York State people going to stand idly by and let the faraway people, three thousand miles away from us, take the market away from us with poorer goods?

Make a market for your goods, so that you will get the rich money. Adopt the economy, the honor and the honesty plan. Under the new system we sell publicly and there is no opportunity to steal a single cent. That is why Mr. Dillon likes the system, and that is why people dislike Mr. Dillon.

That is the only objection they have to Mr. Dillon. He is one of those guys that sell at public auction, who wants everybody to have an opportunity to bid on the goods. If one of you farmers was going out here to sell your horse, would you rather have ten buyers or would you rather have one buyer? Most farmers would rather have ten men want that animal. Then they would come nearer getting what it is worth.

You will want to know who we are organized for. We are organized for

anybody who wants to ship to our market. We make no exceptions, treating all goods alike, from California, Florida, everywhere else.

And we have had much help morally. We have had many noble people come to say that our State is doing better than it has in times gone by. Many wealthy men are giving their attention now to these practical questions. There is not that great desire for more railroad building and the accumulation of more millions by a few men. We find the times have improved. We find men like Mr. Osborn and his committee doing great work, and we find our friend the Standard Oil Company preaching public conservation, and we find men like Mr. Dillon giving their time and services to the State free of charge in his department.

Everyone has a tribunal where they can get justice. The labor unions have their strike system to get better wages. The railroads go to the Interstate Commerce Commission to get their adjustments. Where is the farmers' tribunal? I don't know. It looks to me as though you had none; that you were dealt out when it comes to getting justice and your rights. The feed bills go up and the prices go down. We anticipate the development of a big creamery in New York State where we can use the milk to take out the butter fat and the farmers can have the skimmed milk to raise swine with, in the way of an open competitor for the so-called milk trust, and we hope you can make arrangements to ship your milk and sell it openly. At the present time they figure out twice a year in Wall street what they will pay you for your milk. The cows now cost more to keep. Under the butter-fat test it is found that there is not as much butter fat there as they thought there was, and they make their returns very disappointing to the farmer. We believe the farmer and the dairymen should have charge of the tests in each county, or somebody under him to do it. Then we hope to manufacture and supply butter—we have women in our State who are very anxious to have butter for their churns and very anxious to manufacture sanitary butter for which we have a call. So that he who buys the milk and the cream will sell the butter from the State creamery, and the best goods from the best cows, just like the largest places, and we hope to get the first prices and we expect you to get your prices for those goods. (Applause.)

President Frelinghuysen—Are there any questions you wish to ask of Mr. Emerson?

A Member—Some of the members know that I have been interesed in the market system in New York City for some time and I know something about what Mr. Emerson refers to when he referred to following up this work, and its ending in murder, etc. I wish you would ask Mr. Emerson, just in a minute, to tell a little bit about his experience with the late poultry trust. A few words of how he smoked them out, and how they followed him up in New York City alone.

Mr. Emerson—I came down to New York City on finding our account sales very unsatisfactory, and I went to our agent's office there and asked what his system of handling was. He said they

sold goods. I asked him who he sold them to. He said he sold them to the gentlemen who bought my goods. I asked him who bought them and he told me who they were; he told me some went to Fleck & Hillman. I asked him, "Did they buy them or did you give them to them?" He said they bought them. I said he would have to show me. "What did you ask them for the goods this week?" He said he did not ask them anything, he just gave them the goods and would settle the prices Thursday. I said, "They are my goods and I guess they will settle the price now." But he didn't. I told him to call him on the 'phone, and he said he would see me at ten o'clock in the morning. So at ten o'clock I met these gentlemen and told them I understood the system was to turn them over to the shipper, and he added three cents a pound because the shipper turned them over to another gentleman who added ten cents a pound because somebody else got them, and then they pooled the profits and divided the money among themselves and charged me five per cent. for doing it, but I wanted exactly what my goods brought, less the five per cent. I figured it out that it made $225,000 or $250,000 on the year's business, and I demanded that money. They told me they had $750,000 in a trust fund, I could do anything I pleased, they were not going to change their system. They were strong politically, and would not change a single thing. If I shipped to New York I must ship to them, I could not ship to anybody else.

Being an American, I did not like it very well, and I got this man Baff to withdraw from the trust and to sell my poultry and we estimated what it was worth and I paid him well for doing it. Well, immediately, there was a row started. And I went down to William Grant Brown's office and drew an indictment of what was going on, a statement of the facts, and took it to Mr. Whitman's office. He assigned Mr. Dufore, who was his assistant, to the case, and he immediately took the case up. He asked me how they could catch the thieves, and I told him that usually criminals were cowards and if he would call them into the Grand Jury room, one at a time and examine them, they would no doubt turn State's evidence. He did so. He called first a number of the men on the list and each man applied before the Grand Jury to be allowed to turn State's evidence. Ninety-three were indicted for those frauds. They had been feeding the poultry ground limestone and other things with corn meal in, across the river, so that they were really doing the feeding in Jersey, and in that way they got about three to six pounds fraudulent weight, or two to three thousand pounds of fraudulent weight on a car, and

got anywhere from six to eight cents a pound profit, and were spending money freely, like men of that kind do when they make money rapidly.

After a long trial, the State paid Mr. Dufore $50,000 in one retainer, and they had other able counsel to defend them and they were found guilty, and they appealed to the Appellate Division and they were found guilty again, and then they went before the Court of Appeals.

Now, it was getting serious. Baff was doing a large business. We had opened up the fraud and there were people like myself who were willing to send their poultry, and the business ran up from 5 cars to 150 cars a week or about 7,500 cars per year. And they were getting good prices. While they were not big prices, yet they were good, and they were cutting the prices sometimes as much as two cents a pound, but still he remained there. As a result of this they said, "Those fellows are going to take this business and ruin us people and we must do something." And we got letters. I, for one, resolved to spend my money. So one evening, the twenty-third of November, Mr. Baff and I were around in the market place talking, when he was called out—someone wanted him on the telephone—and he came right around to his office again, and, about fifty or seventy-five feet from me, he was assassinated, shot down, as you have probably heard, with three or four bullets in his back. It was still light, but the man walked away. There were 1,500 people in that market and we could not find a man to tell us whether he was black or white. That rather put a chill on things. We had two labor union men. So they decided those men were in the way, and they killed both of them. They arranged those things at Mazappa's saloon, where they had drinks, and so that Mazappa would not talk much about it, they shot him.

But things grew better. We still have poultry coming in, 150 cars a week, and have the producer and the consumer closer together. Mr. Baff's son still carries on the work. Thank God, there will be a wide open market and the consumer will get the supplies at the least possible cost if there is anybody like John J. Dillon to give it to them. I thank you. (Applause.)

President Frelinghuysen—I trust some of the delegates will make a motion to tender Mr. Emerson a vote of thanks for his splendid address.

Mr. Woodruff—I make a motion that we tender the gentleman a vote of thanks for his address.

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

Mr. Emerson—You want to know what is being done over there and I have tried to tell you, and perhaps where you can help along the work of Mr. Dillon is that you can realize that New York is your market for your surplus stuff, and very largely there we set the prices for you that you get on the balance of your stuff. If New York is high you get better prices at home, in Philadelphia and elsewhere, in the other States, Rhode Island, Connecticut. And if you would be of assistance to us in bettering these conditions, you might have passed a resolution endorsing the work done by the Department in trying to open the market and bringing about a lower cost of handling and better conditions generally. I know you folks are all marketing fruits and vegetables and you want a centralized selling power and want to get what the goods are worth, and we are trying to get it for you.

President Frelinghuysen—The request of Mr. Emerson will be referred to the Committee on Resolutions.

The next matter on the program is "Railroad Transportation," by Prof. Blake. I will introduce to you Prof. Blake, who needs no introduction to this audience.

Prof. Blake's Address.

Mr. President, ladies and gentlemen—I have not gone into the railroad business. Your Secretary asked me to come down here and, in a few words and a few moments, to say something about the railroad transportation side of the shipment of our perishable fruits.

New Jersey is close to the large Eastern markets, and a great deal of produce may be hauled in by wagon or truck. But, still, the great bulk of our products must depend upon the railroad for transportation to market, and, when we stop for a moment to consider the fact that 1,400 carloads of berries were grown in one small district in this State and shipped over one line of railroad this year, we get some idea of the size of the problem, even though we do not take into consideration either the carloads of tomatoes and the carloads of peaches and other perishable products.

The railroad question is important. What do we demand of the railroad at the present time?

An adequate supply of cars; especially refrigerator cars, cars that are well built and clean and ready to carry the fruit to market in good condition.

Rapid transfer from shipping point to market.

Prompt delivery means fruit in better condition, means better prices.

We also demand a system of checking cars and shipments so that we may know where a car of fruit is at any time if we should want to change the route.

And we need fair freight rates.

Are we doing all that we can to study or to improve the question of transportation by rail?

What is the other side of the question?

In the first place, this fruit must be picked at the proper stage of maturity. Fruit markets are no longer large enough to handle our crop of perishable fruits and produce in favorable seasons. If we are to succeed we must be prepared to reach all available markets, and that involves railroad transportation. The farther these fruits have to go before they are sold, the more important the stage of maturity and the handling of the crop.

How do we estimate the number of cars that we are going to need? How do we prepare for this rush of shipments? When we stop for a moment to consider, nearly all of our produce goes to market in three or four weeks. This is true of our strawberries, true of our raspberries. Do we order those cars from the railroad several weeks in advance so that they are ready? Or do we depend upon them to give us an estimate, in whatever way they can, how many cars we are going to need? Or do we wait until we need the cars, on the very day of shipment, and then expect to get them? One would not care to keep a lot of horses in the stable idle, because it is expensive. Neither can the railroad afford to keep several hundred cars on the siding waiting for business. We need to have a good means of estimating the crop from a certain district and of knowing when it will go to the market.

Can we assist the railroad in this? One way is to have an orchard survey of our little district. For instance, a peach survey of the Hammonton district last year showed that there was about 5,000 trees of Comets variety, about 13,000 Belle of Georgia, about 13,000 Carman, and more than 32,000 Elberta. Any man who gave a little study to the situation, and the period over which the ripening of these fruits spread in New Jersey, could estimate the number of cars that will be ready to move at a certain time. Suppose that one man is in charge of the ordering of those cars, having them on hand, and find out where they are to go, and makes the arrangement with the freight agent. On the other hand, as it is, twenty different men go to the freight agent on the same day, and try to arrange for cars. Perhaps we can imagine how he might look at the end of the day, trying to get this arranged.

But, in doing all this, the large grower is spending time—taking it away from the problem of growing and getting it ready. It would seem as if we could do this more effectively through one man.

Another great problem of railroad transportation is, having these cars properly loaded; having these cars made up of standard sized goods. Suppose, for instance, that we send a car to New York or to some other point, made up of a dozen or more different varieties, consisting of individual shipments from fifteen or twenty growers. It is difficult and expensive to check up all these small details. The man who wants three or four hundred crates of peaches to sell quickly wants them ordinarily alike.

We need to standardize the growing in any given district, according to the few varieties that we can grow best, and ship them in carloads. The difference in the carload rate is quite an advantage over the part carload rate. From Vineland to New York, during the past season, there was a difference of three and a half cents a crate. This seems a small item when we consider

one crate, but a number of growers who coöperated shipped over 43,000 crates, and that was a small portion of the freight, on each crate, but it amounts to considerable when you take on the bulk.

Carloads can generally be sold for a much lower commission, at least from three to five per cent. lower than part carloads. Then, it is economy to ship in carload lots. This means coöperative shipping in a great many districts, combined shipments. One man may be two or three days in loading a refrigerator car. The fruit that he puts in first is ripening, it is deteriorating, it is costing him additional amounts of ice to keep that car on the siding. Two or three men working together could fill the car promptly and start it for the market. It does not cost any more money. It sometimes seems difficult to organize those shipments, but that is what the shipping agent is doing and has been doing in a great many districts in this State for several years. For instance, in some of our small sections or centers where there are many small growers, there are several shipping agents representing a certain number of commission houses. These small shipments come to the station, they are organized into carloads, they receive the carload rate of freight. Do those small growers get the advantage of the carload rate? Not at all. Whatever difference there is between the cost of loading those cars and advantage in the freight rate goes to the agent. For instance, a difference of three and a half cents a crate would be $16.50 a car of five hundred crates. It would take two men not over an hour or an hour and a half to load one of those cars that is loaded for New York. So the difference between the cost of those two men for an hour or two and $16.50 is profit to the commission man or the agent. Why can't we collect these small shipments into carloads just as well as the agent, and send them that way? This is one way in which we can economize on the cost of shipping the fruit to the market.

But, after all, the important thing, to my mind, is this: We have a large perishable fruit business organized in the State; there are times when certain markets need the fruit much more than the nearby markets do, the price is better. We ought to be organized and prepared to supply those markets. But, it cannot be done in twenty-four hours' notice. I heard a story the other day which struck me as particularly appropriate along this line. It is said that a number of potato growers and the agent of a seed house were talking in the southern part of the State recently, and one potato grower said that the bugs ate his crop up in two days and it was too late for him to plant more. The sales agent said that was bad enough, but up at their warehouse the bugs had been going over their books for three weeks to find out who ordered seed. (Laughter.)

You ought to be forehanded. Start in early enough to be ready. During the past season, at Vineland, a number of growers formed a little association and tried to take advantage of the carload rate and of reducing the cost of commission and of being prepared to ship to outside markets. They engaged a distributing agent. This distributing agent had full power to order the necessary cars, order the necessary icing, and took full charge of all of this work. The grower did not have to worry about whether there was an iced car at his shipping point or not, the sales agent saw that it was there. Under

the old system these crates of fruit had to be delivered at the railroad station at three o'clock in the afternoon or they were not accepted. Very few growers could get all their fruit delivered at the shipping point at three o'clock in the afternoon, and the only thing to do was to leave the fruit on the trees to continue ripening or to leave it in the hot packing-house, where it would suffer. The growers who worked together saw that there were two or three cars after the time that the fruit would leave, so that if a man arrived at the station late, the loading could continue and the cars were iced so that the fruit would be held in good condition.

The rural telephone service is not always dependable. This distributing agent was supplied with a motorcycle, so that he could get from one grower to another on prompt notice.

I could go on and tell you of a great many benefits that might be secured in this way. I think the main point, after all, is that these men are trying to understand the shipping business so that they may ship promptly to any point where the market conditions seem to indicate the shipment should go.

I have wandered a little from the subject of railroad transportation. There are a few things in regard to cars. There have been a great many improvements in the insulation of storage houses, and we would like to have those improvements in refrigerator cars, so that it would take less ice.

If we could organize a steady and consistent shipping business from any point, the railroads ought to be interested to help out. Last year the distributing agent at the Vineland point distributed nearly a hundred carloads of fruit. Not a single crate or car went astray, due to the earnest coöperation on the part of the railroad. He sent a message at night telling how many cars were moving, where they were going, the route of several cars was changed after they left the shipping point, and by close coöperation with the railroad he was able to keep in touch with those cars that he had sent out. After they had left his hands, he could still transfer them from one market to another.

I wonder if we are doing all that we can to estimate the number of shipments that may be moving from a given point and to organize the railroad transportation? We are going to need it and we want to be prepared if we have a heavy crop of fruit to reach distant markets.

I think we might take a few minutes now to see a few of the slides that will show some of this work.

It is important that we have cars of a certain length if we are to load certain crates well. The large fruit growers' dispatch cars that are used in the South are very easily loaded. Some refrigerator cars do not load well with crates two feet long, and a space is left in the middle which requires the bracing of the crates.

I think if we made a closer study of this problem of shipping, and coöperated with the railroad, that we could improve on our shipping conditions. At many points in New Jersey during the summer you will find hundreds of refrigerator cars in service. This picture shows one of the points where these cars are being iced. At several points the cost of icing is increased, because there is no adequate means of icing cars quickly. They have to be iced by hauling the ice. In the summer the direct icing of cars at Vine-

land costs about $4.50 a ton for ice, and the railroad will ice those cars in transit, re-ice them for $2.50 a ton, because they have an icing plant and an arrangement whereby they can be iced quickly. At some of those points where they are shipping out hundreds of carloads of perishable fruits, perhaps we ought to study the icing proposition. Where the ice has to be hauled separately to the cars and hauled up by hand the cost of icing must be expensive.

We have been doing much to attempt to standardize our products, but we can improve upon our present conditions. We need to have the fruit large and well colored. We need to have it of a standard size in a given package. This assists in the sale of the fruit. Suppose you send a carload of fruit to New York, all of the same grade and of the same variety—it does not take very long to sell such fruit. It makes a nice reputation for itself and they want more. Suppose, on the other hand, we send a carload of fruit to New York with the fruit large and small, mixed together, representing different varieties, in different stages of maturity. It is not a very profitable car to handle from any standpoint. We could study the standardization of the fruit to great advantage.

We ought to send this fruit to market in clean packages, new packages. We are not adding to the reputation of nice fruit when we send peaches to the market in poor crates—some damaged, second-hand, old, and some even tomato crates. Some of our growers are making reputations for New Jersey in the quality of the fruit. Let us put it in good packages, put on our own labels, and advertise our own district.

We need to understand the packing of these crates, whatever they are, to see that when they are loaded in the cars they will arrive on the market in good condition. Slack packages will not make up for careful handling on the part of the railroad.

We are studying the question of economy in picking. We are trying to find any appliance that will enable us to fill up these crates faster or to handle the fruit in a more economical way.

One of the common methods of loading the crates in cars for New York is to lay them in the cars and cross them in alternating layers; and, in this case, no refrigeration is demanded. It is not safe, however, for cars going farther than New York or beyond New York. They must be spaced so as to provide for good refrigeration.

The critical time in the refrigeration of fruit is the first few hours after it is loaded. In order for the fruit to keep it must be kept at a low temperature. If it remains hot it ripens rapidly, and after it is ripe it cannot be held in good condition for any length of time. The critical time is the cooling of that fruit when it is first put in the car. The proper spacing of the crates is necessary for good refrigeration.

These facts should be in the hands of all shipping distributors. If we have a distributing agent who makes it his business to look after shipments from that section he could see that that is properly done. I said that we needed good refrigerator cars, well insulated and of good length. This is one of the so-called Fruit Growers' Express Cars, taking sixteen tiers of crates and ending up perfectly at the door. That does not require any extra bracing.

This shows a nearer view of the car, showing you how these crates come together at the center without any bracing. These Fruit Growers' Dispatch Cars used in the southern trade are very much better than are almost any others. They are better built and are the kind we want.

This is an illustration of a shorter car, taking only fifteen tiers of crates, but it comes out fairly even. The inside measurement of a refrigerator car should be just about a foot longer than an even length. This car does not show up as well, but there is a space of about two feet between those crates. Unless that car is braced properly it will not arrive in condition.

All of these are facts and principles that need to be considered in the railroad transportation of fruit.

We need to unite our growers so that they will ship in carload lots to take full advantage of the freight rate and economy in selling in large lots.

A distributing agent with a motorcycle can often carry information when the telephone is out of business. He can also go to the orchard, and he can move around quickly and can go any place where it would be possible for an automobile to go, and many places where it would be impossible to go with an automobile. This is a quick way of getting around.

The distributing agent will have his loading agents at the various points, and will be able to check up the shipments as they are being loaded in the car.

At the end of the day, or just before they are shipped out, he makes up his billings, his shipping sheets should have the number of crates in each car and the grade already figured out, and he simply has his totals to make. He is making arrangements in this picture with the sealer of the cars for the final sending out of these loaded cars.

I suppose one way to get around some of our problems of shipping and of packages would be to grow peaches so large that we could ship them in bulk. But at the present time we need to give little study to this shipping situation.

I believe that we can greatly assist the freight agent and the other employees of the railroad by giving them definite information as to the crop in a district, when it will move and what we need, and the details that he will need to condense the question of cars, and the icing and placing those cars for icing so that it would be in the hands of one man, one railroad man. One distributing agent can do more business in one or two hours than twenty-five or thirty men can do in a day, because the whole thing has been condensed, the number of cars known and the freight agent has definite word as to how many are wanted.

We must study this transportation situation. The amount of products which we are growing and sending to the market demand it. The man who depends upon the small local market and the fancy fruit store for his market, large enough to handle the product, may find that he is without a market at the time he most needs it. (Applause.)

(President Frelinghuysen relinquishes the chair to Vice-President Cox.)

Vice-President Cox—The next question here is one that will

be treated by Dr. Kenyon L. Butterfield, President of the Massachusetts Agricultural College, which has been entitled "A Survey of the Situation of To-Day," which will be followed by "The Next Steps in Rural Progress." I will now introduce to you Dr. Kenyon L. Butterfield. (Applause.)

Dr. Butterfield's Address.

Mr. Dye asked me to make a very brief report of the National Conference on Marketing and Farm Crops, which was held in Chicage early in December, and I will take just five or six minutes for it. The conference was the third of its kind that has been held on a national scale. When the roll was called, there were only four States that were not represented, and it was estimated that six hundred persons attended the sessions, of whom about four hundred registered and presented credentials.

This conference considered rural credits as well as marketing matters, and the committee reports cover the policy of the conference with regard to rural credits, but that does not come in here today. It will take too long even to read all the resolutions in regard to marketing, but it may be interesting to make a few quotations.

In regard to marketing, the first thing to which attention was called was the need of standardization, and that seemed to be the thing that was emphasized, perhaps, more that anything else. Prof. Blake has said that the first thing is to have farm products graded so that people will know what they are buying. The conference recommended that Congress immediately provide by law for Federal inspection of commodities of large volume, such as grain, hay and cotton, whereas such inspection is now conducted under State law, or under rules of commercial bodies, to the end that by such public inspection the classifying and grading of the articles of interstate or foreign commerce may be made uniform.

In the second place, the conference approved the employment of governmental agencies for collecting considerable information regarding farm products, but urged that these records be made more accurate, and insisted that equal attention be given to collecting and the disseminating information that will reflect the rate of consumption of farm products. It was recommended that the Bureau of Foreign and Domestic Commerce and Office of Market be provided with the means required to collect and dissemniate the information which will enable the producer fairly to trace and distribute his products and to distribute widely, and that this information be furnished while the farmer has produce to sell, not after he has sold it.

There was a strong resolution in favor of the organization of State marketing commissions. Fourteen representatives of State marketing commissions met in Chicago and formed an organization. The conference urged that these be organized in every State.

The next item was terminal markets, and the principal thing brought out there was the need of Federal legislation for interstate shipments, which will require commission merchants in their reception of farm products on

consignment, to keep a uniform system of accounts, giving each shipment in brief reports, showing the date of receipt, the date of sale, the name of the purchaser and the price, and to keep such records open at all times for the examination of the shipper or any State or Federal official.

Then there was the Committee on Permanent Organization, which advocated the organization of the American Agricultural Organization Society, this society to have for its purpose the examination of methods of production and distribution of farm products with a view to perfecting a system of greater economy and efficiency in the handling and marketing of the same; the encouragement and promotion of storing and marketing produce; the economical transfer of produce from the purchaser to the consumer; the efficient organization of the business of agriculture, and several other things in the way of issuing reports and pamphlets; the development of coöperative marketing and work with educational institutions and departments, etc., in regard to agricultural business and marketing.

That is rather an important resolution, because it is quite probable that some such organization will be developed in the very near future and it will serve as a sort of a central clearing house for the whole marketing proposition of the United States, working, of course, with the Bureau of Markets in Washington and with all the existing agencies possible.

Now, as I understand it, you want me to go ahead with the other subject.

Mr. Chairman, ladies and gentlemen—It is a great pleasure to be here to-day. I am quite sure that some college presidents talk too much. I recall a little saying of a friend of mine, a college teacher, who occasionally quotes a remark of Bernard Shaw to the effect that "those who can, do; those who cannot, teach," and then he adds, "and those who cannot do either are made college presidents."

About twenty years ago, when I was active in work of this kind up in Michigan, trying to organize farmers' institutes, I attended a meeting of men who were managing farmers' institutes in this country. At that meeting I met for the first time the man who for all these years has been your Secretary of this Board of Agriculture here in New Jersey, Mr. Franklin Dye. He was kind to me and I learned to respect him, and to have a great affection for him, and when he wrote a little while ago saying that he was getting to be nearly eighty years of age and asked me, as a personal favor, to come down here and talk to you, why I simply had to surrender. I am glad to be here to-day for his sake, and to speak this word in regard to this long friendship, to me a most delightful one. He asked me to speak on some subjects that may be grouped under the general title of "The Next Steps in Rural Progress."

As I think of this subject, my mind goes first of all to a famous statue that you will find in the little village of Concord, Massachusetts. It is called "The Minute Man." It represents a stalwart young farmer carrying a gun, but with his hand still on the plough handle, just ready to leave the furrow to fight for liberty. Most people think of it as the figure of a soldier; but it is not the figure of a soldier. It is the figure of a farmer who was called upon to be a soldier and proved himself a valiant one. It is the figure of a man who typifies thousands like him, not only in New England,

but here in the Middle Atlantic States, and down in the Carolinas, who, a few years after the revolution, began that wonderful westward movement which went on for sixty or seventy years and at the end of which time a great continent had been subdued to civilization. The greatest conquests that the world has ever seen in so short a time have been made by the American farmer, and the great prairies and forests and plains of the west have been brought under the yoke of the plow and the plowman. That was the first great rural movement in our country, and one of the greatest of all times. It was effectual, solid, satisfactory, constructive.

As time went on, it proved that that movement had gone on perhaps too rapidly. The mouths which could consume the products that came in trainloads and shiploads across the continent had not yet been provided, and dissatisfaction arose among the farmers both east and west. The eastern farmer had to meet the competition of the west. The western farmer felt that he did not get enough for his product; that the railroads were overcharging him; that the middlemen were not treating him fairly either when he sold or when he bought. And so we had forty years ago the greatest farmers' movement of the time, which resulted in the organization of the Grange, which resulted in the development of the Farmers' Alliance and all the other great economic and social and even political movements of those decades. And if any of you are interested in the causes—speaking non-politically—what we call the great progressive movement of to-day, you can trace them back to this same period.

Mr. Emerson spoke about the fact that the railroads had a place where they could get adjustments made if they felt that they were aggrieved. He said that the railroads and the other people are not saying what they said forty years ago, "the public be damned." No; the railroads have a new point of view; they have accepted the principle that they are at least quasi-public servants; they must serve the public. But that principle was first enunciated by the farmers of America and was the backbone of what is called the Granger movement. Out of that farmers' movement have come great economic changes and even political changes.

To-day we are having a new rural awakening. During the past twenty-five years we have accumulated a great bulk of new knowledge concerning agriculture, especially concerning agricultural production The Agricultural Experiment Stations, the United States Department of Agriculture, hundreds of thousands of investigators, quietly at work, have made a new agriculture, so that to-day the man who farms skillfully uses knowledge that was not dreamed of twenty-five years ago. The old agencies like the Grange and the Colleges and the Experiment Stations and the Boards of Agriculture are still doing greater work than ever before, but new agencies have come into view, the county farm bureaus, and newest of all, and in some respects most efficient of all, that marvelous piece of educational legislation, the Smith-Lever bill, which gives every agricultural college in America the opportunity to make the whole State its classroom. This I believe to be the greatest piece of popular democratic educational legislation ever enacted by any country.

We have other agencies coming on rapidly. I had occasion the other day, up in my own State, to make a list of agencies in operation in Massachusetts. When I went there ten years ago there were only six or eight; I made a similar list of the new agencies, and there are twenty-five or thirty of various kinds, doing all sorts of work. These new agencies mean new plans, new schemes; some of them are not good, some of them are; some of them are foolish and some of them come out of inadequate knowledge.

Nevertheless, the fact is that the agricultural world is alive with new schemes—some of them good, some of them poor—but alive as it had never been before. We are out on the broad highway of a new rural awakening, and what are the steps we ought to take if we are to follow on right lines and not make worse farmers? Well, there may be a great many—perhaps somebody else may speak of different things—but I shall speak about a few of them this afternoon. I believe we should make every effort, we who are connected with Boards of Agriculture or with the colleges or with the Grange or with the old and tried educational societies, should make special effort to urge the farmers to utilize more fully than they do to-day existing agencies and existing knowledge.

You know, as well as I do, that there are great masses of our farmers, East, West, North and South, no matter where you go, who do not take advantage of these things. Some of them are still faithless as to the value of this new knowledge; some of them still decry book farming; some of them take no stock in what is said to them by the expert or specialist. A gentleman in my hearing only yesterday, in Massachusetts, said that he knew of neighbors of his, farmers, who would buy fertilizer costing sixteen or eighteen dollars a ton, and when they were asked why they bought it or what it contained, they said they did not know what it contained, but it was rather cheap and they thought it was a good bargain. Yet for over thirty years fertilizers have been analyzed in Massachusetts and the knowledge published broadcast, and every effort has been made to show farmers the value of the information as to what was in the fertilizers, because everybody who was intelligent realized that there were differences and the price did not always tell the difference.

A man told me not long ago that the University of Wisconsin a few years ago made a canvass, a pretty accurate census of the number of farmers who were reading the Experiment Station bulletins, and the percentage was distressingly low.

We still have farmers, plenty of them, who are taking no pains whatever to inform themselves of the things that to you men have become the very A, B, C of modern successful farming. There are plenty of farmers who do not take advantage of existing agencies for agricultural education, who do not go to farmers' institutes, who do not belong to a Grange, who do not take very many farming papers—some of them none at all—who are not in touch with the new methods of extension work. That number is growing less every day, and yet you could go, I think, into almost any State in the Union, and you would find altogether too many who do not utilize these existing educational agencies.

Sometimes we are charged with having too many of these educational agencies. I remember that at a meeting in our State last winter, one of the farmers was heard to remark that it had gotten so that it took six men to show him how to grow a barrel of apples. It is quite possible that we have multiplied these agencies too much. I am inclined to think that we are in danger of doing it, and something ought to be done to simplify the machinery. Nevertheless, the other thing is the thing that is more difficult to handle, that there are still too many men who do not listen to the best advice in regard to how to grow or pack or ship a barrel of apples.

Now, I am going to make another suggestion along this line that may not be particularly popular, and that is, farmers should be urged to take greater advantage of the help which the cities are now bringing to agriculture.

I know a good many farmers who say, "We don't want the help of the cities. We don't want it because it is not disinterested. They are working for some scheme. They are working for something that will serve their purpose. We do not want it because it is not intelligent. They do not know what they are talking about. They cannot come out and tell us what we ought to do or how to do it." I will admit that these things are very often true. The ignorance that is manifested by men who have not studied agricultural improvements and who are still handing out panaceas for the solution of the rural problem is sometimes amusing and sometimes disheartening to us all.

It will never do for the farmers of this country to take the attitude of ignoring the consumer, ignoring the people who are tremendously concerned about the future food supply, its quality, its quantity, its price. There must be an adjustment between production and consumption. There must be an adjustment between the producer and the consumer. Is that adjustment that we are trying to bring about righteous and fair? I believe there are two parties to this whole agricultural business, the party who produces and the parties who are interested in the production, because they are the consumers.

In the city of Springfield, a city of about a hundred thousand people in Western Massachusetts, there in the Connecticut Valley, a crowd of business men have successfully been devoting themselves in the last two or three years to see what they could do for agriculture in Western Massachusetts. In the first place, they were the main factors in organizing the Hampden County Improvement League, and a number of these business men gave freely of their time and of their money in order that this improvement league could be put upon its footing. Before that time the Springfield Chamber of Commerce had had a very active Committee on Agriculture. This Hampden County Improvement League now has paid out of private funds, State funds and Federal funds nearly twenty-five thousand dollars and has a staff of six or eight people at work. The backbone of it so far has been the earnest, self-sacrificing, intelligent work of this little group of business men who are seeking to draw together the farmers and business men, and they have been carrying on an advanced, earnest, intelligent campaign for better farming in that county. A little while ago some of these same business men added to this an exposition, and they, by themselves,

organized the Eastern States Agricultural Exposition and planned to hold an exposition annually in Springfield. A few weeks ago this same crowd of business men, aided by still some more, and backed up by representatives from other parts of New England, went out to Chicago, and, in the face of almost sure defeat, captured the National Dairy Show and brought it from the West to the East for the first time in its history. (Applause.)

Of course, we, in Massachusetts, are glad it is coming to that State for this year; but I tell you the farmers of the East ought to feel that this is something that is worth while not only for New England, but for the eastern part of the country, a real triumph, and I believe if the thing is managed rightly that it ought to prove of tremendous assistance in the forwarding of this new movement on behalf of agriculture here in these Eastern States. The backbone of that work, I am perfectly willing to say, was this little group of business men, who took their time and their money and put in their energy and their effort and their experience in trying to bring this thing to pass, and it never would have been brought to pass without their aid.

Now, there must be developed a spirit of coöperation between these organized forces representing agriculture and business and other interests of the city and the State. There may be times when no compromise can be reached, no coöperation can be had, when the farmers' interests must be protected, even if they have to fight for them, but, I believe, in the long run the farmers should take advantage of these offers of assistance that come from the intelligent, earnest, honest business men of the State, and you will find plenty of them who are ready to help.

The farmers should think more about their larger citizenship and the duty of exercising a larger influence in the affairs of the time. I know perfectly well that the farmers of this country have exercised more influence upon the affairs of the nation than anybody, than they themselves are perhaps willing to admit. When it comes to the time of balloting, I think that national policies and the election of men in political life to represent the people in carrying out those policies, can be credited more completely to the farmers, by all odds, than to any other one class. If you stop to analyze the vote by which members of the Legislature, Governors, members of Congress and even United States Senators are elected in this country to-day you will find the rural vote predominating under our district system. And it is not without significance that President Wilson, in making his tour in order to arouse the country to what he regards and what he believes to be the best program in regard to preparedness, should go out into the great heart of our agricultural country, because he knows that while rural public opinion is often silent, it is effective. At the same time I feel that rural public opinion ought to be more vocal, to use one of his favorite words, that it ought to have more to say about large policies. I think that it can do this through even more thorough organization. I have been a member of the Grange for more than twenty years. I know something about the way in which the Grange has voiced the opinion of the farmers of the country, and is doing it still; but I think there is still room for good work, advanced work, along that line. I think the farmers should insist that they should participate more fully in the business of the country.

A good many years ago Prof. Bailey, who speaks to you to-night, called attention to the fact that it is a very rare thing for a business man's body, as the Chamber of Commerce or Board of Trade, to have on it any man representing the great industry of agriculture To-day, although agriculture is still our largest business, there are few gatherings of business men in which agriculture is even represented, to say nothing about being adequately represented.

The time has come when the farmers of America should insist that the business machinery of this country, the business organizations of this country, should take into consideration more fully than has been done before, the interests of the largest business in the country, because agriculture is related both to the welfare of the farmers and the welfare of the State and the welfare of every business of the State and city.

Now, the business of the farm is related to both the farmer and the business interests of the country, and I think it behooves the farmer to have a larger share in dictating business policies. I should like to see the farmers, as a group, more of a factor, not merely when the silent vote comes, not merely in the enforcement of silent public opinion, but in the shaping of policies of national character. I believe that here is one step that can be taken by the farmers. By adequate organization they shall get a larger voice in the adjustment and in the decision of questions of general public welfare.

The farmers should join together more completely in making big plans for big results in agriculture and country life. I believe that we have not yet quite done enough thinking as to what the rural problem really is.

If you were to go out to-day and ask that same question of most farmers or farmers' organizations, or even Agricultural Colleges and college professors, I think you would find the answer not so much that of increasing production as you would that of better distribution. You would find that the problem that Mr. Emerson is engaged in, the problem that Prof. Blake has spoken about, is the one thing that to-day the farmers are feeling is the most present defect, perhaps, of the time. And yet, we wonder if that, after all, is all there is to the rural problem. I don't think so. It seems to me that it is well for us, no matter how important these particular things are, to look at the thing in the largest possible way, and I believe we have got to look at the farm problem in all its aspects.

It is partly a matter of production. We can never have the best agriculture in America until every acre is used to its best capacity. American agriculture can never be all that it ought to be until the farmers are skillful in getting out of each acre all that will come out of it. On the other hand, the individual farmers can never be successful unless they, just as the better farmers are now become skillful in their management of the farm, because the management of a farm, the actual working out of a farm, is not the same thing as skill in growing apples or in growing vegetables. Any man who has half an eye knows perfectly well that the most skillful farmer is sometimes successful, not because he is so much a better grower than somebody else, but because he is a good manager. And so we have that separate problem.

There are thousands, tens of thousands, yea, hundreds of thousands of farmers in America who can grow wheat, and cotton, and corn, and, perhaps, even grow vegetables, but who are not good managers, and do not make a success of it simply because they do not understand the fundamental principles of business management.

Then we have the problem of distribution. We have a wonderful system of transportation. It is one of the means of bringing the products of the Pacific coast over here to the Atlantic coast and selling them at a low rate. We have a great development of storage warehouses, and most marvelous machinery for the distribution of farm products; and yet, in spite of that fact, every man who has studied the subject, every man who has been connected with it from a practical point of view, joins in saying that our system of distributing farm products is unsatisfactory, that it is costly, that it is clumsy, that it is not economical. Undoubtedly, one of our great problems to-day, perhaps the most pressing single problem, is the simplifying and making efficient of this machinery which distributes farm products.

But that is not all. What are we living for anyway? What do we want better production for? What do we want greater profits for? We know well, when we stop to think about it, the interests of the farmer, the necessities of his life, the necessities of his wife, the necessities of his children, that whole range of things dealing with rural living, constitute the fundamental thing, the great thing that we are all working for.

We want better education, better rural schools, better means of recreation. We want to make sure of the normal conditions. After all, our country towns and open country life are not all they ought to be. We want to provide all those things that make life really worth living. We want to make sure that conditions under which boys and girls come to young manhood and young womanhood are all they ought to be, that make for the building of good character; that make for moral stamina; that make for education, intellectual enlargement and enjoyment. We want to make country life just as strong, just as fine, just as rewarding as even the best city life can be, but are we doing it? We know very well we must do it if we are to preserve American agricultural life on a high plane.

So, I say, we must look at this farm problem in the broadest way. We must not be partisans of any one thing. We must think of it in all its aspects. We need a rural policy; and I mean by that we must study as we have never done before to know what conditions are under which farmers work. We must know the conditions of the soil, the relation of the soil to culture, the relation of the different kinds of soils to crops, the relation of the types of farming of America to the market and all other conditions, the labor supply, all of those things that enter as actual, practical factors in the working out of a farmer's job. We know only in part. We have not yet made an adequate study of our rich resources. We do not yet know what is the best use for our land under the economic and social conditions that exist.

We need an adequate plan of improved education, a big plan, a plan that will fit a large area. You take this matter of standardization that has been talked about. While it is pretty hard to standardize and grade

crops unless you have enough of them so that you can do it efficiently, yet I take it that the wonderful success of the California Fruit Exchange is due in no small part to the effect that over a large area oranges have been grown on pretty nearly every farm. With that condition existing it was easy to standardize, easy to grade, easy to grow and easy to sell collectively. Without those conditions it is almost impossible to develop those things.

I spoke about those twenty-five agencies we have in Massachusetts. We must have some way by which the work of these different agencies can be understood; we must have some better plan by which every possible help that can be given to any one of these problems shall be given. Personally, I do not feel that we have by any means yet reached an ideal plan with relation to what may be called the organization of our agricultural and country life.

My time is up, but I want to take just a few moments, if I may, to tell you of the problems in my own State of Massachusetts, because they illustrate what I believe to be the very heart of the thing I am trying to get at this afternoon.

In the little township of Hardwick, a rural community of about a hundred farmers up in the hills of Massachusetts, there was organized three or four years ago what was called a Community Council. A meeting was held, very much like an old-fashioned New England town meeting, for everybody was invited—old men, young men, women, children. They had come together for just one thing: What can we do to improve our town of Hardwick? How can we do it?

To make a long story short, they organized several committees, one on agriculture, one on education, one on the church, etc. Those committees called in experts from outside and they studied conditions themselves, and they made reports, each one of them, and the result of it was another meeting at which those reports were presented, discussed, amended and adopted, and those reports consisted of plans for the upbuilding of that town, plans for improving the agriculture. They said, "We can grow more apples than we have." They said, "We can specialize in a certain breed of live stock," because it was a part of the country where they did not have very many pure-bred cows, and they chose Holsteins. They said, "We will do more. We will specialize in one or two breeds of poultry instead of having a dozen or fifteen." They had plans for the improvement of the schools, plans for the improvement of the roads, plans for consolidating the two churches into one, because they needed only one. They had plans for improvement all along the line. I had a letter the other day from a man who knows conditions in that town, a typewritten letter, single-spaced, nearly four pages long, telling what had been done in that town in those four years.

Don't you see what the principle is? Here was a community that had decided to study itself, to plan for itself, everybody working together to upbuild the community. It was not a theoretical thing. It was not to deal with an ideal or fanciful condition. It was most practical, because it got everybody to work along the line of some general plan for the upbuilding of that town.

I believe myself we will never have the rural progress that we ought to have until every one of the fifty thousand or hundred thousand farming enterprises and communities in this country are doing practically that same thing—thinking out their problems; adapting their soil to the best uses; working together in planning for development in every agricultural and rural line, and planning to abide together and to deal together, to buy together and to sell together, planning to act together as a unit in all those things that make for civilization and the wealth and joys of life.

One thing more. We organized a year ago what is called the Massachusetts Development Committee, made up of representatives of the Board of Agriculture and the Agricultural College, the State Board of Education, the State Forestry Survey, the agricultural school system and county farm bureaus, and on that committee they are all represented, and that Development Committee is trying to work out plans for a comprehensive agricultural survey of the Commonwealth of Massachusetts, so that we will know what we have to deal with. We will know something of the possibilities of the State in agriculture; and on top of that we are trying to work out a plan by which those possibilities can be realized, a practical definite plan which will go over a term of years for the improvement of those conditions to their maximum capacity, if possible.

We are trying to get together the different organizations to see what work each one can do, to see how they can work together, to get each one to map out some large policy or plan for itself instead of working hit-and-miss fashion.

To summarize, on the matter of rural progress I have suggested three matters: first, that the farmers utilize the knowledge and assistance that already exist, utilize them more fully than they do—and I mean by that not merely our best farmers, but all our farmers. That is fundamental. Unless you get that, there is not going to be rural progress.

In the second place, that the farmers of America, the farmers of every State, ought to see to it that through their organizations, and through better organization, they come more closely into the councils of the nation. I mean into those councils that are making policies in our business and development of our industries and our common social life as a great nation.

Finally, they must see to it that in every community, every local farming neighborhood, every county, every State, and in the nation as a whole, large policies are developed that more accurate knowledge and comprehensive knowledge of all conditions the farmers actually have to face shall be gained and spread abroad, and that organizations and associations and institutions shall be made more efficient, working more definitely towards one great end; all working together in one great force for rural progress. (Applause.)

A Member—I am sure we have all enjoyed Dr. Butterfield's most eloquent address, and I move you that a vote of thanks of the State Board be extended to him for his kindness in coming down to address us.

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

President Frelinghuysen—Before entering upon the next subject for discussion, I want you to remember that in a long game there is always a seventh inning, so I am going to give you gentlemen two minutes to stand up and stretch, and the Chair now declares a recess so that you may talk with each other, and please do not leave.

The members then took a recess of two minutes, and the Board was then called to order by President Frelinghuysen.

President Frelinghuysen—The next speaker upon the program we have been waiting with pleasurable anticipation for. There is no subject which is of such deep interest to the farmers of New Jersey as the road question. I have now the great pleasure of introducing to you our Road Commissioner, Col. Stevens, who will speak of the "Road Situation in New Jersey To-day." Col. Stevens. (Applause.)

Col. Stevens then read his address, which is as follows:

Road Problems.

COL. E. A. STEVENS, ROAD COMMISSIONER.

The road problem in New Jersey to-day is the organization and coördination of the work and the recording of results. We have long since passed the stage when it was necessary to persuade people that they needed good roads. Our experience has been long enough to teach us how to build the different types of road demanded by our traffic and for which our locally available materials are suitable. But, in order to secure the results aimed at in the expenditure of public money in road building, it is not enough to merely build a good road. Its maintenance in proper shape to yield the service for which it was built is essential.

In any system of improvement the cost of maintenance will at first be small compared to the outlay for construction. As the improved road mileage increases, repairs will naturally grow until their cost becomes the greater. This consummation was reached in this State about four years ago, its date having been hastened by the phenomenal growth in motor vehicle traffic. Whereas, a few years ago, the cost of repairs was, in the aggregate, small and outlays per mile low, both the total spent and the cost per mile have grown rapidly and beyond all expectation. There seems to be no reason to anticipate any early let-up in this tendency. We must prepare to meet it. Any attempt to check the growth of our highway traffic by excessive taxation or otherwise would stifle and impede the industrial advance of the State of which this growth is a necessary and natural symptom.

Our road legislation belongs to a bygone age. It has done good service in the past, but has outlived its usefulness. As to this, all charged with the

duty of administering the law are agreed, whether they be State, county or local officials. As to the provisions of a new law, there is, however, no such general agreement. To enable you, who are engaged in one of the great industries of the State, and one especially dependent for its efficiency and profitableness on good road service, to judge of the legislative needs of our roads, I shall outline some of these needs and problems connected therewith.

1. A proper system of roads for the State, even with the most efficient expenditure, will involve an investment of some $50,000,000 in new roads. The maintenance of those already built, and the reconstruction of such of them as have proved inadequate, and of those which will do so in the future, will greatly add to this figure. The tax on the people of the State, no matter how levied, will be heavy, and no step that will reduce the burden can be neglected without an utter and possible disastrous failure of the duty owing to the commonwealth. In other words, no one can be allowed to play politics with road legislation or with road administration. The temptation is great, and, unless the people awaken and make their will known in no uncertain tone, the temptation will prevail. Liberty is not the only thing for which you must pay the price of eternal vigilance.

2. So great and important has the work of providing good roads become that the methods of accounting for the expenditure and of stating the unit costs of the resulting service rendered must be standardized, if the full benefit of our experience is to accrue. The need for better accounting has impressed itself on several of our counties and municipal bodies. Unfortunately, but quite naturally, each works out a method of its own, and the results are not comparable. Our repair accounts show great outlays. Much of this is for work that adds materially to the cost and value of the original investment. These items should be accounted for as betterments, and their inclusion in the upkeep charge is deceptive and misleading. So, also, is the practice of reporting as the upkeep charge merely the part of the necessary repair work done by day labor and lumping all work done by contracts. To satisfactorily account for the expenditure we must show what has been done with the money in such a way that all can understand. This can be secured only by uniform methods, and this uniformity must be prescribed by legislation if it is to be attained.

3. The true measure of road service is the cost of providing a good road referred to the unit that will best represent the commercial return of the expenditure. This unit must represent the weight transported and the distance moved; it should also take speed into account. This is hard to do, because the exact value of speed is uncertain. For our purpose, let us call the unit a ton mile at some standard speed. Any given mile will carry a certain number of tons a year at a certain cost. This cost will be made up of the yearly repair charge, of an item I shall call depreciation, being a proportionate part of the cost of the resurfacing which will become necessary in a period of years, and of the interest on the investment. These may not show in the tax bill, but the people at large will pay them.

It follows naturally that a low repair charge is not necessarily a measure of efficient service. Even under the same traffic, the interest and depreciа-

tion on an expensive type may more than wipe out the greater upkeep cost of a cheaper road. When there is difference in traffic, the uncertainty as to the truly economical type becomes greater. Interest can easily be computed, depreciation with a little experience can be estimated, but traffic must be actually counted if the road work is to be intelligently judged. This counting cannot be carried on continuously and its results must be arrived at by a system of averages. This averaging must be done under uniform rules if it is to be of full value. Don't, however, understand me to urge enacting such rules into law. The power to prescribe rules and to enforce their observation, however, is sadly needed. The analysis of road costs will give the cost of providing and maintaining a road referred to the traffic unit—or to the ton mile. It is only by comparison of such results that the efficiency of various methods of construction and maintenance and of the officials in charge can be determined. Our present legislation throws special difficulties in the way of this work

4. We must avoid the mistake of legislating as to details. For example, it has been urged that the establishing of a patrol system be made by law a condition of State aid. The patrol system is by no means established as the best. It has yielded excellent results specially abroad. It seems well suited for macadam roads. I doubt whether it would pay on gravel and some other types of roads. Only after a careful comparative trial of various systems should a decision be reached.

We must avoid, also, prescribing in minute detail how advertisements should be published, contracts made, bonds issued, etc. These should be covered by general statute and not differentiated for each different kind of work. Something should be left to the discretion and honesty of the officials.

5. Most important, however, of all our needs is a road force which, by its moral and technical fitness, will command the respect and confidence of the people. Without such a force, the best devised statute will be of but small value. With it you will get some results, even under an otherwise poor law. Such a force can only be recruited on the basis of permanent tenure, filling of upper grades by promotion and exclusion of politics, and its efficiency can be maintained by no other means than discipline. When, as seems now necessary in all of the important roads outside of a few of our richest counties, the State must bear a considerable share of the expense, if our road system is to be finished at any early date, it seems but right that the officials, on whose fitness the efficiency of the expenditure will largely depend, should be under its control. The men employed should have the greatest freedom in selecting their methods, but should be held to a strict accountability for the results.

I do not believe that we can secure men of the right type unless the selection be made with the sole view of fitness. Until there is such a force on the job, our road work will leave much to be desired; until then, we shall have laws more or less inspired by the theory that their administration will be in the hands of fools for whom every step in the procedure must be prescribed in detail, or of rascals who cannot be entrusted with any power. The futility of such legislation is but too apparent. An illustration may show my meaning. In a recent talk with two distinguished engineering

officers of the navy, the subject of specifying patented devices was mentioned. After some discussion, I asked whether either of these men had ever heard any question raised as to the motives of a navy engineer in specifying patented articles. Neither could recall any such criticism. Yet several States forbid this practice and we have almost every year a proposal that we should do so. If you have the right men in force, you need no such statute. It is worse than useless if you have not the right men, if they are going to swindle the people or allow of such swindling there are plenty of other channels for their exertions equally rich in possibilities of spoilation. All the items of work, including the instant repair of minor defects, should be divided among the members of such a force so that some one designated person will be responsible for every detail. Means must be provided for enforcing this responsibility by strict discipline; this can only prevail in a force of considerable size, and under centralized control.

6. So great a task as we have before us demands careful and thorough preparatory study and systematic prosecution if we are to carry the same into effect without avoidable waste. This we cannot do under our present law. No one has any idea of the system of roads that will be built in this State. A plan has been made of the State highways, and an actual survey was begun. Statutory provisions, however, were found to interfere with the work, and it was abandoned. Few, if any, of the counties have any idea of what their system of county roads will be. There is little or no compiled information about local roads. There is no difficulty in fixing both the State, county and local systems and in arriving at a preliminary estimate of their cost, excepting those arising from lack of statutory authorization. The cost of this work will be considerable, but the expenditure will be amply repaid in the future.

7. After these facts have been gathered, a plan must be formed for doing the work of construction and upkeep and providing the means necessary therefore. For this purpose some financial provision on which those responsible for the work can count would be of the greatest benefit; while not absolutely indispensable, such a provision would make it possible to do the work more systematically and more efficiently. Whether this provision be by an issue of bonds or by a State tax is a matter of financing, not of road administration. I cannot but confess a preference for paying as we go. If bonds be resorted to some provision must be made for meeting the interest and sinking fund charges, as well as for maintaining the roads. The present system of annual appropriations is not satisfactory. If it be decided, however, that it is the only possible method, the custom of restricting the work paid for out of the annual appropriation to improvement and that paid for out of the Motor Vehicle Fund to maintenance should be abolished. Our work to-day should be largely confined to ordinary repair and to resurfacing and reconstructing roads that have proved too light for their traffic unless more means can be provided. Yet under the law the appropriation cannot be thus spent. Let me add here that I do not favor increased appropriations until such a force as I have suggested has been put on the job and has had time to do its work of preparation. Rushing into a big program of construction with our present powers and organization would be going off half-cocked.

Since the foregoing was prepared the Commission appointed by the last Legislature has presented its report and a road bill. Of neither of these have I been able to secure a copy in time to become familiar enough with them to speak to you thereon. I fear, however, from the press reports that the proposed bill falls far short of what I deem necessary for a proper administration of our roads.

I fully realize that my term of service is drawing to an end, that this is in all probability that last time I shall be honored by a request to address this Board. I had hoped, nay I hope, that if I had accomplished nothing else, I shall have led the people of New Jersey to recognize and insist upon the fundamentals on which modern highway legislation must be based. Such a service will be the greatest I can render. To its performance you may be sure I shall continue to bend every effort.

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

Mr. Fithian—I would like to know what the possibility would be of increasing the licenses so that we could get some more road money. He suggested that himself, once.

President Frelinghuysen—I think I will have to rule that out of order. That is another subject—the subject of automobile licenses. The question we are discussing is the question of the maintenance and repair of roads.

Mr. Fithian—Well, maintenance, don't that cover the expense of maintenance?

President Frelinghuysen—The question of the appropriation from the automobile funds, I don't think would enter into it. I rule it out of order, and if you want to appeal you can, sir.

Mr. Parker—I would like the Commissioner, if he can, to tell us the way in which the maintenance of a road is kept up. At the present time there are some roads in part that are all fallen down, and a short distance further on they are in good condition, or when you come to cross-roads they are well kept, in the same county. I would like to know why, if each man controlled the roads, this condition exists. Why is it tolerated in some sections, and how does that condition come?

Commissioner Stevens—The intterpretation placed upon the Requisition law and the Road law together, in order to make them agree in any way at all, makes it impossible for the State to take any part in the work of repair, or do anything about repair until the money necessary to pay for it is actually collected. The counties are practically in ignorance of what they are going to get out of the automobile law. In a great many counties there is a scrap in the Board of Freeholders as to which township the repair money is to be spent in. In some cases the program of

repair is not decided on until July because it is impossible to know until then how the division is to be made.

President Frelinghuysen—Mr. Commissioner, as I understand the law, previous to your administration, the appropriations from the automobile funds were pro rated according to the mileage of State aid roads in the various counties. When you came into office the entire distribution of the automobile funds, which amounts upward of a million dollars, was left in your hands. Was that not so?

Commissioner Stevens—I don't know that that was the condition when I came in.

President Frelinghuysen—At the present time you have the distribution of the automobile funds?

Commissioner Stevens—Yes, sir.

President Frelinghuysen—In 1911, Essex county received $25,000; in 1910, $18,000, and in 1915 she received $100,000. Hudson county, in 1910, received $22,000; in 1911, $17,000, and in 1915, $106,000. Now, the mileage of State-aid roads in Hudson and Essex county is comparatively small. They are mostly county roads, are they not? What is the reason for the large increase of appropriations to these two counties, when other counties in the State have a larger mileage of State-aid roads?

Commissioner Stevens—The question is, I take it, largely on the basis, not so much of mileage as the tonnage miles over those roads. I take it that because a county had built its roads previous to the passage of the State-aid act, and paid for them entirely by itself, is no reason why it should be excluded from receiving aid in the maintenance of those roads. The counties of Passaic and Essex and Hudson and Union and Morris, and, I think Monmouth, have built or secured a very considerable mileage of roads without State aid, and I have included the mileage of those roads. I don't know, previous to my time, what the basis of distribution was, but in my time I have included those and tried to get the results that way.

President Frelinghuysen—The act was originally drawn, because I drew it, feeling that as far as the State generally was concerned, that any money transferred to the various counties for the relief of the taxpayers for the benefit of the State-aid roads, should be distributed on a mileage proposition to repair those roads. Figuring that we would keep those roads which the State was aiding in building in proper shape throughout the whole State, and leave the question of the county roads to the care of the counties that had built them. That plan was revised

and the whole distribution of this fund was left to the Commissioner to make, so that it would be taken away in a measure from the State-aid roads. It would seem to me, in having a State highway system, that probably a greater portion should be distributed to the country roads in country districts, for this reason, the city districts have a larger amount of valuations, real estate valuations, to tax on, and the country districts cannot bear the weight of the automobile traffic, particularly on the main highways, going to and from the pleasure resorts all around the State, that the city districts could. The roads have been built as well, and the damage is greater. Now, after considering this question, it would seem, in view of the fact that there is a million dollars of automobile fees paid into State, to be a question of whether this present plan is a fair distribution. I know Col. Stevens has attempted to be fair. He feels that this is the best basis. The question is to arrive at some correct basis; whether the cities or the richer districts should receive more and the rural counties less, should be determined. It should be the subject of careful thought as to whether that million dollars which is now directly appropriated to the repair and maintenance of roads, is properly distributed when the larger and richer counties get apparently more in proportion than the smaller counties, although they have many of these improved highways.

Commissioner Stevens—I can assure you for myself, and I think I can extend the assurance to everybody who has anything to do with the distribution, that it would be a great relief if someone would tell us what to do. There is no subject presents greater difficulties than that one, and there is nothing that has given me more cause for worry and more cause for dissatisfaction in what I have actually done than that matter of distribution. I feel very much as you have expressed yourself, that the money should be largely distributed in the country; that the object of the State aid is to provide roads in those communities in which the assessment of the total value of the cost of the work against the property would not be justified, and the benefit derived by the cities is in a better access to their markets from the country, and that they should not look to the actual expenditure of money. At the same time the Legislature don't seem to agree with that; they seem to pass acts which make it very hard to keep the money away from those counties. Now, I admit there is room for criticism, and I do accept the criticism in the proper spirit, in the spirit of trying to be of service, and especially so to the country. I feel very much dissatisfaction

at the work done. Without saying so, I can imply dissatisfaction from your remarks, and I agree with you.

President Frelinghuysen—I want to be polite. Is not the situation somewhat like the two old Scotchmen who were both shepherds and engaged in driving sheep, and one man said to the other, "Well, Sam, how is it that when the sheep are in you get the most in; what do you do?" "Well," he says, "the man that has the best dog gets the most sheep."

Senator Gaunt—Col. Stevens, in closing his remarks, said that perhaps this would be his last report before this body. I want to assure him that one of the problems that the committee having in charge the preparation of the road bills had, was the proposition of knowing how to write sections that would retain in office the present Commissioner, the present Engineer and the present Commissioner of Motor Vehicles.

Commissioner Stevens—Since I wrote that I got a copy of the act and found that out.

Senator Gaunt—I did not want the impression to go out that the committee was after any scalps. We want the Board to thoroughly understand the report that the committee has prepared. We are only sorry that it is not printed so that it can be distributed here. I think at the very outset that we state very plainly, and as forcibly as we know how, that that is our aim. The trouble with our roads, as we state in our report, is not with the officials, it is with the system. It is a hodgepodge of the last twenty years of laws. We started out twenty-one or twenty-two years ago, and there has been one amendment after another, and supplements, and now and then a few other things put in, and it almost takes a Chinese lawyer to know how to interpret those laws. And no one knows it better than the Colonel. I am beginning to learn something about it, and I have been studying the question for more than a year.

Commissioner Stevens—Everyone approaches this subject from a different point of view. I have one point of view and someone else another; and I must say that I was disappointed in not finding that discussed in the report.

Senator Gaunt—I hope you and I will be working together in passing road bills for a long time to come.

President Frelinghuysen—Is there any further discussion on the subject?

A Member—I have understood that Senator Gaunt has a bill on this matter. I know nothing about it, and if it would not be out of order I would like to hear the bill read.

President Frelinghuysen—You have heard the request of the gentleman from Bergen?

Senator Gaunt—You cannot get me to read the bill. It is too big a job. There are several bills. I have been wading through that mass of stuff for the past two or three months, about three or four times a week, and the subject to me has almost become a chestnut. I can give you briefly an outline of the bill.

To start with, a year ago, it was one of the problems, and was considered one of the most important ones for the Legislature to take up. It was sent to a committee.

We immediately began the preparation of the bill at the last session of the Legislature. We had the coöperation of the engineers and a few other gentlemen who were willing to assist us in that work. We soon found that the problem was too big a one for us to finish at the last session of the Legislature. We tried to frame a law, but we were not sure that it was what we wanted placed on the books, and, instead of reporting the bill, I reported to the Senate a substitute authorizing the President of the Senate and the Speaker of the House to appoint a committee; it was a joint resolution authorizing the President of the Senate and the Speaker of the House to appoint a committee to study the subject and prepare a bill revising the Road law.

The President of the Senate and the Speaker of the House appointed the then Committee on Highways of the House and the Senate, and your humble servant was the chairman of that committee and was made chairman of the joint committee.

I have traveled from Maine to California this year in lecture work and trying to gather information that will aid us in solving our road problems.

I will be frank with you; the problems of other States differ from the problems in New Jersey. Situated as we are, between the two great centers of population, we have more automobile traffic than any other State by far, and we have conditions that will not apply to other States, or theirs to ours. However, I want to say that many of our real troubles, and our real problems, arose because of the lack of authorization, or the lack of organization or the lack of authority on the part of the department to affect a perfect organization. And we have no criticism—our report was very frank in that matter—that we were not criticizing the department or the officers of the department, but we believe we are all entitled to criticism because we

have allowed our road laws to become obsolete. We have not kept pace with the times.

In this law we have tried to write as near a perfect Road law as we know how. We have tried to provide for a business administration. We have divided the State into three districts. Instead of having one commissioner, we have three commissioners. We have one in each district, and I think that will assist very materially in the distribution of the road funds, I think they will be distributed more equitably. If you had said $200,000 instead of $100,000 for Essex county, you would have been nearer to the right figure, because I think that is what they have had in the past not so very long.

We have tried to work out a policy, and the statement that the Colonel made is practically in the bill. We have avoided details. That has been the trouble with all the legislation that has been placed on the books in the past few years. The Legislature has tried to write into the law details instead of leaving that for the officials who had charge of the different departments to work out. They are specialists. They know how to do this very much better than we members of the Legislature do.

We have tried to arrange this so that we will have a pretty comprehensive plan. We have given the Commissioner authority to establish a State Highway system, to be rebuilt and maintained exclusively at the State's expense.

We have also provided, as it is now, State aid, under different conditions. We are trying to arrange so that we can get more of the money from the Motor Vehicle Department down in these rural counties where their ratables are twenty millions as compared with the ratables of some of the upper counties where they are six hundred millions. Essex county has ratables approximately $600,000,000. They have a very small amount of miles of road compared with Ocean and Burlington county, where the ratables of Burlington county are $31,000,000 to $32,000,000 approximately and Ocean county $20,000,000 and Gloucester $27,000,000, and Sussex county about eighteen or nineteen.

How are these rural counties going to maintain their roads on such ratables? It is simply impossible, and we must have a different method of distributing the road funds so that those counties can be taken care of.

Those are the problems that we have to face. To say we have a perfect bill here we know would not be true. We cannot draw a perfect bill the first year, and we understand and expect

opposition to this. As I stated this morning, there will be certain interests going to be cut loose from this that have been, perhaps, getting into some things they had not ought to be into.

We believe the time has come where there should be some centralized power in the road proposition. We want to be able to get a finger on the fellow that is responsible for what has gone wrong. At the present time there are many fellows we have to look to and try to get our fingers on, and we are not always finding them. And we believe there should be more power centralized in the commissioner so that we can be in a position to correct some of the wrongs we believe we have found.

But we did not want anyone to say that we were trying to legislate out of office anybody. We believe experienced men are good men to have in a position to trust, especially in as big a problem as the road problem is.

Mr. Brown—Mr. President, I have a resolution to offer on this subject.

President Frelinghuysen—The introducer will read the resolution.

Mr. Brown—I desire to present the following:

Resolved, That it is the sense of the delegates attending the annual meeting of the State Board of Agriculture that there should be a complete and an immediate revision of the laws relating to the improvement of the public roads. Whether the present evil of the improved road system lies in the complicated and uncertain system of laws or in the operation of the laws, we are somewhat uncertain, but we are convinced that a thorough and effective reorganization in the laws is necessary to any real improvement in operating conditions. We do not want to be told in the future that our roads cannot be kept in better condition because the law is defective. Changes in the Road Department have not resulted in any marked improvement in road conditions. Then let us have the laws changed so that responsibility can be fixed either upon the officials in charge or upon the laws under which they operate.

We believe that the bills introduced by Senator George W. F. Gaunt, Senate Bills Nos. 87, 88 and 89, will help to this end; that the change which they will make in the road laws is an improvement; and that under this proposed system we are much more likely to have our roads kept in a condition which will give us a proper return for the money spent on them than we are getting now.

There is something wrong with the road system now. We have been requesting improvement and better results for many years. Now the time has come when we will not be put off any longer.

We therefore call upon all farmers, all County Boards, all Granges, and all other persons and organizations interested in good roads, to demand from their representatives firm and courageous action on this question of the passage of these bills.

We instruct the Secretary of the Board of Agriculture to transmit this resolution to all organizations connected with the State Board, and to request them to call upon their members and their neighbors to require their representatives in the Legislature to support these recommended measures and provide us with the means of relief from a condition which is intolerable.

Mr. Brown—I move the adoption of the resolution, Mr. President.

This motion was duly seconded.

President Frelinghuysen—Do you wish to discuss the resolution? Are there any remarks? If not, the question is on the adoption of the resolution. As many as are in favor of the adoption of the resolution will please vote "Aye."

On a vote, the resolution was carried.

Mr. Collins—Mr. President. on the road question, and pending the passage of the new road regulating laws, the delegates from Warren county consider that they have a grievance in relation to roads; they have been making application year after year for a road from Belvidere to Washington, and the road that they consider the most beneficial to the agricultural interests has been practically turned down. Now, the Warren representatives would ask you to appoint a committee of this Board to investigate their claims to a road, and if that committee finds their claims genuine and just to so report to this Board and ask a resolution that the attention of the Road Department be called to that road.

President Frelinghuysen—Is that in the form of a resolution?

Mr. Collins—It is in the form of a motion.

President Frelinghuysen—Your motion is that a committee be appointed?

Mr. Collins—That the Chair appoint a committee to investigate the question of this Warren county road, and if they consider it just and proper that that part of Warren should have the road, that they so report to this Board, and ask the attention of this Board and of the Road Department to the matter.

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

President Frelinghuysen—This subject will be referred to the Committee on Resolutions and they will report back to this Board their findings, and if their findings approve this resolution, that shall be conveyed to the Road Department.

Mr. Bush—Mr. President, I don't think the motion said anything about the Committee on Resolutions. I think a committee should be appointed.

President Frelinghuysen—The Chair stands corrected. The Chair will appoint a committee later.

And now, gentlemen, I am going to ask your indulgence to excuse me from now on in the session. I have arranged to go away with Mrs. Frelinghuysen on a short vacation, and business demands my attention in New York. I regret exceedingly that I cannot be here for the remaining hours of the session, but I will make it up during the year in my attention to work, if I may be excused. I thank you for the honor you have conferred upon me in again electing me your President. (Applause.)

Mr. Cox then took the chair.

Vice-President Cox—I note that the next question is "Agriculture as a Coördinating Industry," by Mr. F. R. Stevens, member of the Committee on Agriculture, New Jersey State Chamber of Commerce. Mr. Stevens will now address you.

Mr. Stevens' Address

Mr. Chairman and friends—At this time of the night I will confine myself to a few words that I had in mind to say to you to-day and promise not to detain you but a very few moments.

In the first place, those of us who are traveling from point to point in this and that neighborhood, in institutes and agricultural meetings, I think, are all impressed with the one thought, and that is the almost unanimous tendency of the thought in those agricultural meetings towards this marketing problem. I have been attending several during this winter and in absolutely every one the question of market was at the fore.

We sometimes, in considering this single subject, go to extremes, and while that question and the subject of marketing is the most important subject to-day before the farmers, yet it is the practical side we must consider, that it means more dollars in the pockets of the farmer for the future to find its solution, and more dollars in the pockets of the consumers.

Two or three points in the whole problem stand out very clearly in my mind.

I approve, and have worked to some extent with, the Bureau of Foods and Markets in the State of New York, which is represented here. It is doing some excellent work.

However, to go back to the original proposition, its success depends upon the pack which you may send to them or any other similar Bureau of Markets. The Bureau of Markets in New York State or elsewhere cannot handle a line of goods that is not uniformly packed and not honestly packed. Therefore, let us begin in the solving of this market problem right back at home,

not with the Bureau of Foods and Markets, but with the pack which can be sold uniformly.

Another thing. No longer is the discussion going along greater production; but I have heard discussions, formal and informal, about the lobby, on matters not only touching the farmers, but I have heard discussions regarding the railroads. I have heard discussions regarding the interests of the consumers in this matter of production. I have heard discussions regarding the factor that the workmen play in this matter of markets of the farm produce, and I have heard discussions regarding insurance, and I have heard discussions regarding labor. I have hear discussions regarding real estate, and, within the last minutes, we have heard discussions regarding roads, as of interest to the farmer.

All of these things are matters of great importance to the farmers, and yet I want to call your attention to another side of it; that the question of railroads is not one entirely for dictation of the farmers, because they haul material other than farm produce; the question of the consumer is not entirely one of farm produce, because they use and consume material that is not produced on the farm; the workmen work for others; the labor serves other interests; the roads are served by others than the farmers.

The main things in which you are interested are dovetailed in with the interests of nearly every body of workers in the State of New Jersey and brings us back to the one part which Dr. Butterfield brought out in his valuable address this afternoon, the necessity of greater interest on the part of the farmers of this State in the Chambers of Commerce, in the organizations of other business men. We are getting together to direct and educate the public mind toward the things which are needed not only for the farmer, but for the real estate man, the insurance man and all the others.

In other words, the work which the Chambers of Commerce and the institution which I represent here to-day, the State Chamber of Commerce, is doing for the State of New Jersey.

In Washington county, Pennsylvania, that idea has so become involved in development work that each township within that county to-day has a Chamber of Commerce. It is true that practically all of those towns have just one interest, and, that is, farming; occasionally there is a grocery store, occasionally there is a little manufacturing concern, but the main business is farming, and yet each town has a Chamber of Commerce. Throughout the State of Pennsylvania that idea is continuing. Within this State there are greater opportunities for you than in the State of Pennsylvania, simply because you have more efficient bodies with which to associate than they have for the development of your ideas.

This is an entirely appropriate place in which to bring up this matter which I have in mind to-day, and the reason that it is most appropriate is this: We have here gathered together the men who are the leading thinkers of agriculture within the State. You members of this Board for a good many years have been interested in farming organizations of various kinds. You know some of the things that I have faced. You know some of the problems that come up. You know how to go to the farmers with an appeal for unification and consolidation.

To build up the farm interests in the way that railroads have been built up, in the way that great corporations have been built up, is impossible, because the farm is preëminently the home. There follows, then, logically the one thought that, while we could amalgamate or unify a large number of farms, we may not amalgamate and unify the interests of those farms without involving the title to the land or the home.

For that reason it is a harder proposition than has been faced by those who created the great railroads.

Another reason, the farmer has from all time been the most independent man on earth. There is no use repeating that here. It is something that goes without saying. Anyone who has been a farmer as long as those of us here realize the importance of that independence. It has been a mighty good thing, and yet it has sometimes worked to the detriment of the farmer. Therefore, we have to face that feeling of—lean backwards, if you please—independence in bringing about a coöperation such as has been brought about by other interests.

Therefore, I am bringing that home to you to-day as the leads for you to follow in your work among those whom you represent, to go back into your districts which you represent and spend your time—and I do not believe it could be any better spent—in just bringing together the farm interests which you have behind you for a united action, not alone among yourselves for packing stuff, although that is essential; not alone among yourselves for marketing stuff, although that is essential, but a united effort to bring together your thought, your wishes and the thoughts and the wishes of the other interests of this State, for the benefit not only of the farmer, but of the farmer and the railroad and the insurance man and the other operators within the State.

In other words, to be perfectly short, I am bringing you an invitation to carry out the thought of Dr. Butterfield, and the State Chamber of Commerce not only bids you welcome to bring out the idea and work with us, but wishes me to go still farther and beg and urge that you give the State Chamber this thought, these wishes and this help to which I have referred. (Applause.)

Secretary Dye—Mr. Chairman, may I make a few statements?

Vice-President Cox—Yes, sir.

Secretary Dye—I want to urge our friends to-night to try to be at the Normal School to hear the lecture by one of the masters of our problems in agriculture and horticulture in the country, Dr. Bailey. Let us have a good large turnout of the farmers.

With reference to to-morrow, the first thing in the morning is to meet with the committee here and have your bills in shape, get them straightened out so that you can get your money returned to you from the State Treasury.

The next thing, and I wish to emphasize this, I hope you will all try to stay here to-morrow to the end of the session. Too often our delegates leave before the end of the session so that there are hardly any left toward the end of the session. There will be to-morrow, the first thing, the final report of the Committee on Resolutions, and there will be some debate, and then some discussion on these legislative bills, and Senator Gaunt will be here to help us in that matter. Then after that we will have this lightning-rod question, and then we are going to have material lightning and spiritual lightning, for Billy Sunday is coming about a quarter to half-past eleven, and he will give you some of his peculiar style of lightning. We want you all to be here and to keep your places, because Mr. Smith, the Custodian of the State House, thinks this house will be crammed. The fact is known that Billy Sunday is coming, so let us all be here, and if you have any friends or family, bring them with you in the morning and fill up this house so far as we can and the rest can be taken by the outside people.

Vice-President Cox—I am reminded that the chairman has a committee to appoint under this recent action of the Board in reference to the Warren county road situation. On that committee the Chair will appoint Mr. James I Cook, of Warren; Mr. S. E. Young, of Morris; Mr. N. B. Curtis, of Bergen.

That committee is requested to get together and organize and consider this proposition.

There was a committee ordered to consider the Liability question and to represent this Board at the hearing next Tuesday at the State House. I am not prepared to appoint that committee just at this time. It will be appointed later.

Are there any further announcements to make? If not, this Board of Agriculture will stand adjourned from here to the auditorium of the State Normal School to-night at eight o'clock, and the session will convene again here to-morrow morning at 9:30 o'clock.

The Board then took a recess until 8 o'clock this evening.

EVENING SESSION.

The Board was called to order by Vice-President Cox in the auditorium of the State Normal School. There were present at the meeting, besides a full attendance of the members of the Board, the pupils of the Normal School, and the proceedings were enlivened by songs rendered by the school chorus.

Vice-President Cox—Our meeting will be opened to-night by prayer by the Rev. Mr. Ketcham, pastor of the State Street Methodist Church, of this city.

Rev. Mr. Ketcham offered prayer.

Vice-President Cox—The State Board of Agriculture convenes in this place to-night, and I know that Dr. Green has a few words of welcome for the members.

Dr. Green's Address of Welcome.

Mr. President and members of the State Board of Agriculture. We are very glad to welcome you again to our institution. We have turned out in goodly numbers from our student body, and we wish that we might have you with us in the daytime that we might turn out in very much larger numbers. As you are aware, our school is composed partly of boarders, and it has a very large number of students, many of whom are train students.

I know that those who are here will extend to you a more cordial welcome as representatives not only of themselves, but of the rest of the student body.

In regard to our attitude toward agriculture as a school, and in speaking on that subject I said the other day to an audience that I thought I was entitled to be considered a good principal, for we all know that a principal of a school is a man who gets someone else to do all his work, and when it comes to agriculture there are those here who can do our work very much better than I can, so that I am perfectly willing to leave it to them to do. But I want to assure you that our institution is aiming, as an institution, in the preparation for teachers, to represent the commonwealth, and the commonwealth is made up of a number of great interests, among which we regard none as superior to that of the agricultural department. There is no branch of our work that is receiving more attention, and more intelligent attention, than is being given in that department, and we are very much encouraged by your coming to us. We know that you come with more than the interest in your own particular line of work, because your sons and daughters, and especially the latter, are here. And we hope you will come again, and we hope that on other occasions you may be as fortunate as you have with this when you have Dr. Bailey, of whom we have heard so much and have so much respected for so many years. (Applause.)

Vice-President Cox—On behalf of the State Board of Agriculture, I desire to express our gratification at being so kindly welcomed to the State Normal School, and to these representatives of the State Normal School I want to say that we appreciate your kindly welcome as manifested by the song you sang for us. We appreciate these courtesies, and we think in meeting with you we are conferring upon you a pleasure and a privilege that it is your good fortune and your happiness to know at least once a year; and, for the State Board of Agriculture, I can say that the members welcome nothing more than the opportunity to meet with the girls of the Normal School (applause), and I don't blame them, either.

The Forthcoming Rural Life.

L. H. BAILEY, ITHACA, N. Y.

Mr. Chairman and New Jersey friends: Since the days when I as a boy, in what was then the New West, could look forward to the visiting of Trenton, New Jersey, as the goal of an ambition in travel, every farmer may have his daily paper, his telephone, his books relating to his occupation, and the magazines; and many of them are well traveled. The bicycle has come, and in some places it already has gone. The automobile has come and has become a necessity for the farmer. Already we have ceased our wonder at the aëroplane. Nowadays we are thinking in terms of long distances, of large sums, big business, great battles, and no longer are we satisfied with little wars nor with small affairs.

We have made the powers of nature to be our servants. We have brought electricity into daily use. We ring our doorbells with electricity, so familiar and commonplace has it become to us. The gas engine has been perfected and is applied to the work of thousands of farms. The gaslight has come, but I remember the days of the candle-mold. Even the gaslight is now a thing of the past in many homes, and they are lighted by means of electricity. We see the transmission of power for long distances. Through a good part of New York State we can hear the roar of Niagara Falls in the whir of the machinery that is driven by its power. We have come into the day of hollow iron pipes, when we may have our plumbing in every house, through which gas and steam and hot water are carried for our use in residence and barns. The old bored log and the long lines of lead pipes of those days are gone.

I bring these matters to your attention, so many of whom are young people, merely to let you know how recent are the riches of invention and of application to the common affairs of life, to lighten labor, to increase the satisfactions, and to allow us more time for other enjoyments. Within the time of which I speak several great rural movements have crystallized and have become a part of the common thinking of the countryside. The movement for better roads is one of these. No longer is it antagonized.

The problem is now not so much the ways and means of securing public favor as the practical methods of laying out the roads and of construction. The public is well convinced that we should have highways on which we may travel rather than those which we are obliged to navigate. The forces of health and for sanitiation have taken shape. They have realized themselves in organization in all the compact and centralized communities of the country; they are rapidly taking shape also for country districts. Already we are beginning to speak of health and sanitation as we do of disease, and sometime they will gain the mastery over disease, and we shall have colleges of health as well as colleges of medicine.

Within this time nearly all the natural sciences have been remade and some of them, at least so far as names are concerned, have been born. The fundamental hypotheses on which many of them rest have been largely restated or advanced, the point of view and the method of work have been modified and in some cases completely changed. The names of departments of science, which only a few years ago were spoken but by the few and by the professional men, are now a matter of common speech. I need only to mention in connection with the agricultural field such subjects as entomology, plant pathology, plant breeding, bacteriology, and forestry, the last of which was not in the dictionary until 1880. Certain great lines of practice and application that have their foundation in chemistry, physics and biology have become fields of their own, representing combinations of science and of practice, as dairying, horticulture, soils, home economics, and many others that will occur to you.

We have seen a movement for the reorganization of the schools, not only from the point of view of the formal administration, but also a redirection of sentiment as to what the school work shall be. No longer do we feel that the daily work and the life of the common day are necessarily to be eliminated from the school and to be kept outside as if they were in themselves unholy. This movement has recently taken hold of the rural school field particularly, and some kind of an organization has been demanded whereby they shall be tied together in a way that shall represent a system or at least a continuity of purpose. As a farmer no longer lives wholly to himself alone, so are the little schoolhouses, no matter how far removed and how small and how simple the work in them may be, not enterprises wholly alone and by themselves. In some way they are connected with one another through county administration or district superintendence or by other means, and they are all a part of a State public school system. We recognize that there is no good public policy that does not recognize an organized system of schools from first until last, from highest until lowest, representing the educational enterprise of the commonwealth.

Within this time we have seen also the library movement begin, run its devious course and finally become somewhat regularized. We have now accepted the idea that books are good not only for those who have them, but for the whole community. We have learned that to distribute books is to distribute the goods of life, for the experience of mankind is put on printed sheets and bound together in attractive covers. To distribute books and to spread the reading habit and to vitalize it has become one of the social movements of the day.

In respect to rural affairs and the point of view of rural people, much progress has been made in the lifetime of many of those who sit with us to-night. The farmer is no longer a person who lives wholly by himself, separate. To a large extent he shares in all these benefits; or at least he is not prohibited or prevented by any outside restriction. They are all free to his use so far as he has the means and the capacity. He may have the telephone as well as his city neighbor. The library is not circulated among all the people except farmers, and our other betterments are not made to except him. He is included distinctly in all plans for general social progress. We accept this as a matter of course, and yet it is not so true in some other countries.

Of course, very special helps and betterments have come specially to the farmer himself. His present resources in the way of new tools have given him power over nature. The Egyptians had plows, to be sure, but the highly developed plow as we have it to-day is the product of the past fifty years. One has only to read the interesting story of Jefferson's studies and of Daniel Webster's experience with the breaking-plow to realize how true this is. Washington ordered his plows from Europe but failed to order the moulds in which parts might be cast, and the tools soon became practically useless to him. The grain-cradle is gone. Many young men now brought up on the farms could scarcely use one. The scythe has mostly gone the same way, although of course still used in small work. There are many farm boys who have never used a flail, and the pounding out of grain on the barn floor has become a thing of history. Many riding tools are so common that they are accepted as a matter of course.

The silo has arisen in all the dairy countries and winter dairying has come in, when farms are given up a large part of the year to the production of milk at a season when, not so many years ago, the cows were supposed naturally to run dry.

Power has now been applied to the farm. The old horse power is not going out, but it is being supplemented by the gasoline engine, by transmitted electric power, by water power, or by other prime-movers. This means not so much that the old prime-movers are obsolete as it does that new activities are coming in and that more work of all kinds is being accomplished.

The character of the animals themselves is changing. The brindled cow of the crumpled horn is almost an animal of the past. Up in our country the cows have become black-and-white. The old red-and-black barnyard fowl has largely gone the way of the brindled cow and they have become white. All this means new methods and real efficiency, new points of view on the part of the farmer, new markets to reach and new tastes to satisfy.

Within the time that we are considering the agricultural colleges have become a reality. The larger part of them have been organized since the time when Trenton loomed so large in my imagination; and in that time all the experiment stations have come into existence. The opposition to these institutions has now passed. They are accepted as one of the necessary parts of a good public policy. They are as necessary in their realm as are the normal schools and the trade schools in their fields.

We have also seen the rise of the farmers' societies, of Boards of Agri-

culture and of definitely organized bodies for the purpose of placing the agricultural affairs on their feet and on a parity with other affairs. The agricultural press has greatly extended its excellence and its influence, and has become a great educational factor in the nation.

The Line of Progress.—It is difficult to project the line of progress in rural life in the next generation. When we look back to the prophecies of the past generation we are conscious that most of them were misjudgments. However, some things are fairly clear, and even though our forecast does not come true, nevertheless it is well to train ourselves to look ahead. We have every reason to suppose that many new discoveries will be made. Some of them may be wholly revolutionary. We do not know, for example, whether the internal combustion engine or the steam engine or even the dynamo is to be the most important prime-mover fifty years from now. We do not know but that we shall find a source of power in radio-activity or in some other realm that seems now to be quite beyond us.

But we are not thinking so much of new inventions as of the type of life that must arise in the rural regions. The great problem of the next generation is to incorporate the new knowledge into a scheme of life and to work it out in personal plans of living. The best civilization is not to come out of the pocketbook but out of the heart.

We ought to be better men and women for all the discoveries that have opened the natural world to us and for all the vast riches that stimulate the imaginations and that also increase our responsibilities. One cannot receive all these privileges, which come ultimately from the hands of the Creator, without bearing the obligation to incorporate them into oneself and to make them means of personal development. As we have received so much, so it is it the obligation of every one of us to radiate some of it to others; but we can radiate only so much as we feel.

There are always those who look for sudden revolutions in rural life, thinking that the vast discoveries of science and the much preaching must turn things topsy-turvy within a night. Persons frequently say to me that they do not see anything very remarkable to have happened in the rural districts in the past twenty-five years. They ride casually over the country, see the same old fences, the same tools, and largely the same buildings. But we do not expect the houses to turn bottom side up, or the trees to change their foliage, or the cows to shed their horns, or the farmers to talk Latin. The first result is expressed in the attitude of the man or woman toward the daily work and toward life. The physical changes come afterwards and are the results. When the man begins to reorganize his thinking, his expression of it will work out in his line fence, his drainage system, his tools, his animals and his buildings.

Nor are we to measure rural conditions by the stationary character of many persons on the land who are disadvantaged by some peculiar reason, who, in themselves, lack the germ of progress or who have the misfortune to live on a farm incapable of abundantly supporting a family. Many men who live on the land are not real farmers, and others live in such unfortunate conditions that they cannot rescue themselves, no matter how much they try. But for all this, anyone who is familiar with the rural situation is aware that the number of high-class farmers is rapidly increasing, that

life is constantly richer in its opportunities, and that the amenities are more numerous.

The so-called country-life movement is a feature of the times. Under this denomination I do not think of the movement of population, but of ideas. It is relatively immaterial to me whether more persons move to the farm or not. The particular obligation is to make better farmers rather than more farmers; and whether one man desires to move to town to better himself or another to move to the country to better himself, is a personal question with which we are here not concerned. There are many persons yet on the farm who ought to move to town for their own good, although it may be difficult for them to get away. A good part of the country-life movement is to assort the people, to separate out those who are real farmers and who can adapt themselves to the new ways, and to allow the others to find other occupation. This assorting process is not yet completed. The idea that we must find means of transferring many more persons to the farm is erroneous. We have been misled by the statistics. In 1790 something like ninety per cent. of our people were on the land or very closely associated with it. The census of 1900 shows that about one-third of the population is what may be called a farming element. I do not know the proportion shown by the last census, but I understand that it is less than one-third. We are not to expect the proportion of persons on the land as farmers to increase. Rather will is probably decrease. We are increasing the power of every man to produce from the land by means of improved machinery and implements and by his greater knowledge. A good farmer is able now to handle more land economically than he was fifty years ago. One of the contributions of the scientific agriculture is that it releases men from farming to engage in the mercantile pursuits—manufacturing, commerce and the trades. Do not understand me to say that we are to have less farmers in the future. We are to have actually more farmers because the whole population is increasing; but the ratio or proportion of farmers probably will not increase and it may decrease. This is in no way alarming.

In mentioning the country-life movement, I am not thinking of any back-to-the-land or back-to-the-farm agitation. I hope that we shall soon pass the epoch of exploitation of real estate, the glory of the reporter's writeup, the exaggeration of the discoveries of science as applied to farm work, and the general foolishness that goes with the development of a new idea or with the spread of a new movement

The country-life movement is merely a desire on the part of those who are interested in it to make the open country as adaptable and as desirable as any other place in which to live in which to rear a family and to spend one's life. The disadvantages and the handicaps are to be removed. Knowledge is to be applied to the situation. New standards of value are to be established. New kinds of ambition are to be developed. The goods of life should be secured in as liberal quantity by the man on the farm as by any other man of similar ability and capital in any other walk of life. This is necessary not only to the happiness and prosperity of the farmer himself, but also to the maintenance of free institutions.

Undoubtedly one of the great betterments in the time immediately ahead of us is to lie in the saving of time on the part of the farmer. He

is thinking much of economizing in horse-labor and fertilizer and marketing expense, and yet he may not organize his own time effectively so that he may use every minute of it profitably in the same spirit in which the manufacturer or the professional man organizes his day. No man could organize a great factory successfully or prosecute a large commercial enterprise until every minute was worth money and meaning to him. He could not do it on the more or less haphazard method of most farmers. The conservation of time and of health and strength are probably the most important immediate problems before the farming people. I am not thinking of organizing farm labor into shorter days or developing any kind of time-service. The sun does not work on an eight-hour basis. However, a man organizes his time, he must make every hour of his day mean more than it has meant before. This is the only way by which he can arrive at a richer life.

Consider the great new literature that is arising for the farmer, in the way of periodicals, bulletins, books and publications of many kinds. The farmer of the future must use this literature effectively in his business and he must also make it a means of adding to the satisfactions of life. This he cannot do, however, unless he has time for it; and he must so organize his business that he shall have time for recuperation as well as for manual labor. This is necessary, also, if he is to give much attention to societies and organizations, and to the general betterment of his community. The freedom and ease with which so many of our farmers now attend many meetings at long distances from home is an indication that they are now beginning to find this leisure.

We are in need of more attractive structures in the open country. The movement to eliminate the signboards is now well under way. When one who looks back a few years from now one will wonder that we should ever have allowed private business to use the public highways for money-making advertisement. There are regular vehicles of advertisement, such as the periodicals, which do not offend, which are legitimate, and which a person may not see if he does not desire to do so.

We need a new type of architecture. I am thinking not so much of fine new houses and barns as I am of the form of the cheaper and common structures to which no thought has apparently been given as to their confirmation and looks. Nothing is more hideous than the milk-stations, creameries and similar buildings the country over. Consider how the old type of railway station has given way to attractive structures in the last few years, and then apply this change to the creamery, the elevator, the outhouses and the small buildings generally. Even a dry-goods box is of good proportions or of bad proportions. Every building, whether large or small, has good lines or bad lines or else it is merely indifferent. It ought to be just as easy and certainly just as economical to put up a cheap building of good proportions as of repulsive proportions. Buildings not only provide a definite means to an end, but they are silent teachers, exerting an effect on us as we come and go day by day which we very little realize. How many a boy, coming back to the farm after years of absence in other surroundings, has felt a sense of repugnance at the buildings which in his earlier days were wholly satisfying to him!

The schoolhouses will be of a different type. They must represent the activities of the community or neighborhood, and not be simply places in which the children may be protected from the weather and in which they may keep their things. We begin to feel that the school is to express the life of the community and the ideals of the people, and if this is to be the case the building itself must have a new character.

The landscape is to be repaired and put in order. At least it is not to be defaced. We were put into the Garden to dress it and to keep it. We must come back to the original intention. The earth is beautiful and fair, and we cannot make the most of ourselves until we appreciate the objects and the surroundings. A continuing process of destruction and despoliation is injurious to ourselves as well as to the objects that are destroyed. If we are our brother's keeper, so are we the keepers of the earth.

In the past generation we have made much progress in multiplying a man's power in the field and in reducing some of the burdens of sheer physical toil. We have begun this process in the household, but we have not yet carried it far enough to make any real redirection in the home life. We must employ mechanical power in the house to systematize and to lighten the labor, and at the same time we must reorganize much of the household economy for the purpose of saving time, strength and hard work. This may mean a considerable modification in habits of eating and cooking, as well as in the adaptation of tools and implements to meet the traditional or customary work.

But I have already indicated that the physical improvements are, after all, secondary to the human reaction. A prominent educator remarked not long ago that he saw no hope for the farming people except that they should increase their supplies, for as rapidly as they secured a new outlook they left the farm. The very problem before us is to make the farm worth the while even when the new outlook is attained, and those who know the situation have no discouragement. The redirection of the point of view may require the span of more than one man's lifetime. It is a great gain to have had the fundamental statements made, as I think they have been made in this generation. The general lines of action are now fairly well understood, and it is our responsibility to work them out.

We are now well past the idea, I think, that the basis of occupancy of the surface of the earth, so far as farming is concerned, is to be on the plan of a socialized partition. There is no evidence that agriculture is to be socialized in the sense that the land and the tools of production are to be owned in common by society. Just now farms are becoming larger under individual ownership rather than smaller, due to the fact that farmers have more power through the application of knowledge and the use of machinery and more ability to handle large enterprises. Many of the farms are yet too small for efficient organization and handling with the resources that are now at the command of the agriculturist. But this is more or less a temporary situation, and we do not know what the size of farms may be a generation hence; but there is every reason to expect that we shall still hold to the individual basis of ownership, whereby a man becomes immediately responsible for the handling of a certain piece of land and is identified

with a definite program in life. The responsibility of ownership steadies a people and provides an anchor-sheet in a democracy. I do not think we are to become a nation of small landowners, however, each man owning his own land and working it, for this would not allow of the sufficient development of individual talents, and we should practically be a nation of laborers or hand-workers; but for all we can see now, a good part of the farmers will continue to own their own land and to develop the responsibility and the contact with the planet that grows out of such ownership.

While the social instinct is rapidly developing in the open country as elsewhere, nevertheless the separateness is developing at the same time. In fact the dispersive movements are now very strong. There is a widespread feeling that one has a right to escape from a machine-made organization and live his own life, and this in good part is the reason for the back-to-the-land propaganda. The physical dispersive movements of which I speak are all those means whereby communication and transportation are applied to persons who live separately and remotely on their own farms, in enabling them to remain there and yet to keep in touch with the world and to assemble to themselves the amenities of life. The good roads development is in this direction; and the telegraph and telephone, particularly the latter, which may attach to any man's house the transmission of power, the development of engine-power that may be owned economically by a single man, the perfecting of individual gas-plants, the rural free delivery and parcel post, the great growth of literature adapted to persons who live in the open country, and the continuing organization to benefit business and to develop the community. One of the most marked of these movements is the new farm-bureau development, which aims directly to make the most of every farm within its range and to emphasize the importance of it, both to the man and to the community.

I have spoken of the extension of power to the rural districts. The general use of power in the past generation has been to develop consolidated groups whereby many persons may work on the products of one centralized and highly developed power establishment. I think we shall see an opposite development in the generation to come, whereby we individualize the prime-movers and apply them to the work and even to the manufacture of families at their homes. Some of us are looking to the revival of spinning to some extent of weaving as a home industry, and also to the manufacture of some of the food products on the farm itself. I am not sure but that we shall yet do much of our own grinding on the farm, when we shall have passed the desire that our flour and similar articles shall be refined, bleached and modified beyond recognition of the original product. We must also adapt our farm machinery to more difficult conditions than in the past, enabling us to use it on rough land, small farms, and for special pieces of work. Naturally we have developed the farm machinery mostly for level lands and for large areas and for the more wholesale operations. I look for the increasing development of the man on the land by means of individualizing the power that he applies to his work.

The farmer's commercial and economic relationship to society must be

very carefully considered in the time to come. While he is a separate man so far as his habitation and his attachment to a bit of the earth are concerned, nevertheless he is an attached or related man when it comes to trade. No longer is he concerned alone in the local market. He is a buyer and a seller, and the world-markets largely control his affairs. This means that he cannot lift himself out of all his difficulties, except in so far as he can control the quality and the pack of his products and can exercise a wise choice in sales. As against large combination of commercial interests, he is very much at a disadvantage. The present tendency is to reorganize the farmer defensively so that he may contend with these situations. Rightfully, however, the defense of the farmer is the obligation of society itself. The farmer's defense against plant and animal diseases is very largely within his own hands, but his defense against economic and commercial situations is quite beyond his power. We can conceive of such a defensive organization of farmers as will control certain great economic situations, but under such situations we should be developing class interest and organizing one group of our people as against another group, and this is a very serious danger in a democracy.

It is the responsibility of society in its collective interest to regulate the distribution and the sale of food supplies. It is as much to the interest of the consumer as of the producer that this should be done. In fact it is to the interest of the distributors and the salesmen also. I would not have government engage in the actual sale and distributing of produce, except experimentally here and there, any more than I would have government own all the railroads or other facilities; but by some means the distribution and the sale must be subject to public inspection and regulation for the protection and good of all parties concerned. We must introduce a new kind of economy in the distribution of our food supplies. We have begun similar regulation in the oversight of common carriers in their interstate relations, and we must now extend it to the food products that they carry. Market-commissions with power and with high-class membership free of political control, municipal regulation, and other means and agencies are certain, in course of time, to bring order out of the present waste and inefficiency. We are just now in the stage of discussion, and have not learned how to apply exact remedies.

The separate man, undetached and more or less alone, and working out his own salvation on his own property, is essential to a free country. Society in its own interest must protect this separate man. It will protect him by safeguarding him from vampires, by assuring him facilities for credit, regulating the transportation and distribution of food supplies, educating him, and otherwise looking after his welfare. We do not yet see how this range of governmental action can work itself out, but we are in the experiment stage, and this is reassuring.

I have already spoken of the necessity that the farmer shall organize his time so that he may use the new literature which is made specially for him. One safeguard of his separateness is that he shall have the information brought to his door. This brings us to the whole question of the rural newspaper and the spread of rural intelligence, a vast question that I can scarcely

more than suggest. I need only to recall that the rural newspaper does not often represent the open country effectively. The local news is largely made in a spirit of gossip or in the interest of urban or "society" affairs. A good part of the support of the rural local newspaper is likely to come from the outside in the way of political patronage, advertisements, and the like. New farm-bureau publications, and other periodicals, are beginning to suggest a new kind of local journalism for the rural district. I am not speaking of the agricultural journal as such, which circulates over a wide extent of territory; I am thinking only of publications for very local and restricted communities or regions, and which shall develop and convey the intelligence of those communities. The support of these journals ought to come almost entirely out of the regions themselves, either directly or indirectly. The news should comprise a systematic account of all rural betterments and permanent improvements in rural life. This will require the activity of some person in each case who is thoroughly in touch with the rural movement and who know enough of agricultural affairs to report them intelligently and to judge the important from the unimportant. Whether we shall develop this periodical service by some change in the ordinary rural newspaper is a question which we cannot determine. It is highly probable, however, that organized groups of one kind or another, as granges, coöperative societies, rural religious centers, farm-bureau associations, and others, will publish journals that do not need to be supported to any large extent by advertisements and which will represent the organizing life of the open country. Already some of these types of journalism begin to appear.

We begin on the right basis when we produce for the farmer a literature founded on fact. The science-spirit is fundamental to a democracy, because it establishes its ideas on the truth and not on mere loyalty or on the dictum of a constituted authority. The farm-bureau agent founds all his work on facts if he is a good agent, rather than on deals, secret understandings, intrigues or promises. He brings a new kind of leadership into the rural districts. No one can dispute the facts; or if we are not sure of the facts in any case, no one can contradict the spirit that pursues the fact with the intention to discover it. The old political leadership founded on patronage and understandings and favoritism is doomed.

The example of founding one's action, in any case, on the well-ascertained truth that lies at the basis of it, will eventually eliminate the false standards of life which are now so much a part of us that we never think of them or challenge them. We are living, for example, in an era of great publicity, and it seems to be taken for granted that one of the desirable ambitions is to have one's name and portrait and doings displayed in the newspapers. We consider it a great end merely to hold public office, but publicity of any kind is never of value unless it is founded on merit, and this merit comes not by means of publicity but by patient personal work. It is easy enough to secure an office, but the test is to hold the office successfully. Many are the men whom I have known to be ruined by public office which they secured with every satisfaction and with the congratulations of friends. If a man leaves such an office with less reputation and with less power for good work

than when he entered it, the office has been a damage to him; and very many people have knowledge of what I mean. Others have been ruined by too much publicity. To have your neighbors and friends speak well of you quietly, day by day and year by year, and to have your approbation grow because it deserves to grow, is worth more to any man or woman than all the publicity of all the newspapers and magazines. It may not get so far at once, but in the end it always goes as far as its merits carry it. Any individual may well forfeit any desire for personal publicity, and place all his efforts in ambition for excellence. There is no real satisfaction in publicity itself. The science-spirit grounds one in the desire for excellence and accomplishment, and the result takes care of itself. The new agricultural literature is founded in science.

If it is worth while to live a simple, full and useful life, then the open country may provide the opportunity for those who are prepared to find it. We are to pass the standard of value as measured in terms of wealth, and other measures of personal worth will come to be controlling. Already the wealthy man has to explain himself, which shows that in the public mind the burden of proof is placed upon him. When the race for wealth is passed, when the race for publicity is passed, when the race for honor is passed, when the race for the holding of office is passed, when the race for glory is passed, then we shall base our life on excellence. There is no other real basis for life.

Accepting this point of view, and granted that a man is fitted by experience, training, and temperament to be a farmer, we are to expect that opportunities in the time just ahead of us will enlarge in such a way that the man on the land, keeping the earth for God and for humanity, will be capable of living his life to the full and of reaching the highest measure of personal satisfaction.

THIRD DAY.

TRENTON, N. J., February 4th, 1916.

Vice-President Cox—The meeting will be opened this morning by prayer by the Secretary, Mr. Dye.

Secretary Dye—We thank Thee, our Heavenly Father, for Thy presence with us in the days that are past. We seek Thy presence now with us in this, the closing session of our forty-third annual meeting. Grant that the exercises may be acceptable to Thee, and profitable to us, even to the close, and go with us to our homes, we who are farmers, we who have to deal with the processes of nature to bring forth the crops so essential for the sustenance of mankind. Bless us in all our farming operations, guide us in all we do, help us to be good citizens,

upright in all our dealings, so that the world shall take note of the farmers of the country, that they are upright, straightforward, godly men and women.

Be with us now, bless our hearts, forgive our sins, and accept us in Christ, our Lord. Amen.

Vice-President Cox—Has the chairman of the Committee on Resolutions anything to offer this morning? This is the final report of the Committee on Resolutions.

Mr. Bush—Mr. Chairman, we have nothing to report, except that, in obedience to the direction of the Board, we offer this resolution:

WHEREAS, We believe, upon reliable evidence furnished, that the New York Commission of Markets is doing necessary and commendable work in bringing the producer and consumer closer together, by which means the producer receives more for his products while the consumer pays less for his necessaries; therefore, be it

Resolved, by the New Jersey State Board of Agriculture, this fourth day of February, 1916, That we heartily endorse the work of that Commission, and commend its method of distribution to the careful consideration of the farmers of New Jersey.

Resolved, That the Secretary be requested to forward a copy of this resolution to the Governor of New York, to the President of the Senate, to the Speaker of the Assembly and to Commissioner Dillon, of New York City.

(Signed by the committee.)

Vice-President Cox—You have heard this resolution; what is your pleasure?

A Member—I move its adoption.

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

Vice-President Cox—The committee, to which the President's address was referred, I think, have their report ready, Mr. Lozier.

Mr. Lozier—Mr. President, the committee have the following report to present:

The Committee on President's address respectfully make the following report:

We heartily endorse the sentiments and general recommendations expressed by our President. We believe after his thorough study of the conditions of the State Agricultural Department we recommend legislation along the lines suggested in his able report. We also urge this assemblage to coöperate with their Senators and Assemblymen to help pass such important legislation.

Respectfully submitted,

ANTHONY LOZIER,
FRANK O. WARE.

Vice-President Cox—You have heard the report of this committee; what is your pleasure?

A Member—I move that the report be accepted and adopted.

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

Vice-President Cox—At the afternoon session yesterday there was a special committee appointed. Is that committee ready to report? Brother Cook, are you ready with your report for that committee?

Mr. Cook—I would like someone else to read it for me, as my eyes are not very good.

Mr. Bush—The report is as follows:

We, the committee appointed to investigate the claim of the Warren County Board for a road from Washington to Belvidere, have investigated the matter as represented by the Warren county representatives, and find that an improved road between the two towns would be of advantage to the farmers of that part of the county in getting their produce to market, and that their request for an improved road is just. We therefore offer this resolution:

Resolved, That this Board convey to the Commissioner of Roads its approval of the application of the Warren county farmers for an improved road from Washington to Belvidere by what is known as the Brass Castle route.

(Signed by the committee.)

Vice-President Cox—You have heard the report of the committee; what is the pleasure of the Board?

Mr. Young—Mr. Chairman, I wish to say that this committee, some of them, were in doubt as to whether this Agricultural Board should take an interest in one small road in the State, but we find in this case that there has been pressure brought to bear upon the State Road Commissioner to place a road in this vicinity at another place, where it would perhaps benefit the pleasure-loving people or the pleasure-loving portion of the community, and we believe that this money could be better expended in a place where it would benefit these people who are producing something for the benefit of the whole country, and this is the reason why we have approved this resolution.

Vice-President Cox—Are there any further remarks?

Mr. Bush—Mr. Chairman, while I heartily agree with the sentiment of the brother, I feel that this body has no right to go into local matters of that class, and I am afraid that if we open the door and begin to thresh out the difficulties we have all over the State we will get into a whole lot of trouble.

Vice-President Cox—Is there anything further?

A Member—I am from the other section of the State. Of course, I had that same idea in mind. I don't think that we can afford to go into local contests of this sort. While we, of course, rely on the report of this committee that they conscientiously think that it would be better, yet we have our authorities that are doing that sort of thing, and it really looks as if we are superseding prerogatives.

Mr. Agen—Mr. President, while I do not wish to be antagonistic to any move Warren county may make in this matter, I feel this way about it. I am from Hunterdon county, and we would like to have some roads built up there, and if this Board is going to work in the interest of Warren county roads we would like to solicit their help on the question of Hunterdon county roads. And no doubt various other counties have the same feeling. I would move you, sir, that this resolution and report be laid upon the table.

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

Vice-President Cox—Mr. Woodruff, from Union county, has something he desires to present to the Board at this time.

Mr. Woodruff—Mr. Chairman and gentlemen: As a member of Union county, I desire to present conditions as they appear to the dairymen of Union county in the past year. Members from Union county look to this body as the seat of their government in agricultural affairs. They look to this as their center. They look on themselves as a unit of this body, and I think it wise to come before you, not with a resolution, but to tell you about their trouble in regard to their dairying business.

Union county, as it is situated agriculturally, lying near the large cities, is fast becoming a great suburban place and it is a district where the growers can find a ready market for their products. But notwithstanding all these advantages of markets, the dairying business is fast declining in Union county. At our meetings the subjects have been brought up and have received the closest attention. We have had animated discussions in regard to the dairying business. We have voiced our complaints about the unfair treatment received at the hands of the various health boards in the municipalities in the nearby cities in the restrictions placed on the local dairy industry, laying themselves in a position of acting harshly. We also complain of the lack of knowledge on the part of inspectors displayed at some of the inspections in the condemning of buildings, men often being placed in those offices that perhaps knew nothing about dairying and not understanding anything about the conditions in dairying, coming there and making laws and enforcing laws against the

dairy business that my fellow members consider unjust. Also in the condemning of the cattle for tubercular trouble and the prices paid for them. Oftentimes it is claimed that they cannot be condemned for they show very little trouble. And then when they are killed they are carried away and sold for food in the cities.

The farmers have been very much agitated about this matter. Meetings have been held, and our meetings have been very largely taken up by these subjects and heated discussions have taken place on them. The dairying in Union county is fast being blotted out. At a recent meeting, Mr. Beebe, known as Dean Beebe, called Dean Beebe by Judge Collins, our Chairman, Mr. Beebe, whom Mr. DeCou of South Jersey mentioned in connection with such names as Dr. Ward, and P. T. Quinn, men who have been connected with agricultural affairs in our State long before I was ever able to talk about them, Mr. Beebe, past eighty years of age, an old gray-haired man, he brought a resolution before the meeting asking for relief and condemning the conditions as they are in Union county.

I mentioned our visit to the home of our worthy President, whom we all like, and the courtesy shown and the warm hospitality, and of inspecting the dairy buildings and the methods used in the production of milk in a modern way, and I think that our men largely looked upon that with gratification.

I have no resolution to lay before the Board, but the dairymen of Union county thought it just as well to place their grievances before this meeting, that is all.

President Cox—We will now take up the regular order of business. "Lightning Rods, their Value as a Protection Against Fire," by Prof. J. Warren Smith, of the U. S. Weather Bureau. You had the pleasure of listening yesterday to Prof. Smith on the matter of the effect of weather conditions on potato crops. I now have the pleasure of introducing Mr. Smith to you.

Mr. Smith then read his paper, which is as follows:

Lightning Rods. Their Value as a Protection Against Fire.

BY J. WARREN SMITH, UNITED STATES WEATHER BUREAU.

Fire Losses.—The National Fire Prevention Association of New York states that fire losses and the cost of fire protection in the United States amounts to $450,000,000 a year. This is $850 a minute.

Figures gathered from the reports of the State Fire Marshals of Iowa, Indiana and Ohio for 1913, indicate that the number of fires due to lightning

was one-sixth of the total number from all causes and that the loss by lightning was one-eleventh of the total fire loss.

Statistics gathered by the speaker from 121 Mutual Fire Insurance Associations operating in 15 different States, largely in the central part of the country, show that in 1913 there were nearly as many buildings struck by lightning as were burned from any cause, but that the number burned by lightning was less than one-fourth of the total lost by fire. The loss on buildings burned or damaged by lightning was about one-third of the total fire loss.

The percentage of loss by lightning is not so great as has been stated by people interested in raising the lightning loss percentage, but the fact remains that the loss by lightning is largely in the rural districts.

The Indiana Fire Marshal states that 75 per cent. of all lightning losses occur in the country, which contains but 47 per cent. of the population. He says also that in 1913 92 per cent. of all barns damaged by lightning were in the country and that 69 per cent. of all barn losses were total. The Ohio Fire Marshal says that of 416 lightning fires in 1913, 319 were in barns. One insurance agent in Missouri reports that in seventeen years the losses due to lightning on barns has been $6,000 greater than by fire from all other causes. The Wisconsin Fire Marshal says that lightning destroys more property in this country than matches, sparks, and kerosene together, and more than any other cause except defective flues.

Lightning.—Lightning is an electric spark on a tremendous scale. It occurs between clouds more frequently than between cloud and earth. The length of the flash between the cloud and the earth is not usually more than one mile in length, while between clouds it may be twenty miles.

Lightning flashes are multiple or oscillatory and last from one one-hundred-thousandth to one five-thousandth of a second. What seems like a simple and single electric flash is really a rapid succession of sparks or flashes.

Damage by lightning is mechanical as well as thermal. Not only is damage done by the main discharges but currents are induced in nearby metal objects and conductors and these often produce additional damage. Fires may be started in inflammable material between two nearly parallel rods or wires by these induction effects. Cases are cited where fire was apparently started between a fan shaft and a drive shaft bearing in a flour mill, and between the wires on baled hay. One writer believes that many otherwise unexplainable fires in properly protected barns and warehouses are due to sparks jumping from one wire to another on baled hay.

Another writer, the secretary of a company carrying risks in farm property of fully $42,000,000, states that all of the losses and damages by lightning which they have had on rodded buildings have been traced to some metal parts which are not connected with the lightning rod. They have found that lightning will jump from 10 to 15 feet even between the lightning rod and the telephone wire, and they advocate placing these as close together as possible without being in actual contact, so that if the lightning collects on one it can get into the ground. The whole of the lightning discharge has to get into the ground and it is going there by the best course if we will give it the chance.

Lightning Rods.—There was a time when lightning rods were a fad and the lightning-rod agent flourished in the land and waxed fat. But because the lightning-rod agent insisted on accumulating the good things of the land too rapidly there soon came a second period when shot guns were kept loaded and standing behind the outside door because the lightning rod agent was more to be feared than the lightning. And this second period still obtains in some parts of this country to-day.

But the lightning rods that were up stayed up, and those that had been installed in an honest and workmanlike manner furnished protection, while all around buildings were being destroyed by lightning. This has led fire-protection agencies, appalled at the immense fire loss, to turn in more recent years to the lightning rod as a possible aid. Honest lightning-rod manufacturers have insisted that properly erected rods are a protection.

Further, professors of physics have told us that the office of the lightning rod is twofold. They say that when a storm cloud passes over the earth there is a constant interchange of electricty between the earth and the cloud, and that when a lightning rod is continuous from the moist earth to the highest point on our buildings it must aid very greatly in carrying on this quiet interchange of electricity, and should make a building less liable to be struck by lightning.

You stand under a rapidly moving belt and put your finger up toward the belt and you will feel the sparks moving from your finger to the belt. If you go on the top of a high mountain during certain electrical storms and put up your hand like that, there will be similar sparks from that finger. So it is when this lightning accumulates in a cloud and that cloud, with the lightning accumulated in it, passes over the rod in wet days, you will find that the cloud is interchanging electricity, or there is an interchange of electricity between the cloud and the earth, and a properly erected lightning rod furnishes the path for that cloud to quietly discharge its electricity, and that is probably the most important office of the lightning rod, and then the properly erected lightning rod, when there is a discharge, an explosion of electricity, will carry that charge quietly to the earth.

As a result a new movement has been started to protect farm buildings, and more especially barns, by rods, and Mutual Fire Insurance Companies are raising the inquiry as to the real efficiency of the rod in protecting the buildings.

To aid in answering this question the speaker was directed by the Chief of the U. S. Weather Bureau to collect information for the annual meeting of the Mutual Fire Insurance Companies, held in Columbus, Ohio, in September, 1914. Letters were therefore sent to over 1,100 Mutual Fire Insurance Companies, doing business in 44 different States, mostly in the rural districts.

Information that could be used in compiling a summary was received from 130 different companies doing business in 15 different States. These companies have about 350,000 farm buildings insured, valued at close to $300,000,000. The reports from these companies are summarized in Table No. 1.

Do lightning rods prevent lightning strokes? This table shows that the total number of buildings struck by lightning in 1912 and 1913 was 1,845.

Inquiry developed the fact that close to 31 per cent. of all of the buildings insured by these companies are equipped with lightning rods. Hence, if rodded buildings were just as apt to be struck by lightning as unrodded ones, there would be 31 per cent. of the 1,845 buildings that were struck by lightning that would have rods on them. As a matter of fact, however, only 67 of the buildings struck had rods of any kind. The number of rodded buildings that were struck, therefore, was only 10 per cent. of the expected number, demonstrating the fact that the efficacy of the lightning rod in actually preventing lightning strokes is 90 per cent.

In a report covering the past five years, 51 different companies, having nearly 95,000 buildings insured, had 660 buildings struck by lightning, only 21 of which had lightning rods on them. As fully 34 per cent. of their buildings are rodded, the expectation would be that 34 per cent. of 660, or 224, would be rodded. But as only 21 were rodded instead of 224, or only 9 per cent., it shows that we may expect from these figures that out of every 100 farm buildings struck by lightning 9 of them will be equipped with lightning rods and 91 will not have rods. A table made up from 67 different companies in Missouri, Illinois and Ohio showed practically the same efficiency.

Five companies doing business in Illinois, Missouri and Nebraska, with over 18,000 buildings insured, made reports covering a longer period of years, the shortest being 13 years and the longest 25 years, never have had a building burned or even materially damaged by lightning that were equipped with lightning rods, and they report over 50 per cent. of their buildings rodded. This is an efficiency of 100 per cent.

If we should omit the few companies that have had damage on rodded buildings, we should still have reports from over 100 Farm Mutual Insurance Companies with over 400,000 buildings insured and with a total risk of $250,000,000 or more, most of them reporting for two years, quite a number for 5 years, and five of them for between 13 and 25 years, with not one building ever burned or damaged to any extent by lightning that had a lightning rod on it.

This finding of the efficacy of the lightning rod in preventing lightning stroke is contrary to the general opinion, but it substantiates those by Professor W. H. Day, of the Ontario Agricultural College. His inquiry covered Ontario, Iowa and Michigan, and included several years, and he found the efficacy of a lightning rod in preventing lightning stroke to be from 92 to 99.9 per cent.

Damage to Rodded Buildings.—Occasionally a rodded building is struck by lightning, but the properly installed lightning rod is of very great value in preventing damage being done to the building.

The table shows that the total claims paid on farm buildings due to lightning, in 1912 and 1913, was $336,171. Inasmuch as 31 per cent of these buildings insured by these companies were rodded, we would expect a loss on rodded buildings of 31 per cent. of $336,171 or $104,213, but in fact the total claims paid for lightning damage on rodded buildings during the two years was only $13,053. In other words, the actual loss was only 12 per cent. of what would have occurred if the lightning rods did not serve as a protection.

The total number of buildings burned by lightning in 1912 and 1913 as reported by these companies was 407, and of these only 9 were equipped with lightning rods, or only 2 per cent. Of those struck that had rods only 5 per cent. were burned and the other 95 per cent. simply damaged, thus showing that the danger of a building being burned by lightning that is equipped with lightning rods is exceedingly slight.

A further study of the reports sent shows that where struck and damaged by lightning but not burned down, the average damage per building was less than $10 on those equipped with rods and very nearly $200 per building where not so equipped.

Imperfect Rodding.—In some cases where rodded buildings were burned or damaged by lightning the rods were recently installed and appeared to be in good condition. But in a large number of cases the rods were known to have been in poor condition or improperly installed. Some of the rods were old and defective, some not properly grounded; in some cases the lightning entered the building on a wire clothesline, and in others the lightning struck a nearby building, and the fire was communicated to the rodded one.

Now, understand, I am not selling rods and have no interest whatever in selling lightning rods. I am giving you all the facts that have been collected by myself from disinterested people, people only anxious to prevent fire loss.

Material for Lightning Rods.—Lightning rods may be of iron, copper or aluminum, and either will be found to be satisfactory as a conductor. As iron is not so good a conductor as copper it is thought to carry a lightning flash more safely, and besides it has the advantage of having a higher fusing point. Iron rods must be heavily galvanized and kept painted frequently, and for this reason should not be used in locations difficult of access.

If single strand iron rods are used they should be No. 2, No. 3 or No. 4 (B. & S. gauge), depending upon the size of the building. No. 2 is 0.257 inch in diameter or about twice the size of an ordinary telegraph wire, which is No. 9, No. 3 is 0.244 inch, and No. 4 is 0.225 inch in diameter.

The Michigan Agricultural Experiment Station recommends the use of ⅜-inch seven-strand iron cable as being easy to handle, inexpensive, and wholly satisfactory. The important thing seems to be to have it heavily galvanized and kept painted.

The best type of a copper rod is said to consist of bundles of small wires twisted loosely together. A steady electric current flows through every part of a conductor, but when the current is variable and exceedingly rapid the flow may be confined to a film very near the surface. To carry a lightning discharge, therefore, the rod should have as large a surface as possible. A twisted rod with 30 wires each 0.0425 inch in diameter has about 5½ times the surface of a round solid rod with the same amount of material.

The National Board of Fire Underwriters recommends that on residences, barns, stables, stores and similar buildings, where the maximum height of any point does not exceed 60 feet, copper cable be used, weighing not less than three ounces per foot and no single wire being less than 0.046 inch in diameter. In the case of taller and larger buildings they recommend the cable to weigh not less than 6 ounces per foot.

The all-important thing seems to be to have a *continuous* conductor from

the highest points on the building to permanently moist earth beneath. The kind of material and the size of the rod does not seem to be so important as frequent inspection, good groundings, and constant care to see that there are no poor or broken joints or rusted and broken connections.

Points should extend above all chimneys or other roof projections and should be placed at each gable end and at intervals of 25 to 30 feet along the ridge. There should be two grounds to all rod systems, and if the buildings are 100 feet or more in length three or more down rods. All cables should be connected in one system. Do not use insulators but fasten the rod directly to the sides of the building. All heavy masses of metal in the building should be connected to the rod, but the rods shall be kept as far away as possible from gas pipes or lead water pipes.

The earth connection generally used in a square sheet of copper, $^1/_{16}$ inch in thickness and not less than three feet square. It should be connected with the lightning conductor by a copper tape and buried in moist earth even if one had to go down 10 or 12 feet. Faulty grounds are probably the most frequent source of error in installing lightning conductors.

The iron water pipe is a splendid ground; if you connect your rod to any of them you have got the best sort of a ground.

Where splices are necessary the ends must be fastened solidly together and if possible riveted and soldered. Where there is an imperfect connection the electrical resistance will be so great that the electricity is apt to leave the rod and damage the building. Metal-covered roofs should be connected with ground wires from at least two corners by riveting and soldering and then run to moist earth.

While lightning rods must be put up in a workmanlike manner, their installation involves no more wonderful or mysterious processes than building a fence or digging a well.

The statement by some lightning-rod agents that no one but special scientists versed in all of the laws of electricity should do the work of putting up lightning conductors is about as sensible as to say that no one but a professor of geometry should be allowed to lay brick.

And not only that, but any professional in the lightning-rod business who advocates that his system is the only one scientifically correct and reliable, while all others are worthless and dangerous, invites the suspicion that he is himself a faker and a charlatan.

The Michigan Agricultural Experiment Station rodded their hundred-foot barn for twelve dollars, using that three-eighths seven-strand galvanized-iron cable; and they say that any man with ordinary common sense and a few blacksmith's tools, and with the ordinary help about the farm, can just as well put up lightning rods as to pay some would-be scientist seventy-five or a hundrel dollars for putting it up.

The installation of a proper rod is not and need not be excessively expensive. By the exercise of ordinary common sense, and with the knowledge that electricity demands a *continuous* path to the moist earth, a satisfactory rod can be put up without serious trouble.

Prof. Smith—I judge, from the time the Secretary gave me on this program, that we have some time for discussion. I know

I have not covered all the points at all. If there should be any questions that you would like to ask I shall be very glad to answer them if possible.

A Member—How far should the point extend above the chimney or other projection on the roof?

Prof. Smith—About eighteen inches, and, if it is a solid rod, it must have a sharp point, and be kept painted so that there is no oxidation.

A Member—How far apart should those rods be?

Prof. Smith—On the roof, every twenty-five to thirty feet; and on every chimney, every cupola, and every other projection, and one on each gable end.

A Member—Can the rod go straight down to the ground? Has it got to be run straight down?

Prof. Smith—No. The rod need not be run direct to the ground, but it should not have too sharp bends in it. It should have round bends, and it should never run down near a doorway where people are passing back and forth, because we are about ninety per cent. water and the very best conductor for that electric charge, and it will leave the wire every time if we get anywhere near it, and go through our body to the ground.

A Member—Would you run each rod to the ground or run them around that way?

Prof. Smith—It would be all right to have separate rods if each has two grounds, but each rod need not run all the way from the chimney down one side of the building to the ground. The better plan with the ordinary building is to run a rod along the ridge and down diagonally opposite corners to the ground. If the barn is a hundred feet or more long, attach another rod in the middle of that and come down the side of the building and attach your whole system together, and attach your iron hay tracks or any other large mass of metal to the rod. You see the electricity accumulates in all masses of metal of any size, and you want to connect these to the ground in any way possible, and with your wire system.

A Member—Does the copper rod need to be kept painted?

Prof. Smith—The copper rod does not need to be kept painted, because that will not oxidize.

Mr. Taylor—Would two wires answer for a seventy-five-foot barn?

Prof. Smith—I think it would.

Mr. Woodruff—In the town district that is covered by trolley lines, trolley wires, electric-light wires, telephone wires, is the danger as great as in the rural districts?

Prof. Smith—It is not so great as it is in the rural districts.

Mr. Woodruff—Will they draw the current by the trolley wires?

Prof. Smith—The trolley wires and other wires of that kind furnish the medium for getting the electricity from the atmosphere to the ground.

A Member—What effect does moisture have on the current? That is, whether there is plenty of moisture up on the top of a building, a tank, a large supply tank?

Prof. Smith—I don't think that would have any effect at all.

Mr. DeCamp—Suppose one has a tall windmill near a barn, don't you think that would answer?

Prof. Smith—I have seen a building struck by lightning near a tower. The tower would help if it is iron, and is connected with the moist earth. The tower would get the current to the ground, and you have got protection there, but if it is far away from the building I would not depend on that.

Mr. DeCamp—Among other things that I have seen in my lifetime, I was one summer putting up lightning rods for a company. In that system they had an extra wire run up into the air about a hundred feet high and another wire into the ground a number of feet, and they were spaced apart, and they placed cotton on those points, and that cotton showed there was more electricity shooting up from the ground than there was from the air. Am I right about that?

Prof. Smith—I don't know. Some men claim it only goes in one direction and others claim it goes both ways. I don't want to test it anyway, myself.

A Member—Touching the matter of the data. The statistics regarding the efficiency of the lightning rods that you have quoted are mostly from the Western States. You don't have to go any further than the State of New Jersey—

Prof. Smith—I sent letters into New Jersey, and the information was very meagre. I have forgotten now (it was a year ago last summer I got it) whether it was because you had so few buildings rodded, or because the insurance companies made no records of the buildings rodded, or what; I have forgotten about that.

The Member—I am not acquainted with North Jersey, but in South Jersey we suffered a few years ago very severely from lightning storms. It was a very common thing for a farmer to see eight or ten or even twelve barns burned down. For the last seven years there has not been a barn, or a house for that matter, in Gloucester, Cumberland or Salem county that has

had any modern system of lightning protection on which suffered any damage. I have made that statement over and over again.

Prof. Smith—You mean they were protected with rods.

The Member—With a modern system of rods. As the Professor has said, the great trouble seems to be that the farmer is more afraid of the lightning-rod agent than he is of the lightning, and he is justified in that, in taking chances with the lightning rather than with the lightning-rod men, especially in the East. In the West they are better off in that respect. It has been taken up by the different State Universities and the Agriculture Department, and there is an inspection to see that it is done right, and I am sure you will be surprised when I say, and I believe it to be the truth, that the address of the Professor in New Jersey, particularly in some parts, will do more harm than good, because the lightning-rod men will go around and say, "All you want to do is to see the Agricultural Department and they will tell you that a professor from the Weather Bureau told them that lightning rods were all right, and this is the rod he is talking about."

Let me give you an example of that. Mr. James W. Lippincott, of Moorestown, the head of the Whittall Tatum Glass Works, said, "I wish you would go over and talk to the farmers. There are any amount of fires here, and it seems to me they would get rods, to say the least, if it was only brought to their attention. I spoke to them on Children's Day in Moorestown and in ten days after that that country, all the way from Merchantville up as far as Columbus, was literally covered with lightning-rod men, selling rods, that were condemned by the Professor, these twisted rods, with porcelain nozzles."

Now, it seems to me that the only way that the State Board of Agriculture can serve the farmer is for the State Board to draw up specifications, have them endorsed by our Professor here, or the United States Weather Bureau, and send them out to the farmers as the proper way to protect a building; and there is no question to my mind whatever that the farmer needs more protection from the lightning-rod sharp than he needs from the lightning. (Applause.)

Prof. Smith—That is what I put so much emphasis on. The fact that it is not necessary to get a lightning-rod man to put up the rods. You can put them up yourself by using some care.

A Member—I think the Professor spoke about the water pipe making one of the best grounds. Isn't that a dangerous recommendation?

Prof. Smith—Why?

The Member—Is not the charge likely to go anywheres on that water system?

Prof. Smith—It will go into the ground.

The Member—It will go to other places, too. I have known of a fellow to be struck where the lightning struck such a ground and followed the pipe up into the house.

Prof. Smith—Are you sure of it?

The Member—Well, it is a pretty dangerous ground then, is it not?

Prof. Smith—I say, are you sure it went up into the house that way?

The Member—A man standing on the ground in contact with the water pipe felt the shock.

A Member—Last summer I was walking through the house when a shower came up and I got about as far from here to that desk from the pipe when a ground current of lightning came into the house, in the door, and went on clear up to the ceiling, came right in through the sink and off through the brass and iron and stopped near the ceiling and knocked that all to pieces.

Prof. Smith—You say you would not advise connecting with the water system?

The Member—I think that is a dangerous practice.

A Member—Speaking of grounds, after thirty years' experience, I have come to the conclusion that there is one best way to make a ground, and especially the water pipe, which everybody agrees to be the best ground imaginable. But it is a very difficult thing to solder a lightning conductor onto a water pipe, particularly when it is cold and pretty hard to work. And in addition to that you always had to have any soldered connection under ground where the solder is bound to corrode in time. It looks all nice above ground, the rods are there, and it is worthless. There are many other ways of doing the thing, and there is always one best way, and that is, never to drive a bar into the ground and put your conductor onto it. To give you an illustration of how much that amounts to, in Germantown, we attempted to keep the grounds apart, and we drove bars and we bored holes for them, and after boring forty feet we found we had struck nothing but mica. Now, if we had driven the bar down in the ground and stuck our conductor onto that, why, it would have been just as apt to go to that bar as if we had driven it into glass bottles, because mica is a perfect insulator. And you cannot tell anything about the geological conditions of the ground by driving a bar. Always bore a hole with a test-hole auger, and

then you can tell whether you have got good ground or not, and, in order to get good surface contact, and this is even better than the plate, because you have to solder to that copper plate to be effectual; take and make a big ball out of wire, and if you have any question of that fill it up with powdered charcoal, which is very easy to be obtained.

There is another great advantage, it seems to me, if rules and regulations would be drawn up and have them endorsed by the Professor or some member of the Weather Bureau, as that will give the farmer something to go by. That is beyond any shadow of doubt. There are many questions: Will the farmer do it? Won't he have it put up? Where is he going to get the very best iron? He knows from the experience he has had with the fire fence that it is almost impossible to get it, and if he does succeed in getting it, who is going to work to paint the lightning rod every year or every two years? They don't often paint their own barns, let alone lightning rods and conductors, and they are absolutely worthless unless they are painted.

But if you are going to do it, either yourself or going to have somebody do it, for your own protection get some rules and regulations.

You sometimes hear of using a piece of gas pipe or a pipe over the bend. Now, that is the most absurd thing in the world to do. You see it done over and over again by lightning-rod men; they put a piece of gas pipe around where the rod enters the ground to protect it, and unless that contact is kept perfect over every conductor it is no good, and just as soon as the current goes into the rod it is liable to burn and you can't see what has happened there because the pipe is over it. That is a most foolish way to do. Just take your two ends, bring them together, give them a few twists and take your hammer and shape it down and then you can solder it if you want, and there is little danger of that breaking, and if it does you can see what is there.

So that I will go back again and say that the Board of Agriculture want to take this subject up and draw up some rules and specifications to be endorsed by the United States Weather Bureau and put them in the hands of the farmer so that he is able to know what to do, and if he is going to have his building protected by somebody else or whether he is going to undertake it himself, he will know it is right.

Mr. Woodruff—Mr. Chairman, I place that resolution before the house, that the Board of Agriculture have proper specifications prepared and drawn up under the supervision of Prof. J.

Warren Smith, covering this matter, for the information of the farmers of New Jersey.

This motion was duly seconded.

Vice-President Cox—It is regularly moved and seconded that this question be incorporated into our annual report. As many as favor the adoption of the resolution, say "Aye."

The motion was, on a vote, carried.

A Member—I would like to ask the Professor whether the United States has issued a bulletin on this?

Prof. Smith—A farmers' bulletin has been issued. It does not go into detail as to the character of the rod.

A Member—Wouldn't it be possible, and a greater source for the dissemination of this information, if this were started from the United States Bureaus instead of just our reports?

Prof. Smith—I think so. There are two or three points in what this gentleman over here said that I would like to refer to, and then I think my time will be used up.

One of his objections was what he said about putting a piece of gas pipe near the ground. Don't do that at all. Leave the rod bare down there. He said I said you wanted a pipe for your roof point. No, you want a solid rod for your roof point.

And then he said that, I don't remember who, recommended using iron instead of copper. I think he is wrong about that. I think the general opinion is that copper is better because it is more durable.

The Member—I said I won't keep the iron rods painted; and, therefore, for that reason I ought to use the copper rod.

Prof. Smith—I think that is true.

Prof. Rider—Farmers' Bulletin No. 367 of the Department of Agriculture gives this information. I would like, myself, to pass a resolution requiring that a little more definite information be given to the farmers in our report of the State Board and hope it will be done. All that is required to get this bulletin is to send a postal card to Washington.

Vice-President Cox—A motion is made that we extend a vote of thanks to Professor Smith for his presence here and his entertaining and instructive address. All in favor of that motion will signify by saying "Aye."

On a vote, the motion was carried.

Vice-President Cox—Mr. Smith, I extend to you the thanks of the Board.

At the afternoon session yesterday the State Board requested the appointment of a special committee to attend the hearing on this road bill that is now before the Legislature, and that

committee I will appoint to consist of Mr. Theodore Brown, Mr. E. O. Woettgen, Mr. Daniel H. Agens.

There was also to be a committee appointed to attend the hearing on the Employers' Liability law which, as I understand it, has a meeting on Monday, February fourteenth. I am not sure that that is just right, however. On that committee I will appoint Mr. S. E. Young, of Morris; Mr. H. W. Kline, of Somerset; Mr. Henry S. Lippincott, of Burlington.

We will now take up the next item on our program, which is Conference and Suggestions on Legislative Matters.

Now, the members of the State Board of Agriculture that are interested in legislative matters, we hope that we will be able to hear from you now.

We don't want all of these long-continued addresses, which are very good in their place, but we want a little opportunity at times; let some of the members of the State Board of Agriculture blow off a little steam, too. Now, this is your time. We would be glad now to hear from the members present touching these matters of legislation, either the Road question or the Employers' Liability act or any other matter that you feel interested in. Don't all speak at once, but somebody get ready.

Secretary Dye—A number of years ago the Board requested that the County Boards and other Associations should have an opportunity to discuss questions of interest to them at the annual meeting. So that to meet that request, we sent out to the different boards for topics they would like to have discussed, and space was given on the annual meeting program for the discussion of those topics. As I remember only two were sent in and very little interest taken in discussing them that year, and then again last year the question was raised here and the request made very emphatic that we should set aside some time at the annual meeting of this Board to discuss legislative matters. The answer was, that we met so close to the time of the beginning of the session of the Legislature that there were scarcely any bills we could take up for discussion. This year the meeting of the State Board was put a week later in order to have an opportunity to discuss some of the bills that are in the Legislature. Now the time has come, the opportunity is here. Unfortunately, Senator Gaunt does not seem to be present. We expected him to take up some of these bills and present them for discussion. Mr. Allison is here and he is a member of the House, perhaps he might have something to introduce before the Board. If you want to have anything to say about legislative matters, express it now.

Mr. Crane—Mr. Chairman, in connection with the road bill, we have found a great deal of trouble with the pavement that is put down, the Amiesite pavement. It is too slippery and dangerous. At places horses have fallen and been injured frequently, and it is very unsatisfactory when it is put down new. Even in good weather it is slippery. I suggest that it would be more satisfactory to put down something that is not so slippery. There is a great deal of complaint about it. It is not quite so bad now, as it has gotten worn a little, but it is unsafe even yet.

Mr. Brown—I desire to announce that the hearing on the road bills will be on next Monday, February seventh, in the Senate Chamber, at 10:45 A. M.

President Cox—That is an important matter. You will please bear in mind. It has been previously announced that the meeting was for Monday at two o'clock. Mr. Brown desires to correct that impression now that the meeting would be afternoon, he wants to inform you that the meeting will be in the morning instead of the afternoon, on next Monday.

A Member—The Committee on the liability law meets February fourteenth, at two o'clock in the afternoon. I wish the Chair would ask every delegate who represent the different counties of the State of New Jersey to meet with the committee that you have appointed at that time and bring as many as they can with them.

Vice-President Cox—I would like to impress that fact upon the minds of the members here present, that while this Board has officially appointed a committee to attend that hearing, it would be very much to the interest of the farmers and the State if you would all be there and stand behind your committee and help them to protest against this radical legislation which would be against the interests of the farmers.

Mr. Kurtz—Mr. President, if we can come down in delegations from all over the State it would be very effective, but if we do not see our way clear to come down then we should do what we can, without coming down, to help those bills, and I think that those of us who cannot come should send a letter to our Assemblymen and Senator, and perhaps get others to write letters.

Mr. Rider—Mr. Chairman, I regard this bill that is before the Legislature increasing the liability for accidents, etc., to be one of the most serious problems that we have. If the farmer meets with one or a series of accidents under the conditions which are proposed in this new bill, it would put one-half of the farmers out of business.

Vice-President Cox—There is one other thing, I think, in connection with those proposed bills, if I understand them correctly. When the law becomes amended, if those bills become a law, they provide for compulsory insurance, that is, that the farmer as well as the manufacturer will have to pay an insurance on his help, or take out an insurance policy to protect his help. Now, I have not lived nearly as long as a good many other fellows have, and not nearly as long as I expect to, but this is the first time, I believe, that I have ever heard of anybody being made the beneficiary of insurance that paid nothing for the insurance.

Mr. Lippincott—Mr. Chairman, may I have a word? I understand the Bill Clerk is out of town, and is not likely to be in here till after the close of this session, but I think it the duty of each delegate to see that his Assemblyman immediately, or his Senator from his county, furnish him with a sufficient number of copies of those bills to distribute them among the farmers in his locality, so that they can be informed on this subject and come out and help us in a body to go fight this bill.

Mr. Agans—Mr. President, as a member of the committee on those proposed road bills, I am not going to say anything about the bills, for I don't know very much about them as yet; I will know more, probably, when the hearing takes place. I would like to solicit the assistance of every member of this Board. Now, we farmers are going to talk; we cuss and discuss, and that is about as far as it goes. The time is past for agitation, for talk; the time has come when we must act, and act at once. We would never have, probably, this employers' liability bill if we had been on the job, but we let it go through. Now we are trying to have it repealed or amended, or something of that sort, and it is almost impossible. You can see the necessity, gentlemen, for action.

A Member—Mr. Chairman, it seems at the present time the proposition of an employers' liability insurance is a very popular movement, and it is going on through all the States, and the thought has occurred to me whether it would be proper for that committee to prepare a bill that would meet our interests in the matter. If we do not like what has been prepared, let us prepare something that is better.

Mr. Loughran—Mr. Chairman, the suggestion of the gentleman on my right concerning this work is, I think, all right, but he ought to go a step farther. If he went to find out the number of members of the Legislature who come from our congested sections, twelve from Hudson and twelve from Essex and so on

all the way through, then you will find out how many of them are in the hands or clutches of those who are pulling this thing through. Now, I think it well, while you are discussing this, to try and take a real practical view of it and not just merely the way it appears to be.

A Member—Mr. President, it seems humiliating to me to have the farmer all the time seeking something for himself on account of the condition that he is in. I suppose that it is so, that the farmers of New Jersey and other States are in a condition where it is necessary for them to have special conditions, perhaps a nursing bottle held to their lips most of the time, or some special favor. But we hope the time will come when the farmers will be considered on a business plane, as other business institutions are all over this State, and that they will be united in opposition to any legislation that will affect them the same as it affects other business institutions. I cannot see why they should be favored, except that they are a set of lame ducks, and if that is so we ought to know it.

Mr. Brown—I would just like to say, in addition to what I said yesterday, that the new liability law does not contain an honest line. It does not benefit the employee as it should and brings an unjust liability on the employer. It ought to be repealed entirely and a new workingmen's insurance law, in which both the employer and employee share in the expense, enacted. That is an honest law and that will work, while this law never can work. (Applause.)

Vice-President Cox—Is there any further discussion of this matter? Are you ready for the question?

Mr. Woettgen—Mr. Chairman, the suggestion raised that the trouble is that we are undertaking destructive and not constructive action, is likely to be found true, and the suggestion made that we ourselves draft a bill that would meet our requirements and which will give our representatives something to work on, is all right. We have never yet presented any bill except possibly the bill presented by someone else.

Vice-President Cox—Is there anything further to come before the Board at this time?

A Member—Mr. Chairman, I would like to call the attention of the members to the remarks of Mr. Brown. I think his idea will be better adapted to meet the situation than anything else. To my mind there is going to be an employers' liability law passed, and I don't think we can get away from that, and the idea of the farmers being exempted from its operation is not a popular one. It is looked upon as class legislation to some

extent. There are good reasons why we should not have that burden to bear, but I think if this committee can get a bill drafted providing as Mr. Brown states it, embodying Mr. Brown's ideas as a substitute and as the farmer's idea of compulsory insurance, I think it would be the best move we could make.

At this point "Billy" Sunday entered the room and the applause accompanying his entry interrupted the business of the meeting. The proceedings were thereupon suspended on this business, for the present, and Mr. Sunday was presented to the Board.

Vice-President Cox—Gentlemen, for the benefit of those who have not seen him, this is "Billy" Sunday (applause), and I am happy to introduce Mr. Sunday to this audience. (Applause).

"Billy" Sunday's Address.

You would not know that I was born and raised on a farm. You would expect to see whiskers on my face to prove the truth of that statement, but it is true, nevertheless.

I never look in the faces of a lot of men who run farms or own farms but that—well, I can hear the tinkling bells in the distance in the fields and can see "the herd wind over the lea," and I can hear the neighing of the mare and smell the new-mown hay, and hear the pigs squeal, and smell the fried chicken and taste it, and hear them holler, "It's time to get up." And I feel a good deal like I wanted to go back to the orchard which sets up on the hill, where the apples are ripening, appealing to us, and turn from there and wind down to the pasture lot and let down the bars or jump over them and find you there waiting, with your eyes shining like twin stars. Oh, those were the fine days on the old farm; and when I see you men here I want to go back.

The farmers are necessary. They are the Commissary Department of Uncle Sam. If they would go on a strike the population of the cemetery would rapidly increase and there would not be any smoke crawling from the factory, there would not be any steel works and the railroads would not turn their wheels, there would be no jobs for them for they would not have anything to carry out or to haul back.

So that he is the great big important figure, he is in Uncle Sam's big machine that we call the Government.

In all history, whenever the small landowner was absorbed by the large landlord, the nation declined. As long as Rome was a nation of small farmers she succeeded and she prospered, but when the common people became divorced from the soil, why then, my friends, she fell; she was cut off from the real source of her strength, and her fame became dim and down she went. And one of the dangers, I think, in America, is that an increasingly large number of people shall become disinherited of the power that is in their arms, and it is very refreshing to me to talk to a crowd of

men who are trying to encourage the young men of America to maintain their once absolute hold upon God's university. That is, the farm.

Now, the cheap, free lands of the far West, they have always been a sort of a safety valve to prevent explosions between capital and labor in the East. Why, up until a few years ago, if conditions grew too hard for the wage earner he could throw up his job, hike West and take up a claim. Well, to-day, my friends, I will tell you the truth. Most of the lands of the West are all gone. There are quite a few arid spots here and there, it is true, that won't raise anything but a jack rabbit, or a prairie dog, or a rattlesnake, but that is about all there is left.

When there were thousands of acres of land to be had by simply taking them, we used our lands recklessly in this country. America has been raped by the reckless methods of farming, and when the early farmer's land wore out, he just pulled up stakes and moved onto another farm. So what was the use of that fellow studying soil and rotation of crops and fertilizer and nitrogen.

Nitrogen is a substance that is necessary to get into the tree, the wheat, the vegetable crop. The atmosphere is seven-tenths nitrogen. It is as free and plenty as any article we can conceive of. Now, the problem is how we can get the nitrogen out of the air and into the ground. Some vegetables decay and it gets in. Some vegetables take it in from the air. And those all increase the nitrogen in the ground. But if once the soil becomes exhausted we will starve to death. So it is up to the farmer to see that he gets the crops that keep the nitrogen there. We all know that peas, beans, alfalfa, clover, vetch, and those crops that are rich nitrogen feeders, that they have got the power to yank it out of the air and deposit it in the ground, and they deposit in the ground more nitrogen than they use. Corn and apples and potatoes and such things as that take out more nitrogen than they bring in.

So that it is true we have got to study crop rotations in order to increase that nitrogen and keep the crops coming. But what was the use of that fellow doing it?

So when they found at the other end of America in those days that they one day woke up where the broad Pacific flowed, they woke up to the realization that there was no more West.

So we learned, if we were going to increase the income from the farm, that we were not going to do it by taking more land, but by using what we already had under cultivation more carefully. So it was up to every American farmer all of a sudden to figure out where he could get out two ears of corn instead of one, how he could get out three and a half tons of hay instead of a ton and a half. And all idea that any kind of a skate would do for a farmer is gone. It takes as much brain and ingenuity to run or to manage a farm as it does to run or manage a factory. All the idea of the long-haired, long-whiskered, and cooney-skin cap and rawhide-boot farmer is gone.

Go out to the country to-day. His home is lighted by electricity or acetylene. A victrola here in the corner, with all the latest grand opera selections right at hand, and carpets and rugs on the floor, and cement floors, and the

silo and the barn, and, great socks, instead of driving to town, he now goes with his automobile. And he has got the trolley that runs to town, and he goes to the telephone and he calls up, "Hello, Wall Street. Please buy me five hundred Bethlehem Steel, five hundred United States Steel Corporation and five hundred Pennsylvania. (Laughter and applause.) And you can sell my trolley stock to pay those bills in town." (Applause and laughter.)

Where are the preachers and the teachers that have talked about the city problems until we each had to do something to solve it simply to quiet him? We have got the rural problem to-day, which is a more serious problem to-day than any city problem ever discussed by any preacher in economics in America.

And I will tell you another thing that you probably know. The time is long past when any kind of a skate would do for a country school teacher. The time is long past when any kind of a skate will do for a country preacher. That is a great thing, not only in that the life on the farm is the finest in the world, but that the society should be made more attractive for the young man and the young woman, and if we spend more time, and more money, and more energy in making our schools and churches and homes we will give a knockout blow to the devil and a knockout blow to the young people leaving the rural life and not wanting to live in the country and going to the city and going to the devil like they do to-day.

Take the Good Roads problem. Why, the farmers ought to make the Legislature go down in their pockets. Stop them spending the time fooling around trying to give more and more to the city and letting the fellow in the country pay the taxes. Why, think, men, in sober moments. This country spent twenty-five hundred million dollars for drink last year. All right. The Agricultural Department in Washington has figured out that it costs sixty-five hundred dollars for a mile of macadamized road sixteen feet wide and seven inches thick. Allowing three thousand miles from New York to San Francisco, I could take that amount of money and I could put a hundred highways from the Atlantic to the Pacific. Allowing twelve hundred miles from Duluth to New Orleans, I could put a highway every twelve miles apart, sixteen feet wide and seven inches thick, with the money spent for drinks in this country in one year. So that we would have those fine highways, every one, to take you to New York or San Francisco, and then if we got into trouble they could mobilize their army over all those roads and do it in fifteen minutes. (Laughter and applause.)

And it would not be like now, when many of our rural communities and small towns are so easily drained of their brightest young men until they resemble a sort of a fish pond, inhabited only by suckers, and they would not have to stand for it. It is like the Irishman who was captured by the cannibals. And they were trying to figure out how to eat him, whether to broil him or roast him, and they finally decided they would roast him. So they fastened him to a stake in the ground and drew up to have a big feast around him, and made a fire, and then began to have a big dance around him, and they kept dancing around and around, beginning far off and coming in closer and brandishing their knives, and during the dance, when they got close enough to him, they got to sticking their knives in him every time

they went around, and finally they got so close that some of them stuck their knives into him, and, drawing it out with blood on, they licked the blood off of it; and our Irishman stood it all in good part, as an Irishman is apt to do, and when it got too close, he finally hollered out, "Hould on, hould on; I'll stand for your feast all right, I'll stand for your dance all right, but I'll be damned if I don't kick at being stuck for the drinks." (Laughter and applause.)

So the situation presents a lot of problems, men, and many of the problems depend on keeping the sane balance between the rural and the city people.

You know we have the largest kind of city to-day in America. Too big a percentage of the population live in the city. And they are developing extravagant appetites and they are degenerating through the powers of that attraction. Ninety-eight per cent. of our criminals come from our cities. Ninety-eight per cent. And you fellows are taxed to prosecute and take care of them—come from the country? No. They come from the cities. And the farmers in the country only are successful in escaping the power of that attraction.

Rome fell because of the excess of city life, and America is fast hastening to the same doom to-day, because the number of consumers outruns the number of producers. That is why we have got such numbers of people speaking about the high cost of living. One farmer has got to raise enough crops for a hundred loots. They would not go to the farm. They would rather panhandle on the streets of the city for something to eat than go out on the farm to milk cows and haul manure. They are lazy and would not do it. That is what's the matter. Some people are scared to death lest Japan or Germany should jump on Uncle Sam's back. I am not afraid of any bunch on God's earth, gentlemen, myself. I think you know that. Not as long as America, or our old farmer in his overalls has the breadbasket of the world, as he has shown the world he has.

But, you may talk about your yearning for to be back on the Farm,
When the clover bloom is blowing and the Summer lends its charm;
You may tell tales of waving corn and the bending cornstalks tall,
But the place for little me is the old Farm in the Fall.

When November's winds are howling and there are snowflakes in the air,
Ain't any place in all this world like the old Farm way back there,
Well, though I may be living in the City now, in some heated flat,
I long for the good old fireplace, the crackling blaze and flapjacks and all that.

Syrup of the choicest brown, apples, Greenings, Ramblers and Snow Spots,
And the attic floor all spread over with nuts and popcorn,
And hung up on the ceiling way up there the sausage and the ham,
Gosh, it is the finest place for Winter on the old Farm in the Fall.

Then the whole world was before me and not a thought of care or strife,
It was all one happy chorus then, nothing to cloud your life,
I've learned since, I'm sorry, though it is beyond recall,
That was the best in all Life's journey, back on the old Farm in the Fall.

I have not said a word about the "Fodder." I did not intend to. That was only my subject. (Applause.)

Vice-President Cox—Mrs. Sunday's father was a farmer and had four or five big farms in Illinois, and ran a dairy where he raised about four or five hundred quarts of milk a day when she was a girl, and I think that she might be interesting to us for a minute and tell us about it. (Applause.)

Mrs. Sunday—I have had experience in both farm life and city life, and I think I appreciate the farm life most, although I was only three months old when my father took me off the farm and took me to Chicago, but I have always had the opportunity to go back to grandmother's for the summer, and every single summer I did until I was fourteen years old or more and got a taste of what farm life was. I just love it, and I am glad I do, because Mr. Sunday is such a Rube himself. (Applause.)

A Member—I move you, sir, that a rising vote of thanks be extended to Mr. and Mrs. Sunday.

This motion was seconded, and, on a vote, carried, so that there was a loud chorus of cheers and ayes as Mr. and Mrs. Sunday were leaving the Assembly Chamber.

Secretary Dye—The Board will be in order. Is there any more business to come before this annual meeting of the Board?

Mr. Loughran—Before adjournment I would like to ask some information. I have been requested to do that from our County Board. I come from a county with over five hundred thousand inhabitants, and there are various municipalities there, Jersey City, Hoboken, Bayonne, West Hoboken, Weehawken, Harrison, and a number of others I cannot think of just now, there are so many. We have had Mr. Lewis and several others down in that county and around to the various points and municipalities and have been unable thus far to secure any data having to do with the State Board of Agriculture. In Secaucus is a garden of agriculture, a garden city, and there are numerous things that have to do with the business of the State Board of Agriculture, but we are unable to get any data so far, and we have gone to various municipalities with out success. So that if there is any information that anyone here can give us as to the best way of going about that, we would gladly accept it and go back there and clear it up, because we think our county can be built up and we can get a good association in Hudson county if we can get the proper information.

Secretary Dye—You can get that information in the Secre-

tary's office. Is there any other matter to be brought before the Board?

A Member—Mr. Lippincott had the floor, I believe, and he was suggesting the amendment of the liability law.

Secretary Dye—That was the matter that was being debated this morning.

A Member—If that committee has not that power it should be given that power.

Mr. Rider—I don't remember if authority was given or not. I move that the committee be given authority to act in the matter of drafting a bill as a substitute for the compensation act.

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

A Member—Senator Gaunt has just come in and we might ask him—it has been considered drawing up another bill for this liability law—can he give us any information in regard to the proper authority to draw up that bill?

Senator Gaunt—I have not been in the room. What has been the action on it?

Mr. Rider—Mr. Brown made the suggestion here that we ought to have a liability law enacted as a substitute for the present proposed law, which would make both labor and capital share in the expense of the insurance; that is, that the labor should contribute its portion of the cost of the insurance that it is now proposed to put on the manufacturer and the farmer, and nothing on the laborer. I think that our Vice-President made the statement that the present case of the proposed liability laws was the only kind of insurance where the man got the benefit from it without it costing him anything. The laboring man gets the benefit of the insurance without any cost to himself. Now, nobody else gets insurance of that kind.

Senator Gaunt—If I understand it, there has been a committee appointed by this Board?

Mr. Rider—That is right.

Senator Gaunt—I would suggest that that committee get in touch with Mr. Nelson B. Gaskill, who has drawn the other bills. He is a very efficient man for drawing bills. He drew our agricultural bills for Senator Frelinghuysen. He drew up the road bills for us, and he has drawn most of the important bills before the Legislature at the present time, that is, for committees or commissions that have been appointed at the previous sessions of the Legislature. I don't know who drew the bills for this Employers' Liability Commission. You know that is an organization that is perpetuated from year to year. They, of course, claim that they have been studying the question from all view-

points. They have not yet studied it from the farmers' viewpoint, in my judgment, and the proper thing for this committee to do would be to get in touch with Mr. Gaskill. Of course, if you do that, you must understand that he will have to be paid for his services. These bills have got to be drawn by a mighty good legal mind, and Mr. Gaskill has been very fair and has always been very reasonable in every way. We will give him our ideas in some concrete form and he can work them into legal form as well as any man I know of.

A Member—Is it not a fact that the whole matter of this compulsory insurance is to assure the workingman whatever indemnity he may be entitled to if he is injured? I think they realize as we do that the farmer may be obliged to pay more than he would be able to pay, and therefore they want the insurance company to stand behind him. We may have more damage to pay than any of us are capable of paying and that we feel ought to be paid to the injured workingman, and I think the purpose of that compulsory clause is simply to insure the workingman, not to insure the farmer.

Mr. Gaunt—As I understand, one of these acts is going to compel every employer of labor to take out insurance. That will be his only safeguard. If he does not take out the insurance, where is the farmer going to get off at? It also provides, as I understand, to take out some sort of a State insurance scheme. I don't know whether the State can go into the insurance business or not. I am not prepared to say that. I have not studied that problem. But one of these bills, as I understand it, provides that the State shall take up insurance.

A Member—I don't know about that bill at all, but I thought the real purpose of those acts was to make the insurance a sort of a safety for the injured party.

Secretary Dye requested Mr. Rider to take the chair at this point.

Mr. Woettgen—Mr. Chairman, the Senator has suggested going to Mr. Gaskill to draw an amendment to the bills for us, but he suggested also that it would be necessary to reimburse him for that. I don't know that we have authority to reimburse him.

Chairman Rider—A motion to that effect would be in order. I think it would be very proper.

Mr. DeCamp—Mr. Chairman, I don't think the Comptroller will audit any expense of that kind. I know he has not done so in other instances. The Comptroller won't sign any order for anyone drawing a bill outside of the Attorney-General. There is no question about that. Don't go on and spend money with

the idea of getting it out of the State of New Jersey, because you won't get it.

Mr. Woettgen—If that is the case I ought to have spoken sooner. I suggest, then, to pass the hat around, if we know approximately what the bill would be. I am glad to contribute as an individual member and I think the rest of the members will be.

Mr. DeCamp—You can go to the Attorney-General and have the bills drawn all right.

A Member—We certainly cannot expect this committee to pay the expenses of drafting the bills and working for them for our benefit and taking the money out of their own pocket to pay the bills. I am willing to pay my share.

Senator Gaunt—I suggested Mr. Gaskill because I knew his qualifications. You might go to the Attorney-General's office, and Mr. Backes is just as able, and just as good. I did not think of the Attorney-General's office, and I have not any brief so far as Mr. Gaskill's business is concerned at all, or to advertise him. I did not think about Mr. Backes. You cannot get at him, perhaps, as easy—they are pretty busy up there, but you can go to the Attorney-General's office and have any work of that kind done by Mr. Backes, and he is a mighty good man to draw bills.

Mr. H. E. Deats (Flemington)—I think we can secure the guarantee of enough men to pay those bills and to warrant us in going to the expense. I should be glad to start the subscription with five dollars.

Mr. Hendrickson—I move that it be left to the discretion of the committee whether they employ Mr. Gaskill or the Attorney-General, or who.

Senator Gaunt—I think the motion of Mr. Hendrickson leaves it to the discretion of the committee. It puts it up to them to have the bill drawn, and they can go to the Attorney-General's office or they can go to Mr. Gaskill if they think fit. I think the motion of Mr. Hendrickson will solve the situation. It puts it up to the committee, and we have full confidence in the committee.

Chairman Rider—The original motion was that Mr. Gaskill be employed and the amendment was that it be left to the judgment of the committee. As many as favor the amendment will vote "Aye."

On a vote, the amendment was carried.

Chairman Rider—The vote now is on the original motion, as amended.

Mr. DeCamp, Jr.—Mr. Chairman, I am a delegate from the Central District Pomona Grange. I do not feel that I should contribute five dollars, and yet will guarantee if the bill passes, and they will send a bill to the Pomona Grange, they will get whatever their share will be of it. If they did not pay it I would guarantee to pay it myself. I would not feel like paying out five dollars.

A Member—We don't want to look at it in that light. We authorize the committee to go to this expense and they must be paid back the money they spend.

Chairman Rider—You have heard the motion that the matter be referred to the committee as to whom they please to employ. As many as are in favor of that motion will signify by saying "Aye."

The motion was, on a vote, carried.

Mr. Hankinson—I suggest that as many as are willing to give their names to the committee for the purpose of giving five dollars to help out in whatever expense the committee has, that they give their names.

This motion was duly seconded.

Chairman Rider—It is moved and seconded that all who would be willing to the expense of drafting this bill give their names to the committee, and when they get a bill for their share they will pay it, as the committee apportions the bill they get for their expenses.

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

A Member—Mr. Chairman, as a delegate of our County Board of Agriculture, I have no way of pledging our Board to make this payment, except, of course, I can go back to them and put it up to them that this payment shall be made.

Chairman Rider—That does not interfere with anybody making a personal pledge if they choose to do it. We have had offers here and personal pledges, and there is no objection to the members making personal pledges instead of the Pomona Grange, or the Agricultural Board, or anything of the kind. All who are willing to share in the expense will have to hand their names to the committee.

Senator Gaunt—Mr. Chairman, I don't want the idea to go out from here that the Attorney-General's Department is not competent, or is not willing to draw that bill. In other words, I did not think when I spoke about Mr. Gaskill, and I only spoke about him because I have been in touch with him so much. He was in the Attorney-General's office, and we went to him because the work we had for the Road Committee would have simply kept

the Attorney-General's office clogged up for a good deal of time, and they had no time to spend on what we were doing. But you can go to the Attorney-General's office, and Mr. Backes or Mr. Boggs are either of them thoroughly able to do your work. I have gone to Mr. Backes and always found him willing and able. I know him, and he knows our affairs and conditions. I don't think you have any cause whatever to worry about the expense, for I think you will be taken care of in the Attorney-General's office if you simply go there and tell him what you want.

Secretary Dye—As to the expense of it, I will say that our law provides that the expenses of committees appointed by the Board or by the Executive Committee shall be met. Now, if you keep an account of your expenses for traveling, etc., and bring them to our office, we will see what we can do about getting them through the Comptroller's office, and I guess we will be able to secure, so far as the money is concerned, the expense.

Chairman Rider—Is there anything further to come before the Board? If not, a motion to adjourn will be in order.

On motion, duly seconded, the Board adjourned.

Officers of the State Grange of New Jersey P. of H., 1916.

Master—G. W. F. GAUNT, Mullica Hill, Gloucester County.
Overseer—WALTER H. HAVENS, Cranbury, Middlesex County.
Lecturer—CAROLINE ALLINSON, Yardville, Mercer County.
Steward—C. C. BASLE, Farmingdale, Monmouth County.
Assistant Steward—D. HOWARD JONES, Freehold, Monmouth County.
Chaplain—SAMUEL L. HOMAN, Swedesboro, Gloucester County.
Treasurer—CHARLES COLLINS, Moorestown, Burlington County.
Secretary—JOHN T. COX, Whitehouse Station, Hunterdon County.
Gate Keeper—AMOR J. GAUNTT, Jobstown, Burlington County.
Ceres—MARY V. RISELEY, Stone Harbor, Cape May County.
Pomona—LILLIE HAINES, Robbinsville, Mercer County.
Flora—LOUISA MABIE, Westwood, Bergen County.
L. A. S.—BESSIE ACKLEY, Deerfield, Cumberland County.

Executive Committee—GEORGE W. F. GAUNT, Mullica Hill, Gloucester County; ALBERT HERITAGE, Mickleton, Gloucester County; H. M. LOVELAND, Bridgeton, R. D. No. 8, Salem County; A. W. FUND, Chatham, Morris County; THOMAS W. DEKAY, New Milford, N. Y.; JOHN T. COX, Whitehouse Station, Hunterdon County.

State Grange Meets First Tuesday in December, 1916.

COUNTY DEPUTIES.

Atlantic—Henry Pfeiffer, Cologne, Atlantic County.
Bergen—E. M. Lyman, Park Ridge, Bergen County.
Burlington—Clifford M. Emmons, Pemberton, Burlington County; David L. Ballinger, Moorestown, Burlington County.
Camden—Howard Garwood, Haddonfield, Camden County.
Cape May—A. T. D. Howell, Dias Creek, Cape May County.
Cumberland—Walton E. Davis, Shiloh, Cumberland County.
Essex—E. O. Wettyen, Cedar Grove, Essex County.
Gloucester—Alvin L. Gaventa, Swedesboro, Gloucester County; James B. Kirby, Mullica Hill, 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—Everett Marshall, New Brunswick, No. 2, 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. Henninger, Paterson, R. D. No. 2, Passaic County.
Salem—John M. Woolman, Elmer, Salem County.

Somerset—H. W. Kline, New Brunswick, R. D. No. 6, Somerset County.

Sussex—George C. Smith, Hamburg, Sussex County; Ira Stoll, Layton, Sussex County.

Union—A. W. Fund, Chatham, R. D., Morris County.

Warren District No. 1—N. Warne, Broadway, Warren County.

Warren District No. 2—James I. Cook, Delaware, R. D. No. 2, Warren County.

Women's Work Committee—Eudora N. Rue, Windsor; Mary Ella Vanaman, Dias Creek; Mabel S. Lippincott, Marlton.

Home Economics Committee—Caroline Allinson, Yardville; Mary Braddock Collins, Moorestown; Sara D. Herbert, Englishtown.

Finance Committee—William H. Borden, Mickleton; J. T. Allinson, Yardville; William Rittenhouse, Stockton.

1916 Pomona Granges.

Burlington Co., No. 1.—Master, David L. Ballinger, Moorestown; Secretary, Amor J. Gauntt, Jobstown; Lecturer, Eliza B. Deacon, Columbus. Meets fourth Tuesday in January, April, July and October.

Sussex Co., No. 2.—Master, Ira Stoll, Layton; Secretary, George C. Smith, Hamburg; Lecturer, William Iliff, Newton.

Hunterdon Co., No. 3.—Master, Egbert T. Bush, Stockton; Secretary, William Y. Holt, Flemington; Lecturer, Miss Mae F. Merrill, Sergeantsville. Meets second Friday of January, April, August and October, at Flemington, Ringoes, Oak Grove and Three Bridges.

Cumberland Co., No. 4.—Master, F. O. Ware, Deerfield; Secretary, L. F. Glaspey, Shiloh; Lecturer, Mrs. J. A. Vanaman, South Vineland. Meets second Tuesday in January, April, July and October.

Mercer Co., No. 5.—Master, Charles E. Rue, Windsor; Secretary, T. A. Bolmer, Rocky Hill; Lecturer, Mrs. Bertha Blackwell, Titusville. Meets March 1, Lawrenceville; June 7, Titusville; September 6, Hopewell; November 15, Cranbury.

Salem Co. No. 6.—Master, John Ridgeway, Hancock's Bridge; Secretary, Minnie C. Wilkinson, Woodstown; Lecturer, Asca Austin, Woodstown. Meets at call of Executive Committee.

Camden Co., No. 7.—Master, A. J. Severns, Blackwood; Secretary, H. M. Gillon, Berlin; Lecturer, Amelia Bates, Haddonfield. Meets second Saturday in January; last Saturday in April, July and October.

Gloucester Co., No. 8.—Master, Thomas Wilson, Franklinville; Secretary, Lidie Hoffman, Clarksboro. Meets January 8, Swedesboro; other meetings at convenience of Subordinate Granges.

Central District, No. 9.—Master, Ehler O. Wettyen, Cedar Grove; Secretary, E. Oscar DeCamp, Roseland; Lecturer, J. H. M. Cook, Essex Fells. Meets fourth Wednesday in January, April and October.

Warren Co., No. 10.—Master, Nicodemus Warne, Broadway; Secretary, Henry Race, Oxford; Lecturer, Nellie Albertson, Delaware. Meets January, May, September and November.

Bergen Co., No 11.—Master, John F. Bomm, Westwood; Secretary, Mrs. Julia Maynard, Paterson, R. D. No. 3; Lecturer, Mrs. Louisa Mabie, Westwood. Meets at convenience of Subordinate Granges.

Monmouth Co., No. 12.—Master, J. L. Pittinger, Freehold, R. D.; Secretary, S. B. Wells, Marlboro; Lecturer, Edgar Bearmore, Belmar. Meets March 11, at Keyport; June 10, at Clarksburg; September 9, at Matawan; December 9, at Glendola.

Middlesex and Somerset Co's., No. 13.—Master, Jacob D. Quick, South Branch; Secretary, H. W. Kline, New Brunswick, R. D. No. 6; Lecturer, Charles S. Hamilton, Somerville. Meets third Thursday in January, April, August and October.

Cape May Co., No. 14.—Master, Lewellyn Hildreth, Rio Grande; Secretary, Eli Townsend, Stone Harbor; Lecturer, A. T. D. Howell, Dias Creek.

Atlantic Co., No. 15.—Master, Henry Tapken, Egg Harbor, R. D.; Secretary, J. L. Purzner, Egg Harbor; Lecturer, Robert Maltby, Pleasantville.

Subordinate Granges.

Pioneer, No. 1.—Master, Spencer Perrine, Cranbury, R. D., Middlesex Co.; Secretary, J. Edward Chamberlain, Cranbury Station; Lecturer, Mrs. W. J. Campbell, Cranbury, R. D. Meets second and fourth Tuesday evenings at Cranbury.

Marl Ridge, No. 2.—Master, William H. Davis, Cream Ridge, Monmouth Co.; Secretary, George W. Ivins, New Egypt; Lecturer, Mrs. Annie Johnson, Hornerstown. Meets first and third Friday afternoons in I. O. O. F. Hall, New Egypt.

Hammonton, No. 3.—Master, A. J. Rider, Hammonton, Atlantic Co.; Secretary, Bertha Friedley, Hammonton; Lecturer, Lewis Armstrong, Hammonton. Meets first and third Fridays in Grange Hall.

Swedesboro, No. 5.—Master, Wilbur F. Beckett, Swedesboro, R. D., Gloucester Co.; Secretary, Minnie Young, Swedesboro; Lecturer, Alice Lippincott, Swedesboro. Meets every Wednesday evening in Black's Hall.

Somerset, No. 7.—Master, H. W. Kline, New Brunswick, R. D. 6, Somerset Co.; Secretary, Mrs. C. E. Kline, New Brunswick, R. D. No. 6; Lecturer, Mrs. C. A. Wilson, Middlebush. Meets second and fourth Wednesday evenings in Wyckoff's Hall.

Moorestown, No. 8.—Master, Alfred N. Evans, Masonville, Burlington Co.; Secretary, S. Lucy Satterthwaite, Moorestown; Lecturer, Alice T. Osler, Merchantville. Meets Thursdays 2:00 P. M., December to April; first and third Thursday evenings balance of year.

Woodstown, No. 9.—Master, Robert G. Baynes, Woodstown, Salem Co.; Secretary, M. W. Buzby, Woodstown; Lecturer, Helena Waddington, Woodstown. Meets Wednesday evenings in Peterson's Hall.

Vineland, No. 11.—Master, Charles Chalmers, Vineland, Cumberland Co.; Secretary, Mrs. Marie E. Hendricks, South Vineland; Lecturer, Mrs. J. A. Vanaman, Vineland. Meets Saturday afternoons Grange Hall, Landis Avenue.

Ringoes, No. 12.—Master, Charles W. Higgins, Ringoes, Hunterdon Co.; Secretary, Mrs. Laura E. Sutphin, Ringoes; Lecturer, Sarah Bellis, Ringoes. Meets second and fourth Saturday afternoons; other Saturday nights.

Hopewell, No. 16.—Master, Eric Carlson, Bridgeton, R. D. No. 1, Cumberland Co.; Secretary, Walton E. Davis, Shiloh; Lecturer, Mrs. Henry J. Mickel, Bridgeton, R. D. No. 1. Meets every Wednesday night, Grange Hall, Shiloh.

Cumberland, No. 18.—Master, H. B. Hancock, Greenwich, Cumberland Co.; Secretary, Sarah S. Hancock, Greenwich; Lecturer, Mrs. Loren Clunn, Greenwich. Meets first Monday evening each month.

Fenwick, No. 20.—Master, Edwin Grosscup, Hancock's Bridge, Salem Co.; Secretary, Anna E. Harris, Harmersville; Lecturer, Myrtle Grosscup, Hancock's Bridge. Meets every Thursday evening in Grange Hall, Harmersville.

Mannington, No. 25.—Master, Frank Austin, Woodstown, Salem Co.; Secretary, Lida N. Hamilton, Salem; Lecturer, Asca Austin, Woodstown. Meets Tuesday evenings in Grange Hall.

Harrisonville, No. 26.—Master, Earl E. Urion, Harrisonville, Gloucester Co.; Secretary, Belle Kirby, Harrisonville; Lecturer, Ellis Horner, Mullica Hill. Meets Tuesday evenings in Grange Hall.

Elmer, No. 29.—Master, John Bishop, Elmer, Salem Co.; Secretary, Mary W. Gaunt, Monroeville; Lecturer, Laura A. Evans, Elmer. Meets Wednesday evenings in Garrison's Hall.

Bridgeport, No. 32.—Master, Lewis Jones, Swedesboro, Gloucester Co.; Secretary, C. B. Vickery, Bridgeport, Cumberland Co.; Lecturer, Mary R. Sweeney, Bridgeport. Meets every Tuesday evening at Bridgeport.

Cedarville, No. 34.—Master, S. B. Starkey, Fairton, R. D. No. 1, Cumberland Co.; Secretary, M. B. Husted, Cedarville; Lecturer, Mrs. M. B. Husted, Cedarville. Meets first and third Thursday evenings, Jerrell Hall, Cedarville.

Medford, No. 36.—Master, Charles Cowperthwaite, Medford, Burlington Co.; Secretary, Julia S. Haines, Medford; Lecturer, Almeda Wilkins, Medford. Meets Thursday afternoons in December, January, February and March; first and third Monday evenings in June, July and August; first and third Thursday afternoons in September, October and November.

Haddon, No. 38.—Master, Wendle Beideman, Haddonfield, Camden Co.; Secretary, W. R. Stafford, Marlton, R. D. No. 3; Lecturer, Viola Garwood, Ashland. Meets Wednesday afternoons, November to April; Saturday evenings balance of the year.

Mantua, No. 39.—Master, Alexander D. Burt, Wenonah, Gloucester Co.; Secretary, Geneva M. Burt, Wenonah; Lecturer, Mrs. George L. Dilks, Wenonah. Meets Monday evenings, Y. M. C. A. Hall, Wenonah.

Windsor, No. 40.—Master, Frank Baus, Hightstown, R. D. No. 1, Mercer Co.; Secretary, R. D. Perrine, Windsor; Lecturer, Ida Augusta Mount, Trenton, R. D. No. 2. Meets second and fourth Tuesday evenings.

Hope, No. 43—Master, Leslie A. Platts, Bridgeton, R. D. No. 3, Cumberland Co.; Secretary, Elizabeth Miller, Bridgeton, R. D. No. 4; Lecturer, Mrs. Mary D. Miller, Bridgeton, R. D. No. 2. Meets first and third Tuesday evenings in Grange Hall, Lower Hopewell.

Marlton, No. 45.—Master, Clifford Atkinson, Marlton, Burlington Co.; Secretary, Caroline S. E. Wills, Marlton; Lecturer, Florence Winner, Marlton. Meets in Endicott's Hall, Tuesday afternoons' December to March; first and third Tuesday evenings, balance of the year.

Pemberton, No. 50—Master, Frank M. Hargrove, Vincentown, Burlington Co.; Secretary, Emma B. Rogers, Pemberton; Lecturer, Ella May Budd, Pemberton. Meets first, third and fifth Fridays in Grange Hall.

Mullica Hill, No. 51.—Master, Amos Kirby, Mullica Hill, Gloucester Co.; Secretary, Anna G. Tonkin, Mullica Hill; Lecturer, Martha C. Ridgway, Mullica Hill. Meets Tuesday evenings in Grange Hall.

Deerfield, No. 52.—Master, George Harris, Deerfield, Cumberland Co.; Secretary, Frank L. Ott, Bridgeton, R. D. No. 5; Lecturer, Belle Ware, Deerfield. Meets Tuesdays evenings in Brotherhood Hall.

Centre Grove, No. 57.—Master, Charles F. Earl, Millville, R. D. No. 1, Cumberland Co.; Secretary, Miss Lida M. Taylor, Millville, R. D. No. 1; Lecturer, William Taylor, Millville, R. D. No. 1. Meets second and fourth Wednesday evenings, Centre Grove Schoolhouse.

Columbus, No. 58.—Master, Joseph Rockhill, Bordentown, Burlington Co.; Secretary, Edna Townsend, Columbus; Lecturer, Mrs. Ella Lippincott, Bordentown. Meets every other Friday evening from January 1 in Grange Hall, Columbus.

Thorofare, No. 59.—Master, Ralph Lodge, Thorofare, Gloucester Co.; Secretary, Claude Platt, Thorofare; Lecturer, Beulah Clement, Thorofare. Meets Monday evenings at Thorofare.

Courses Landing, No. 60.—Master, Albert O. Layton, Sharptown, Salem Co.; Secretary, Gertrude W. Freas, Sharptown; Lecturer, Eva DuBois, Sharptown. Meets Tuesday evenings in K. of P. Hall, Sharptown.

Crosswicks, No. 61.—Master, Howard M. Rogers, Crosswicks, Burlington Co.; Secretary, Joseph B. Johnson, Crosswicks; Lecturer, Mrs. Guy E. Mayo, Robbinsville, R. D. Meets second and fourth Saturday evenings, Orthodox Schoolhouse.

Pennington, No. 64.—Master, S. S. Hixon, Harbourton, Mercer Co.; Secretary, W. H. Drake, Pennington, R. D. No. 1; Lecturer, Mrs. George B. Hunt, Pennington, R. D. No. 1. Meets second Saturday afternoons and fourth Friday evenings.

Vincentown, No. 67.—Master, Frank K. Brown, Vincentown, Burlington Co.; Secretary, Mrs. Ethel Robbins, Vincentown; Lecturer, Fredericka Githens, Vincentown. Meets every Saturday evening in Grange Hall, Vincentown.

Ewing, No. 73.—Master, H. M. Fine, Trenton, R. D. No. 1, Mercer Co.; Secretary, James H. Cox, Trenton, R. D. No.; Lecturer, Mrs. S. J. Vernon, Trenton, R. D. No. 1. Meets first and third Tuesday evenings, Church House, Ewing.

Mercer, No. 77.—Master, John Stout, Hopewell, R. D., Mercer Co.; Secretary, J. M. Dalrmyple, Hopewell, Box 116; Lecturer, Mrs. Annie M. Conover, Hopewell, R. D. Meets second and fourth Saturday afternoons in Grange Hall, Hopewell.

Wantage, No. 78.—Master, William H. Leport, Sussex, Sussex Co.; Secretary, Mrs. Evi Vandruff, Sussex; Lecturer, Mrs. W. W. Titsworth, Sussex. Meets first and third Wednesday evenings in Grange Hall at Sussex.

Hamilton, No. 79.—Master, Albert Grove, Trenton, R. D. No. 2, Mercer Co.; Secretary, R. E. Haines, Robbinsville; Lecturer, Mrs. M. M. Nutt, Hamilton Square. Meets first Tuesday afternoon, third Tuesday evening, from October to March; evenings, balance of year.

Friesburg, No. 81.—Master, Lewis Sigars, Bridgeton, R. D. No. 8, Salem Co.; Secretary, Attie D. Loveland, Bridgeton, R. D. No. 8; Lecturer, Mrs. Amanda Shriver, Bridgeton, R. D. No. 8. Meets Tuesday evenings at Friesburg Grange Hall.

Williamstown, No. 85.—Master, James Taggart, Franklinville, Gloucester Co.; Secretary, Grace Ritchie, Williamstown; Lecturer, Meta Taggart, Franklinville, R. D. Meets second and fourth Tuesday evenings from November to May; every Tuesday balance of year, in Grange Hall.

Locktown, No. 88.—Master, Lester B. Sherman, Flemington, R. D. No. 2, Hunterdon Co.; Secretary, Elizabeth A. Barrick, Croton; Lecturer, A. M. Lockwood, Flemington, R. D. No. 2. Meets every Tuesday evening, Grange Hall, Locktown.

Blackwood, No. 90.—Master, Martin Schubert, Laurel Springs, Camden Co.; Secretary, Gardner Driver, Laurel Springs; Lecturer, Mrs. Nettie Truncer, Blackwood. Meets every Saturday evening in Grange Hall.

Monmouth, No. 92.—Master, E. C. Conover, Freehold, R. D., Monmouth Co.; Secretary, G. W Blatchley, Jr., Freehold, R. D.; Lecturer, H. E. Taylor, Freehold, R. D. Meets first and third Wednesdays.

Hightstown, No. 96.—Master, William H. Thomas, Cranbury, Middlesex Co.; Secretary, Harvey H. Dey, Cranbury, R. D. No. 4; Lecturer, Hattie N. Cunningham, Hightstown. Meets every Saturday afternoon, December to March; second and fourth Saturday evenings balance of year.

Allentown, No. 98.—Master, G. H. Kirby, Allentown, Monmouth Co.; Secretary, Anna I. Otterson, Cream Ridge; Lecturer, Lizzie Hunt, Davis. Meets first, third and fifth Saturday evenings.

Liberty, No. 99.—Master, D. H. Taylor, Bradevelt, Monmouth Co.; Secretary, S. B. Wells, Marlboro; Lecturer, Carrie Stryker, Marlboro. Meets second and fourth Wednesdays, Grange Hall, Bradevelt.

Sergeantsville, No. 101.—Master, Percy W. Bush, Stockton, R. D. No. 1, Hunterdon Co.; Secretary, W. E. Rittenhouse, Stockton, R. D. No. 1; Lecturer, Miss Mae F. Merrill, Sergeantsville. Meets Saturday evenings in Grange Hall, Sergeantsville.

Livingston, No. 104.—Master, D. J. Edwards, Chatham, R. D., Essex Co.; Secretary, Miss Grace Van Ness, Chatham, R. D.; Lecturer, Mrs. M. E. Edwards, Chatham, R. D. Meets first and third Thursday evenings, Mechanics' Hall at Livingston.

Morris, No. 105.—Master, A. M. Webb, Hanover, Morris Co.; Secretary, A. L. Reinman, Jr., Hanover; Lecturer, Mrs. J. P. Gegenheimer, Whippany, R. D. Meets second and fourth Tuesdays at Hanover.

Kingwood, No. 106.—Master, S. E. Boyer, Frenchtown, R. D. No. 1, Hunterdon Co.; Secretary, J. H. Stull, Raven Rock, R. D. No. 1; Lecturer, Emma K. Cline, Frenchtown, R. D. No. 1. Meets Saturday evenings, Grange Hall, Barbertown.

Caldwell, No. 107.—Master, Austin E. Hedden, Verona, Essex Co.; Secretary, Mrs. A. E. Hedden, Verona; Lecturer, Richard C. Campbell, Verona. Meets second and fourth Thursday evenings.

Roseland, No. 108.—Master, Marcus W. DeCamp, Roseland, Essex Co.; Secretary, E. Oscar DeCamp, Roseland; Lecturer, Mrs. J. K. Ellison, Roseland. Meets second and fourth Tuesday evenings in Grange Hall at Roseland.

Warren, No. 110.—Master, Frank Housel, Broadway, R. D., Warren Co.; Secretary, Mrs. May Oberly Groff, Broadway; Lecturer, Joseph Banghart, Broadway, R. D. Meets first and third Tuesday evenings in Grange Hall, Broadway.

Mickleton, No. 111.—Master, T. Edgar Haines, Mickleton, Gloucester Co.; Secretary, Elizabeth L. Duell, Mickleton; Lecturer, Ruth H. John, Mickleton. Meets Thursday evenings in Grange Hall, at Mickleton.

Hurffville, No. 115.—Master, Benjamin F. James, Pitman, Gloucester Co.; Secretary, Walton H. Chew, Pitman; Lecturer, C. J. Davenport, Sewell, R. D. No. 1. Meets Saturday evenings in Davenport's Hall, Hurffville.

Rocksburg, No. 116.—Master, Van Young, Phillipsburg, R. D. No. 2, Warren Co.; Secretary, Josephine Young, Phillipsburg; Lecturer, Flossie Buchman, Phillipsburg, R. D. No. 1. Meets every two weeks.

Washington, No. 117.—Master, Melville Rush, Washington, Warren Co.; Secretary, Mrs. Joseph Bodine, Washington; Lecturer, Mrs. Henry Race, Oxford. Meets first and third Thursday afternoons, Grange Hall, at Brass Castle.

Oak Grove, No. 119.—Master, Charles E. Burd, Pittstown, Hunterdon Co.; Secretary, Lizzie Compton, Pittstown; Lecturer, Maud B. Gano, Pittstown. Meets Tuesday evenings in Grange Hall.

Spring Mills, No. 120.—Master, Eli P. Burgstresser, Milford, Hunterdon Co.; Secretary, Mrs. Mary E. Woolf, Milford; Lecturer, Mrs. John L. Crouse, Milford. Meets first and third Tuesday evenings in Grange Hall.

Stewartsville, No. 121.

Aura, No. 122.—Master, Floyd Atkinson, Monroeville, R. D., Gloucester Co.; Secretary, Joanna Ivins, Aura; Lecturer, Rena Johnson, Monroeville. Meets Wednesday evenings in Grange Hall, Aura.

Cross Keys, No. 123.—Master, William Garrigues, Sewell, Gloucester Co.; Secretary, Jacob Harper, Williamstown; Lecturer, Jennie Scott, Sicklerville. Meets Saturday evenings in Hurff's Hall.

Grand View, No. 124.—Master, William T. Prall, Flemington, Hunterdon Co.; Secretary, Edward P. Neif, Flemington; Lecturer, Frank Funk, Flem-

ington. Meets Saturday nights April to October; balance of year Wednesday nights.

Riverside, No. 125.—Master, William S. Davis, Three Bridges, Hunterdon Co.; Secretary, W. W. Foster, Three Bridges; Lecturer, Mrs. Cora Agans, Three Bridges. Meets every Saturday evening in Grange Hall at Three Bridges.

Delaware, No. 126.—Master, I. S. Appleman, Columbia, Warren Co.; Secretary, J. H. Albertson, Delaware; Lecturer, Nelly S. Albertson, Delaware. Meets first and third Friday afternoons, November to May; evenings from May to November.

Iona, No. 127.—Master, William B. Nichols, Franklinville, Gloucester Co.; Secretary, Corbett D. Nelson, Franklinville; Lecturer, Bertha Streitz, Monroeville. Meets Saturday evenings, Nute's Hall, Franklinville.

Cape May, No. 128.—Master, Percy Douglass, Dias Creek, Cape May Co.; Secretary, Edward W. Tuttle, Dias Creek; Lecturer, C. Maurine Lewis, Dias Creek. Meets Friday evenings in Mechanics' Hall, Dias Creek.

Bergen, No. 129.—Master, Joseph P. Winters, Ridgewood, Bergen Co.; Secretary, Arthur Lozier, Ridgewood; Lecturer, L. F. Merriil, Hackensack. Meets first and third Wednesdays in Grange Hall, Spring Valley Road.

Franklin, No. 130.—Master, Henry Hopper, Wyckoff, Bergen Co.; Secretary. Mrs. J. Vanderhoff, Wyckoff; Lecturer, Mrs. S. C. McCarthy, Midland Park, R. D. Meets every Tuesday evening in Grange Hall, Wyckoff, except June, July and August, every two weeks.

Rancocas, No. 131.—Master, Ezra C. Engle, Masonville, Burlington Co.; Secretary, Mrs. Nancy M. Leeds, Rancocas; Lecturer, Mrs. Florence B. Haines, Mt. Holly, R. D. Meets first and third Wednesday evenings from April to November; balance of year every Wednesday.

Cold Spring, No. 132.

Hickory, No. 133.—Master, A. B. McCrea, Pattenburg, Hunterdon Co.; Secretary, Sara E. McCrea, Pattenburg; Lecturer, Goldie Zick, Pattenburg. Meets Wednesday evenings near Pattenburg.

Vernon Valley, No. 134.—Master, Andrew S. Drew, Vernon, Sussex Co.; Secretary, Miss Alice Storms, McAfee Valley; Lecturer, Mrs. T. B. Storms, McAfee Valley. Meets first and third Tuesday evenings, Parish House, Vernon.

Ramsey, No. 135.—Master, John Carlough, Allendale, R. D., Bergen Co.; Secretary, Miss Grace Cortright, Allendale, R. D.; Lecturer, George Coe, Suffern, N. Y., R. D. Meets Tuesday evenings, October to April; balance of year first and third Tuesday evenings.

Lincoln, No. 136.—Master, William H. Bomm, Westwood, R. D. No. 2, Bergen Co.; Secretary, Lila E. Bomm, Westwood, R. D. No. 2; Lecturer, A. C. Ramish, Westwood. Meets second and fourth Wednesdays in Westwood.

Mt. View, No. 137.—Master, George Turner, Beemerville, Sussex Co.; Secretary, Mrs. James Decker, Pellettown; Lecturer, Samuel Willson, Beemerville. Meets Tuesday evenings.

Berlin, No. 138.—Master, H. N. Gillon, Berlin, Camden Co.; Secretary, H. F. Ottiger, Berlin; Lecturer, Anna A. Hutton, Atco. Meets Tuesday evenings in Grange Hall, Broad street, Berlin.

Tuckahoe, No. 139.—Master, George Colwell, Tuckahoe, Cape May Co.; Secretary, Z. A. Townsend, Tuckahoe; Lecturer, Mrs. Rebecca Gandy, Tuckahoe. Meets first Friday, April to October; first and third balance of year.

Montague, No. 140.—Master, John Middleton, Port Jervis, N. Y., Sussex Co.; Secretary, Harry E. Cortright, Port Jervis, N. Y.; Lecturer, Edna Day, Port Jervis, N. Y. Meets second and fourth Saturday evenings.

Pascack, No. 141.—Master, John J. Brickell, Park Ridge, Bergen Co.; Secretary, E. M. Lyman, Park Ridge; Lecturer, John M. Myers, Westwood, R. D.

No. 2. Meets second and fourth Saturday evenings in Borough Hall, Woodcliffe Lake.

Olive Branch, No. 142.—Master, J. W. Lyle, Matawan, R. D. No. 2, Monmouth Co.; Secretary, J. H. Douglass, Matawan, R. D. No. 1; Lecturer, R. V. Crine, Morganville. Meets Wednesday evenings, October to April; every two weeks, April to October.

Delaware Valley, No. 143.—Master, A. B. Van Sickle, Layton, Sussex Co.; Secretary, Elwood W. Little, Branchville; Lecturer, E. J. Van Sickle, Layton. Meets first and third Saturday evenings in Grange Hall, at Layton.

Saddle River, No. 144.—Master, Jacob O. Ackerman, Saddle River, Bergen Co.; Secretary, Agnes C. Leamon, Saddle River; Lecturer, Lola W. Esler, Saddle River. Meets first and third Wednesdays in Association Hall.

Wayne Township, No. 145.—Master, Frank T. Torbet, Paterson, R. D. No. 1, Passaic Co.; Secretary, C. Fred Day, Paterson, R. D. No. 1; Lecturer, John Lobb, Paterson, R. D. No. 1. Meets first and third Thursdays in Grange Hall, at Preakness.

Egg Harbor, No. 146.—Master, John Kolb, Egg Harbor City, Atlantic Co.; Secretary, Lorenz Krein, Egg Harbor City; Lecturer, L. A. Young, Egg Harbor City. Meets first and third Saturday evenings at Krein's Hall.

Wrightstown, No. 147.—Master, Trevanion V. Potts, Wrightstown, Burlington Co. Secretary, Mary A. Croshaw, Wrightstown; Lecturer, Elizabeth Stevenson, Jobstown. Meets second and fourth Wednesday evenings in Mechanics Hall.

Stanton, No. 148.—Master, Silas Schomp, Lebanon, R. D., Hunterdon Co.; Secretary, J. W. Lare, Flemington, R. D.; Lecturer, Matilda Anderson, Lebanon, R. D. Meets Thursday evenings in Grange Hall at Stanton Station.

North Arlington, No. 149.—Master, P. J. O'Malley, North Arlington, Bergen Co.; Secretary, Edward Favier, Lyndhurst; Lecturer, Celia Brandenburg, North Arlington. Meets second and fourth Saturdays.

Burlington, No. 150.—Master, William H. Bodine, Florence, Burlington Co.; Secretary, Hannah E. Shedaker, Burlington; Lecturer, Fannie McIntyre, Burlington. Meets Saturday afternoons, December to March; evenings balance of year.

Milltown, No. 151.—Master, Lucian J. Cosgrove, New Brunswick, R. D. No. 3, Middlesex Co.; Secretary, Joseph J. Smith, Box 294, South River; Lecturer, Mrs. Frank Smith, New Brunswick, R. D. No. 3. Meets second and fourth Wednesday evenings in Mechanics' Hall, Milltown.

New Market, No. 152.—Master, David J. Perrine, New Brunswick, R. D. No. 2, Middlesex Co.; Secretary, Mrs. Lyranthia Muller, Dunellen; Lecturer, Mrs. Alexander Randolph, New Brunswick, R. D. No. 1. Meets second and fourth Thursday evenings.

Raritan Valley, No. 153.—Master, Herbert Van Pelt, Whitehouse Station, R. D. No. 1, Somerset Co.; Secretary, Mrs. C. S. Phillips, South Branch; Lecturer, David K. Scott, South Branch. Meets second and fourth Monday evenings in Grange Hall, South Branch.

Union, No. 154.—Master, Isaiah Tomlin, Leesburg, Cumberland Co.; Secretary, Laura Smith, Leesburg; Lecturer, Eunice Camp, Leesburg. Meets second and fourth Tuesday evenings in Mechanics' Hall.

Fair Lawn, No. 155.—Master, Albert I. Ackerman, Ridgewood, Bergen Co.; Secretary, Mrs. A. I. Ackerman, Ridgewood; Lecturer, Mrs. Amy Bogert, Fair Lawn. Meets first and third Monday evenings in Grange Hall, Fair Lawn.

Raritan, No. 156.—Master, William Coe, Port Monmouth, Monmouth Co.; Secretary, Harry M. Aumack, Keyport; Lecturer, Mrs. J. P. Brower, Keyport. Meets second and fourth Wednesday evenings the year round; first and third Wednesday afternoons, December to March.

Farmingdale, No. 157.—Master, Max Lamont, Farmingdale, Monmouth Co.; Secretary, Mrs. C. C. Basley, Farmingdale, R. D. No. 2; Lecturer, Miss Susie Ketcham, Farmingdale, R. D. No. 1. Meets first and third Friday evenings.

Lafayette, No. 158.—

Whitehouse, No. 159.—Master, P. Davis Reed, Whitehouse, Hunterdon Co.; Secretary, Miss Ethel M. Burdette, Whitehouse; Lecturer, W. A. Drinkwater, Whitehouse. Meets Saturday afternoons, October to April; evenings balance of year.

Frankford, No. 160.—Master, Linus Clark, Branchville, Sussex Co.; Secretary, Mrs. Robert V. Armstrong, Augusta; Lecturer, Mrs. Thomas C. Roe, Augusta. Meets second Saturday afternoons.

Shrewsbury, No. 161.—Master, James C. Richdale, Phalanx, Monmouth Co.; Secretary, Frank A. Bloodgood, Lincroft; Lecturer, George G. Ivins, Little Silver. Meets first and third Tuesday evenings at Red Bank.

South Seaville, No. 162.—Master, Frank Swain, Swainton, Cape May Co.; Secretary, Mrs. Clara D. Townsend, South Seaville; Lecturer, Mrs. Mamie Sutton, South Seaville. Meets second and fourth Tuesday evenings in P. O. S. of A. Hall, South Seaville.

Titusville, No. 163.—Master, Alvin N. Hart, Titusville, Mercer Co.; Secretary, Elizabeth M. Scudder, Titusville; Lecturer, Mrs. J. S. Barber, Titusville. Meets first Tuesday evenings and third Saturday afternoons.

Hardyston, No. 164.—Master, Albert L. Rude, Hamburg, Sussex Co.; Secretary, George C. Smith, Hamburg; Lecturer, Mrs. E. K. Martin, Hamburg. Meets first and third Monday evenings in Mechanics' Hall, Hamburg.

Farmers Enterprise, No. 165.—Master, William Iliff, Newton, R. D. No. 3, Sussex Co.; Secretary, Charlie M. Crawn, Newton, R. D. No. 2; Lecturer, Mrs. Sanford J. Crawn, R. D. No. 2. Meets second and fourth Saturday afternoons in I. O. O. F. Hall, Newton.

Blue Anchor, No. 166.—Master, John J. Curry, Blue Anchor, Camden Co.; Secretary, Benjamin Barrett, Blue Anchor; Lecturer, Mrs. Emma Hunter, Blue Anchor. Meets first and third Saturday evenings at Blue Anchor Grange Hall.

Palermo, No. 167.—Master, Henry Young, Beesley's Point, Cape May Co.; Secretary, Jesse T. Young, Beesley's Point; Lecturer, Minnie Madara, Palermo. Meets second and fourth Saturday evenings in Mechanics' Hall, Palermo.

Glendola, No. 168.—Master, Edgar Bearmor, Belmar, R. D. No. 2, Monmouth Co.; Secretary, Chester C. Thompson, Belmar, R. D. No. 2; Lecturer, Mrs. Howard Slocum, Belmar. Meets second and fourth Friday evenings in Mechanics' Hall, Glendola.

Millstone Valley, No. 169.—Master, H. W. Spice, Millstone, Somerset Co.; Secretary, W. F. Crane, Somerville; Lecturer, Mrs. C. A. Wyckoff, Millstone. Meets first Friday at East Millstone.

Lawrenceville, No. 170.—Master, R. Stanley Terhune, Princeton, R. D. No. 3, Mercer Co.; Secretary, Thomas C. Hill, Lawrenceville; Lecturer, Mrs. J. Golden Pierson, Princeton. Meets first and third Tuesday evenings, 7:45 P. M., in Grange Hall.

Washington Valley, No. 171.—Master, John Zimmerman, Martinsville, Somerset Co.; Secretary, I. R. Penny, Martinsville; Lecturer, William F. Way, Martinsville. Meets first Thursday at Martinsville Hall.

Salem, No. 172.—Master, J. Morris Reeves, Salem, Salem Co.; Secretary, Anna L. Reeves, Salem; Lecturer, Hannah T. Reeves, Salem. Meets Thursday evenings at Dennis Hall, Salem.

Anchor, No. 173.—Master, Fred Popee, Lakehurst, Ocean Co.; Secretary, Howard Jamison, Vanhiseville; Lecturer, John Jamison, Vanhiseville.

Stillwater, No. 177.—Master, Theron W. Martin, Stillwater, Sussex Co.; Secretary, O. Van Horn, Stillwater; Lecturer, William H. Fassitt, Stillwater. Meets first and third Saturday evenings.

Clayton, No. 179.—Master, Joseph F. Blakeborough, Clayton, Gloucester Co.; Secretary, Miss Clara E. McWilliams, Clayton; Lecturer, Maggie Bowers, Clayton. Meets Saturday evenings in Down's Hall, Clayton.

Pedricktown, No. 180.—Master, John D. Cook, Pedricktown, Salem Co.; Secretary, C. B. Green, Pedricktown; Lecturer, George Gaventa, Pedricktown. Meets Wednesday evenings in Red Men's Hall, Pedricktown.

Pennsgrove, No. 181.—Master, Charles E. Harbenson, Pedricktown, Salem Co.; Secretary, Charles G. Turner, Pennsgrove; Lecturer, Mary Zane, Pennsgrove.

Westville, No. 182.—Master, Benjamin F. Haines, Westville, Gloucester Co.; Secretary, Samuel H. Hewitt, Westville; Lecturer, Lavina E. Headley, Westville. Meets Saturday evenings.

Acquackanonk, No. 183.—Master, L. C. Conradi, Paterson, R. D. No. 2, Passaic Co.; Secretary, H. G. W. Henniger, Paterson, R. D. No. 2; Lecturer, Mrs. S. E. Shuit, Paterson, R. D. No. 2. Meets second and fourth Tuesday in Grange Hall, at Richfield.

Plainsboro, No. 184.—Master, Franklin Mershon, Plainsboro, Middlesex Co.; Secretary, H. A. Stults, Plainsboro; Lecturer, Mrs. H. A. Stults, Plainsboro. Meets first and third Monday evenings in Grange Hall, Plainsboro.

Rio Grande, No. 186.—Master, Lewellyn Hildreth, Rio Grande, Cape May Co.; Secretary, Edna Endicott, Rio Grande; Lecturer, Agnes Hand, Rio Grande. Meets first and third Tuesday evenings in Grange Hall, Rio Grande.

Moravian, No. 187.—Master, Milton C. Gibbs, Blairstown, R. D. No. 1, Warren Co.; Secretary, Noel M. Harris, Townsbury; Lecturer, Mrs. Charles Loren, Hope. Meets first and third Saturday evenings at Hope.

Passaic Township, No. 188.—Master, Elber Bebout, Millington, R. D. No. 1, Morris Co.; Secretary, Martin Rosenbaum, Chatham, R. D.; Lecturer, Edwin Bebout, Millington. Meets second and fourth Monday in Myersville Hall.

Manalapan, No. 190.—Master, G. Winfield Conover, Englishtown, Monmouth Co.; Secretary, F. G. Stockbridge, Englishtown; Lecturer, Mrs. C. V. Aumack, Englishtown. Meets every other Monday evening from January 10th, at Columbia Hall.

Cologne, No. 191.—Master, William F. Hohneison, Egg Harbor City, Atlantic Co.; Secretary, J. L. Purzner, Egg Harbor City; Lecturer, Mrs. M. Mauroff, Egg Harbor City. Meets third Saturday and first Thursday.

Allenwood, No. 193.—Master, L. J. Allen, Allenwood, Monmouth Co.; Secretary, Peter Tilton, Allenwood; Lecturer, Miss Frances Reynolds, Manasquan. Meets first and third Thursday evenings in Mechanics' Hall, Allenwood.

Towaco, No. 194.—Master, J. Elmer Rathbun, Towaco, Morris Co.; Secretary, Grant Yerbury, Towaco; Lecturer, Daisy Van Duyne, Towaco. Meets first and third Tuesday evenings at Lyceum Hall.

North Haledon, No. 195.—Master, Alexander Hay, Paterson, R. D. No. 3, Passaic Co.; Secretary, Julia D. Yahn, Paterson, R. D. No. 3; Lecturer, Julia P. Maynard, Paterson, R. D. No. 3. Meets every Wednesday evening in North Haledon Borough Hall.

Adelphia, No. 196.—Master, Waldo E. Holbrook, Lakewood, R. D. No. 2, Monmouth Co.; Secretary, Mrs. John Stricklin, Freehold, R. D. No. 3; Lecturer, Ruth P. Vossler, Farmingdale, R. D. No. 2. Meets first and third Monday evenings in K. of P. Hall.

Newport, No. 197.—Master, Harry Lore, Newport, Cumberland Co.; Secretary, Morton Bradford, Newport; Lecturer, Mrs. Mary Newcomb, Newport. Meets Wednesday evenings.

Chester, No. 198.—Master, Romeo Robinson, Chester, Morris Co.; Secretary, John P. Stout, Chester; Lecturer, Mrs. Isaac Rowe, Chester.

Stone Harbor, No. 199.—Master, Mary Vaughan Risley, Stone Harbor, Cape May Co.; Secretary, Mrs. O. S. Herbert, Stone Harbor; Lecturer, Miss Marie Louise Van Thuyne, Stone Harbor. Meets Saturday evenings in Borough Hall.

Toms River, No. 200.—Master, Charles W. Herflicker, Toms River, Ocean Co.; Secretary, John Fischer, Silverton; Lecturer, Mrs. Teresa King, Toms River. Meets first Thursday at homes of members.

Mt. Bethel, No. 201.—Master, F. T. Horton, Plainfield, R. D. No. 3, Somerset Co.; Secretary, Oscar Fingerhut, Plainfield, R. D. No. 3; Lecturer, Sol. Arons, Plainfield, R. D. No. 3. Meets second and fourth Friday evenings in Mountain House Hall, Mt. Bethel.

Millstone Central, No. 202—Master, Abijah M. McKnight, Freehold, R. D. No. 4, Monmouth Co.; Secretary, Ferdinand E. Grassum, Freehold; Lecturer, Lizzie McKnight, Freehold. Meets second and fourth Friday evenings in Red Men's Hall, Clarksburg.

Bargaintown, No. 203.—Master, Roland Haggerty, Pleasantville, Box 176, Atlantic Co.; Secretary, Mrs. S. Y. Wilson, Linwood, R. D. Lecturer, Miss Ethel Peters, Linwood. Meets every other Tuesday from January 11th.

Mays Landing, No. 204.—Master, James O. Hazard, Tuckahoe, Atlantic Co.; Secretary, Mrs. William L. Cooke, Mays Landing; Lecturer, William L. Cooke, Mays Landing. Meets every Monday evening at Mays Landing Court House.

Absecon Highlands, No. 205.—Master, Henry Hornbostal, Absecon, R. D. 1; Secretary, Charles Foster, Box 203, Absecon; Lecturer, Chas B. Burns, Absecon, R. D. 1.

Reports of County Boards of Agriculture.

ATLANTIC COUNTY.

President, John Huenke, Egg Harbor City, R. D.; Vice President, Prof. A. J. Rider, Hammonton; Secretary, Wm. F. Hohneisen, Egg Harbor City, R. D.; Treasurer, William Liepe, Cologne.

The first meeting of the Board was held in Hammonton on April 23d, 1915, in connection with Hammonton Grange. The meeting was very enthusiastic, with an attendance of 100 people. The principal speakers of the evening were: Prof. Clark, of the N. J. Experiment Station; Prof. A. J. Rider, of Hammonton; County Farm Demonstrator L. Douglas, and Mr. Parkhurst, of Hammonton.

The second and annual meeting was held in Egg Harbor City in connection with Egg Harbor Grange. The attendance was about 75. After the election of officers, Mr. Douglas, Mr. Maltby and Mr. John Huenke addressed the meeting on very interesting subjects.

Atlantic county can well be proud of having the interest of the farmer looked after as well as those in charge are doing. Through the efforts of the county demonstrator, in connection with the different Granges and the County Board, we are getting along nicely. Canning clubs for the ladies are being formed. A special advisory board was brought into existence and a Vocational School for ladies has just been started. We also have four vocational schools in our county for boys and girls who are interested in agriculture, with a very good attendance.

The Atlantic County corn growing and home-making contest, under the auspices of our public schools, was very successful again this year. Prizes of about $150.00 were distributed.

In connection with this we had four institute meetings during 1915, two in Cologne and two in Hammonton. All of these four meetings had a very large attendance.

WM. F. HOHNEISEN,
Secretary.

BERGEN COUNTY.

President, Isaac A. Hopper, Fairlawn, N. J.; Vice-President, Frederic Heine, Hackensack, Del. 2; Secretary, John M. Myers, Westwood, Del. 2; Treasurer, F. V. Strohsahl, Park Ridge.

The Bergen County Board of Agriculture was very active during 1915. The rainfall was a little above normal. Several years of drought during spring and summer induced a number of farmers to break up low ground and produced very good crops, and if a shortage of rainfall had continued year after year, these low, swampy areas would have been the most productive parts of the farm. Frequent rains were a detriment to our low-ground farmers. By intelligent use of drain tiles these conditions will be under control.

Early planted potatoes yielded well, and those dug soon after the vines were ripened were O. K., but those left several weeks before digging rotted badly.

Two institutes held during the winter were well attended, and will prove very helpful to those who were at the meetings. One held at Old Tappan was entirely new to that section and the farmers responded by giving a large

attendance. One hundred and seventy (170) were at the two sessions. The ladies furnished a bounteous lunch, free.

A new Grange will be organized at this place and is sure to be a great help to the County Board.

The meetings held at Wyckoff were attended by one hundred and fifty (150), and were favored by a good program.

The Bergen County Fair, held in September, was a very successful exhibition of live stock and agricultural products of the county.

The old Bergen County Fair died about twenty years ago, and was revived in 1915 through the efforts of the Bergen County Board. The encouraging results give promise of a fine future for this fair, and a permanent organization now has charge and plans are well under way for the fair of 1916, which will be one of the best to be held in the State of New Jersey.

The Bergen County Poultry Association is a strong organization and occupied a fine section of the fair. They also held a large poultry show in Hackensack in November, and the large number of entries and the high standard of exhibits was a revelation to the residents of Northern New Jersey.

Since the organization of the Bergen County Board of Agriculture in 1895 it was evident to the officers that their best efforts were accomplishing only a small part of the work that needed attention for the best interests of the farmers of the county, and to the Secretary, who came closest to those needing counsel and advice, did the need of someone who could devote his entire time to the work seem most evident. Two years ago we secured the appointment of a Farm Demonstrator and, after viewing what has been accomplished by him in this short time, we now wonder what our county would be like if this appointment had been secured ten or twenty years ago, when so many problems presented themselves. Our County Board and Demonstrator have worked as a unit through an advisory board and board of directors who represent every part of the county, the members of which were appointed by every Grange and other organization whose aim was the advancement of the interests of the tillers of the soil as well as the consumers of the products. Having a live and competent man, Mr. L. F. Merrill, whose duty it is to respond to every call for assistance and advice, and who is backed up by the officers and specialists of the State Board of Agriculture, has proven to be of the greatest value to Bergen.

The work done in connection with the public schools promises to be of lasting benefit. Boys and girls whose lives are being shaped for future usefulness need close attention. During 1915 nineteen schools were assisted in developing agricultural instruction. Over 900 farm visits were made for the interest of better methods of work and application of plant food and storing and marketing crops. The county and local papers are assisting in every way possible, and their columns are always open for the use of our Superintendent in giving notice of meetings, demonstrations, etc., and printing timely articles on the use of spray pumps and the life history of fungus and insect pests to be fought and the best material and time to combat them.

Thousands of circulars and National and State bulletins, etc., were mailed to those needing information. Over 300 office calls were received by our Superintendent from those seeking advice. Numerous pruning and spraying demonstrations were conducted. The use of cover crops encouraged. The sowing of alfalfa was urged where conditions were suitable. A tour of the county by automobile was made by 45 men, who visited many farms growing alfalfa successfully, and a close study made of their methods of culture and handling the crop.

The peach and apple crops for 1915 were large and well handled. Hay and grain gave a good yield, but were difficult to harvest on account of frequent rains.

Truck crops gave a large yield, but prices ranged low during most of the season.

(Signed) JOHN M. MYERS,
Secretary.

BURLINGTON COUNTY.

President, C. Craig Tallman, Columbus; Vice-President, Edw. A. Mechling, Moorestown; Secretary and Treasurer, Edward Rogers, Moorestown.

Any brief report of the results of the past year would be inadequate to describe the vicissitudes of the farmers' season and the chaotic market conditions.

For the most part hay and grain farmers suffered more by the wet weather than the truckers. The injury by the rains was offset, however, by good prices for their products. Especially with hay, the market is not as critical as usual, number 2 hay frequently bringing the price quoted for number 1. In harvesting their crops Burlington County farmers fared better than in some other sections, where considerable hay and grain were never gathered.

Vegetable and fruit crops were not so seriously injured by the excess of moisture, with the exception of strawberries and melons and some other crops, unless they were on low ground, on which places many fields of potatoes, tomatoes and other crops were drowned. The greatest losses were from the dull market conditions, by which many of the fruit and truck crops were sacrificed. A few exceptions to the poor prices, such as sugar corn, may be noted.

Owing to the failure of the Board of Freeholders to make the appropriation for a Farm Demonstrator for this year, over 300 farmers have themselves contributed to the support of a demonstrator. A Farm Bureau has been formed, and a demonstrator appointed, who started work November 1 with office in Mount Holly.

The County Board held a summer meeting in July on the farm of C. Craig Tallman, near Columbus. Considering the wet weather and the fact that some farmers had not finished harvesting, there was a very good attendance of several hundred people. In the morning the farmers held a meeting on the lawn, listening to two addresses on the farm demonstration work. In the afternoon a canning demonstration instructed the ladies, while a tractor at work in one of the fields interested most of the men.

A novel plan was tried in the county last year, when the public school pupils were set to gathering information for a farm census. Requests were sent by the Secretary of the County Board to all the rural schools in the county, asking the teachers to coöperate. The results were gratifying considering that the plan was an entirely new one. Reports were received from 19 schools, some of which had done very creditable work. The census was taken on 384 farms by 47 boys and 42 girls, of an average age of 13 years. The results were not sufficiently complete to be accurate for the whole county.

The County Superintendent of Schools, Mr. H. A. Stees, whose interest was aroused in the census work last year, has taken charge of taking the farm census this year, and has sent the papers to the teachers in all the rural schools in the county. The returns have been much more complete than last year. Already 48 schools have sent in their census reports, and doubtless others will follow. So far as received the census reports are from 22 townships, including 904 farms, taken by 192 boys and girls.

There are practically complete census reports for the following townships: Bass River, Bordentown, Cinnaminson, Mansfield, Medford, New Hanover and Willingboro.

The pupils and Mr. H. V. Holloway, of Bordentown School, and the pupils and Miss LeConey, of the Cinnaminson School, deserve especial credit for their excellent work. The best map of a school district submitted was made

by Joseph Johnson, of Cinnaminson School. Agnes Peoples, age 13, of Mansfield School, Mansfield township, took the census on 20 farms.

That the plan of taking an agricultural census by the pupils in the public schools is practical, has been proved conclusively. The mails have brought many evidences of this to Mr. Stees' office during this November. The most certain thing about it is the willingness and efficiency of the boys and girls.

Where the census work has not been done at all, or has been done poorly, evidence shows that the reason is primarily a lack of interest and coöperation on the part of the teacher, and sometimes the refusal of the farmer to give the information. Several teachers have alluded to this objection, which is said to be based on a fear that the census will be used for raising the assessment and taxes. With some farmers the real reason may be that they would rather make no showing than a poor one. As the names do not appear on the census reports, this sensitiveness is uncalled for.

HENRY H. ALBERTSON,
Secretary.

CAMDEN COUNTY.

President, J. Watson Matlack, Haddonfield; Vice-President, Alvin Ebert, Ashland; Secretary-Treasurer, Everett Garwood, Kirkwood.

The Thirty-second Annual Meeting of the Camden County Board of Agriculture was held in Grange Hall, Blackwood, on Thursday, December 16th, with the President, Mr. J. Watson Matlack, presiding.

After a short address by the President and the reading of the minutes of the last annual meeting, Mr. John H. Hankinson, County Demonstrator for Mercer County, gave an interesting address on the problems connected with his work demanding his solution, and brought out the fact that a County Demonstrator cannot accomplish much without the close coöperation of the farmers and that in many instances too much is expected of a Demonstrator.

In the afternoon Prof. Clark, of the Experiment Station, elaborated further on farm demonstration work and told something of its origin and history. He told of several instances in which, by coöperation, farmers have saved a great deal of money and that a farm demonstrator would be of great value to us in organizing coöperative societies. Mr. Clark then gave a good lecture on poultry and egg production, and among other things said that most of the leading poultrymen of the State have reached the conclusion that a cross-bred chicken is preferable to a pure-bred as a general-purpose chicken.

After very interesting addresses by Mr. Hall, of Jos. S. Campbell & Co., on "Tomato Culture," and Mr. Benj. Barrett, on "Nature's Lessons on the Farm," a very successful meeting of our Board was brought to its conclusion by the election of the officers.

EVERETT GARWOOD,
Secretary.

CAPE MAY COUNTY.

President, Jos. Camp, Pierces; Vice-President, Howard Hoffman, Cold Spring; Secretary, R. Schellinger, Green Creek; Treasurer, Ralph Taylor, Cold Spring.

The Cape May County Board of Agriculture has held two interesting meetings during the year. There has been four institutes held, which were pretty well attended. The annual Board meeting, held at Cape May Court House, November 5th and 6th, in connection with the corn and potato-growing contest for boys and household arts for girls, was interesting. The exhibits by adults and school children was a marked increase over previous years.

The crops of vegetables, corn and peaches was a little above normal, but prices low. Hay very good, also price. Labor help a little more plentiful. The farmers of the county are in a pretty prosperous condition as a rule. They have a very good local seashore market.

RALPH SCHELLINGER,
Secretary.

CUMBERLAND COUNTY.

President, William E. Shoemaker, Bridgeton; Vice-President, Walton E. Davis, Shiloh; Secretary, Albert M. Seabrook, Bridgeton; Treasurer, Leslie A. Platts, Bridgeton.

Delegates to the State Board of Agriculture—L. Willard Minch, one year; William Ott, two years.

The Cumberland County Board of Agriculture held three meetings during the year 1915. The first was held at Dividing Creek on February 25th. An all day and evening program was provided, and the people in that section took a great deal of interest. They opened their homes and entertained all who were attending from other parts of the county.

At the morning session Prof. W. H. Conner, supervisor of the schools of Buena township, Atlantic county, gave an instructive address on "The Relation of the Home to the School in the Training of the Child." R. B. Gilman spoke on "Rearranging of the Kitchen to Save Steps," with blackboard illustrations. In the afternoon, Messrs. William Ott, L. Willard Minch and Walter E. Ware gave reports of the annual meeting of the State Board. L. Willard Minch gave an address on "Soil Improvement." Mr. Douglas, Farm Demonstrator for Atlantic county, gave an account of what had been accomplished by his department in his county. At a business session a resolution was adopted strongly urging the Legislature to make an appropriation of $20,000 for demonstration and extension work. In the evening Prof. Bennett K. Matlock gave an illustrated lecture on the "Economic Value of Our Native Birds."

The second meeting of the Board was held at Vineland, on June 26th. Miss M. Anna Hauser, extension specialist in Home Economics, Rutgers College, gave a demonstration in canning fruits and vegetables. A large number of ladies were present and they took a great deal of interest in Miss Hauser's work. Prof. J. G. Lipman gave an address on the "Practical Ways in which the Experiment Station and Agricultural College can Serve the County." In the evening Prof. Matlock gave his lecture on "The Economic Value of our Native Birds," to a full house.

The third meeting of the Board was held at Shiloh, on December 10th. In view of the low prices which have prevailed for farm produce, the program committee deemed it wise to devote the whole of the afternoon to a discussion of the question of "Marketing."

Howard W. Selby, Vice-President of the National Vegetable Growers' Association, led a discussion on the "Problems of Marketing." He urged proper grading, uniform packing and the use of attractive packages as some of the essentials to secure the best market prices.

Mr. George McKay, Superintendent of the Reading Terminal Market, Philadelphia, gave an address on "The Relation of the Cold Storage to the Marketing Problem." Mr. McKay strongly urged coöperation on the part of the growers, and thought that many communities could successfully maintain cold storage plants in which to store their produce in times of low prices, and hold them until market conditions improved and prices advanced.

ALBERT M. SEABROOK,
Secretary.

ESSEX COUNTY.

President, E. O. Wettyen, Cedar Grove; Vice-President, A. W. Fund, Northfield, Chatham P. O.; Treasurer, Geo. E. De Camp, Roseland; Secretary, Geo. T. F. Millar, Northfield, Chatham P. O. Board of Directors—Henry, F. Harrison, Joe H. M. Cook, William Deicks, A. E. Hedden, E. O. Wettyen, Marcus De Camp.

Members of the State Board of Agriculture—For two years, H. W. Fund; one year, A. E. Hedden.

For farmers and growers of things good to eat, in Essex county, the year of 1915 was not as prosperous as other years have been, for the weather was against them, having lots of rain, and there were either large crops with an over-supplied market, or it was so wet some could not be harvested.

Fruits grew in great abundance and sold at very reduced prices in most cases. Strawberries were an enormous crop, and the price was very low. Blackberries were an extra large crop, so large that some of them were never picked. Raspberries bore very well, but the weather was so wet that they moulded on the canes. There was a large crop of peaches also, the largest this county has had in years, but the price was very low. Apples only bore on hills which were air drained, and the prices received for them were good. Pears were the exception this year, there being no pears to speak of, and what there was sold well. Grapes were a large crop, where they were cultivated they were of fine quality, but if unkept the bunches were straggly.

The market gardener had a better year than the general farmer, for the excessive rains made truck grow faster and more luscious than otherwise. Lettuce, cabbage, celery, and in fact all greens were a large crop, but the prices were lower than usual. Tomatoes and sweet corn were fair crops and sold fairly well. Most root crops, such as carrots, turnips, parsnips, were a large crop and are selling well.

Whereas the general farmer had the excessive rains to hinder him so, with the limited labor at his command he could not keep the weeds in check, and his crops were not larger than usual, with the exception of hay and grains, and the potatoes, which were a fair crop, rotted badly. Hay, which was a large crop, was harvested in weather that was not suitable for the best hay-making, and the hay is not of the best quality. Hay grown on low land in a great many places was too wet to cut. Oats were a very large crop, but only one-fourth of a crop was harvested and they were black and dusty. Rye and wheat were large crops and were harvested in bad condition with much labor, one piece of wheat which I knew of was cut and spread out five times and then abandoned.

Although very little honey is sold from the farms in this county, many bees are kept for the owners' use; but not enought bees are kept for proper pollenization of the fruit blossoms and more could be kept with profit

Another source of income in the rural and farming sections of this county is poultry and eggs Now, this branch of farming receives considerable attention, although no figures can be given As poultry is kept by nearly all the farmers and in the towns by a large part of their inhabitants, the products from these flocks are used for the needs of their owners and then the surplus is sold to pay their keep or for profit. If an account of all this could be kept it is easy to see what a vast amount this would be, for in a small place there are about ten hens for every man, woman and child. These chickens are not all culls by any means, for some of the best pure bred stock is kept, and every year a poultry show is held, with prizes for the best, etc. This encourages competition in the production of better each season.

Essex county has within its borders the largest city in the State and several smaller ones, and this makes a good market for milk of quality and the farmers are not slow to take advantage of this. Milk is produced in large quantities in the most improved manner, the herds are being improved

year by year, as pureblooded sires are being kept on the better farms, the boards of health make the owners keep the stables better and cleaner. The production of milk has not paid as it should, for the cows were tuberculin tested and some were destroyed in every herd and the price of feeds has advanced with no advance in the price of milk. The farmers are trying to increase profits by using silage and growing alfalfa, for each year new silos are built and increased acreage of alfalfa, although this crop is receiving increased attention and more is being grown, it is not always a success, for not over one-half of the seedings are to be seen the second year, but after failure comes success and more is grown each year. With plenty of fresh milk, fresh eggs and honey, fresh fruit and pure air, the farmers expect with the aid of the legumes and the silo to have a more prosperous year during 1916.

GEO P. F. MILLAR,
Secretary.

GLOUCESTER COUNTY.

President, Theodore Brown, Swedesboro; Vice-President, George Ridgeway, Mullica Hill; Secretary, Minnie Young, Swedesboro; Treasurer, Wm. H. Borden, Mickleton.

The Gloucester County Board of Agriculture has held four meetings during the year, with a good average attendance and much interest manifested in the meetings; also an interesting and profitable institute was held at Swedesboro on November 10th and 11th, at which many questions of vital interest were discussed, both by local talent and by able speakers from the Experiment Station and other parts of New Jersey.

In reviewing the rural progress in our county during the year just passed, we find it has not been one of marked prosperity to the average farmer. While some few realized good profits from their crops, they were exceptions and not the rule. The tomato, while there was an average yield, the quality was poor owing to so much rain, and there was no market for them, many rotting in the fields, and the farmer did not realize enough to pay for cost of production.

The conditions were favorable for a good yield of hay and the crop was above the average, good meadows yielding an abundant second crop. The pea crop was abundant but the prices so low the farmer could not realize enough to pay for the cost of harvesting, in consequence of which a good percentage lay in the fields and rotted.

In coöperation with the Y. M. C. A. and other organizations a very successful and profitable corn and potato show was held at Glassboro on December 4th, as well as the home-making contest for girls, and for anyone to visit the show and see the excellent displays there was sufficient proof of the interest taken. One hundred and twenty-four boys were enrolled in the contest, and of these 46 won premiums, 12 boys were given a two-days' trip to the Experiment Station during Farmers' Week, and the premiums were all valuable, aside from the knowledge gained from their efforts. The girls also had fine specimens of their handiwork, both in baking and sewing, and plans are already under way way for the contest in 1916.

MINNIE YOUNG,
Secretary.

HUDSON COUNTY.

President, Thos. Loughran, Sr.; Vice-President, Chas. Bolin; Secretary, Frank Follin, 280 Fairmount Ave.; Treasurer, John Graham, Sr.

Executive Board—Chairman, D. Y. Lewis; E. Forshe, J. A. O'Connor.

It is a difficult matter to get the statistics of the stock, products, prices, &c., as no board in the county or various municipalities seems to know much about the matter.

FRANK FOLLIN,
Secretary.

HUNTERDON COUNTY.

President, E. T. Bush, Stockton; Vice-President, Wm. Bellis, Copper Hill; Secretary, Roscoe De Mott, Stanton; Treasurer, F. J. Tomlinson, Pittstown.

During the year the Hunterdon Board of Agriculture held four meetings. The first was a special meeting, held in the Court House at Flemington, March 20th, to plan out the work of the year. Although there were few present, we had an interesting session.

The regular April meeting was held at the Grange Hall, Ringoes. Talks were given by wideawake farmers of our county. Our President, Mr. E. T. Bush, read a report of the State Institute, held at Trenton in January. This was both interesting and instructive.

The next meeting was held in White House Grange Hall in August. The morning session was devoted to the business of the board and suggestions regarding the marketing of peaches in which the citizens of that section were much interested at that time. At noon the meeting adjourned and the ladies of the Grange served a generous and very tasty lunch.

The afternoon session was called about one-thirty and an interesting address was given by Prof. Alva Agee, of New Brunswick Agricultural College, on the advisability of keeping the farm well sodded.

The last meeting was held in the Court House at Flemington, December 11th, when the above-mentioned officers were elected for the year 1916. Mr. H. E. Deats, of Flemington, was also appointed as delegate to the State Institute. It was resolved to send a resolution to the U. S. Senators from New Jersey, also the Representative of the Fourth Congressional District, stating that the County Board was in favor of the "Smith-Hughes Bill," which is designed to render Federal aid to the cause of agricultural education in various States. The Senators and Representative have each sent a reply promising the bill their support.

In addition to their regular work the County Board has also taken an active interest in the domestic and agricultural contest work of the girls and boys of our county and stand ready to lend a hand to any good work where we are able.

Details concerning the agricultural conditions have been given in the statistical report sent to the State Board previous to the institute. Crops in general were below the average. Corn last fall was greatly damaged, due to heavy winds at earing time. Rye was almost up to the average, but much of the wheat was very thin on the ground as low clay fields were badly wintered out. The oat crop was heavy, but as the weather was unfavorable at harvesting time much was wasted in gathering the crop.

Pork, milk and eggs have all brought fair prices during the autumn and winter and all live stock is bringing high prices at dealers' sales and vendues.

ROSCOE DE MOTT,
Secretary.

MERCER COUNTY.

President, Wm. H. Blackwell, Titusville; Vice-President, R. M. Dilatush, Robbinsville; Secretary, R. E. Haines, Robbinsville; Treasurer, F. W. Cruser, Hopewell.

The Mercer County Board of Agriculture held three enthusiastic meetings in 1915. The thirty-first annual meeting, held in the Court House,

Trenton, on February 24th, was well attended. The following subjects were discussed: "Care and Management of Swine," by Prof. F. C. Minkler; "The Brighter Side," by Mrs. Mary R. Brower; "Establishment and Care of Apple Orchards," by John Barclay; "The Fertilizer Situation," by Dr. J. G. Lipman.

The eighth annual Field Meeting and Basket Picnic was held at the home of your Secretary, on the Hamilton Square and Crosswicks road, on Thursday, July 29th. The meeting was opened with prayer by Rev. C. K. Newell, of Allentown, N. J. Hon. Joseph S. Frelinghuysen favored us with an address. Miss Ethel May Hutchinson, Flora of Hamilton Grange, furnished the musical program. The day was very warm but all present had a pleasant time.

The annual Fall Meeting and Farmers' Institute was held in the Jr. O. U. A. M. Hall, Yardville, on Tuesday, November 30th, and the following subjects were discussed: "Growing and Storing Second-Crop Seed Potatoes," by Mr. L. Willard Munich; "Results of Recent Investigation in Spraying Potatoes," by Mr. H. Clay Lint. Our President, Wm. H. Blackwell, awarded prizes on exhibits; Hon. H. M. Lavette awarded the prizes in boys' corn-growing contest. "Potatoes Without Potash," Mr. W. B. Duryee, Jr., Farm Demonstrator, Monmouth county; "The Latest in Certified Seed Stock," Dr. Mel. T. Cook; "Certified Seed in Mercer County," Mr. John H. Hankinson, Farm Demonstrator of Mercer county; "Profitable Truck Crops for General Farming," Mr. C. D. Barton.

All our meetings have been well attended and the farmers are taking great interest in the same. Hon. J. T. Allinson, who has served the Board as President so faithfully for seven years and built it up to its present efficiency, felt that he must resign. After finding we could not induce him to reconsider his decision, our nominating committee presented the name of Mr. William H. Blackwell, of Titusville, who accepted, and we have in President Blackwell a live young man. We have still our former President with us, for it is now Hon. J. T. Allinson, Assemblyman of Mercer county. We have had a hard year for many of our farmers on account of low prices early in the season, and later the heavy winds which caused such havoc to our corn crop. Winter grain is looking fine; milk cows high; pork not very satisfactory; peaches discouraging, and on account of fertilizers having scarcely any potash, and the scarcity and high price of seed, our potato crop will be greatly reduced this year. Percentages about as follows: Corn, 65 per cent.; wheat, 100 per cent; potatoes, 80 per cent.; hay, 100 per cent.; rye, 90 per cent., with good prices prevailing.

R. E. HAINES,
Secretary.

MIDDLESEX COUNTY.

President, George Davidson, Plainsboro; Vice-President, George Cosgrove, New Brunswick; Treasurer, George Ridshaw, New Brunswick; Secretary, W. B. Kurtz, Bound Brook; Chairman Executive Committee, Irving L. Owen, New Brunswick.

During the past year the farmers of Middlesex county have had their usual promise of abundant crops early in the season, only to be disappointed in the net returns, owing to climatic conditions, disease pests, over-production and increased costs of manures and fertilizers.

In fruit, peaches have been so plentiful and price so low that many were not picked at all, this was largely owing to a too literal application to make two peach trees to grow where none grew before. This was especially so on the part of the "Back to the Landers," who see in prospect enormous return from their lands purchased at about double market value. More trees were planted in this county the past few years than in many years preceding combined. The supply was far in excess of not only the local but

also for the shipping markets, except on the very finest fruit, and this will unfortunately be repeated in following seasons until the reaction will result in neglect of orchards until they become so decimated that the production of peaches will more nearly equal the demand.

Plums were a failure owing to rot. Cherries, especially sour cherries, were plentiful and prices ruling low. Other fruits, especially small fruits, were benefited by the cool, wet weather, and produced large crops of fine fruit, which brought remunerative prices. Potatoes never looked finer when in bloom, but wet, cold weather and the ravages of the white grub, rot and unmarketable potatoes reduced the yield in some instances, especially on shale and heavy soils, 50 per cent. or more, so that with the low prices in the beginning of the season changed prospective profits into actual losses. Hay and small grains yielded above the average, which prevailing prices made a profitable crop.

Severe wind and rain storms lodged the corn badly at its most critical period, resulting in more than the usual "blind ears" and "nubbins" and made harvesting with the machine difficult and often impossible and reducing the yield materially. Prices were about same as last year.

Milk retail prices have advanced one to three cents per quart without a corresponding increase paid to dairymen, the more stringent and arbitrary regulation of milk production, high prices of cows and feed combine to put the dairyman "up against" the same old problem, whether to continue the business at no profit, "quit right now" or produce more home-grown dairy feeds.

Poultry, both for egg production and for meat, has been disappointing, and many "poultry enthusiasts" are either reducing or disposing of their flocks. So much has been written and lectured about the get-rich possibilities of the poultry husbandry which was not realized that a reaction has set in which will put the business on a more practical and less "roseate" footing.

The attendance at the indoor meetings was so disappointing that the Board determined to try other methods to best serve the purposes for which the Board was organized, with the result that we decided that what this county needed more than anything else to further this purpose was a live County Farm Demonstrator. After agitating the question among live farmers and the Granges, we, with their assistance, successfully petitioned the Board of Chosen Freeholders to grant us one for this county. With the assistance and by the advice of Director Agee of the Agricultural College, Mr. Irving Owen was secured for the position. He has proved an efficient ally of the Board, and much of the success of the Board is attributable to his untiring efforts.

The first meeting served as an occasion to introduce the Demonstrator to the farmers present and to outline a definite work for the year, among which was a "corn contest," which was made possible by the liberality of the National Bank of New Jersey, of New Brunswick, which enabled us to offer prizes, for which there were thirty-five contestants.

The midsummer meeting was held at the home of Mr. George Davidson, Plainsboro. After an inspection of this farm, which was, by judicious management, converted from "a run down farm" to one which produced a maximum crop of potatoes in addition to general farm crops, that were an inspiration for greater and continued effort to all who had the pleasure to view them. Prof. Cook, of the Station, gave one of his plain and decidedly practical talks on the "Potato, Its Diseases and Pests," and by vines plucked from the field on this farm showed that the experienced expert could detect diseases that were not observable to the average grower.

The October meeting was held at the home of President Evans, at New Market, to see the result of the community seed corn contest, produced from seed selected among the farmers of the neighborhood, which showed yields of from 42 to 67 bushels per acre, grown under identical conditions on the same plot of ground. This contest emphasized the importance of seed selection adopted to climatic and soil conditions and added force to the

talk of Mr. Witter, of New York, on the cheaper and more profitable production of corn.

The November meeting was an exhibition of farm products and of corn entered in the contest.

The Granges entered a competitive exhibit for a silver cup, which was a credit to all who entered, and this, with the individual exhibits, made it the finest exhibit of the farms ever held in this county. The corn, as shown by the contest, yielded as high as 100 bushels per acre of shelled corn. The average of all the contestants was 56 bushels, which is about 20 bushels above the State's average.

The annual meeting, held in December, at which the reports of the officers showed that while much was accomplished during the year, the scope of the Board must necessarily expand and the feasibility of coöperative purchasing of farm supplies was favorably discussed, and efforts along this line will be the keynote of the work for 1916.

W. B. KURTZ,
Secretary.

MONMOUTH COUNTY.

President, J. C. Richdale, Phalanax; Vice-President, D. H. Taylor, Bradevelt; Secretary, D. H. Jones, Freehold; Treasurer, Wm. M. Monan, Freehold.

Board of Directors—T. P. Jones, Freehold; C. D. B. Forman, Freehold; E. A. Sexsmith, Belmar; G. T. Jones, Keyport, and E. C. Conover.

Delegates to State Board of Agriculture.—One year, Chas. A. Craig, Freehold; 2 years, E. W. Winsor, Farmingdale.

The Monmouth County Board of Agriculture has adopted some new methods to improve its efficiency for the betterment of agriculture in Monmouth county. There will be several meetings held and at different places, and topics pertaining to that locality will be discussed.

Five meetings and a field day were held the past year. The first meeting was held in Court House, Freehold, with 250 present. Field Day was held at the farm of J. C. Hendrickson, with over 300 present. The last meeting, held in Auditorium of the Grammar School, Freehold, with 150 present.

The past season has been favorable in many respects as to the growing of farm crops. Corn was looking fine until it was struck by a storm which knocked it flat, and it was damaged so it never outgrew it, making only one-half crop; price high.

Hay was an average crop; price high. Grain good and harvested in good shape; price high. White potatoes, crop good, but price lower than in many years at harvesting time, but since that time has advanced to four times that price. At present, January 1, price $3 per barrel. Sweet potatoes, crop good, price fair. Berry crop normal and price good. Small vegetables plentiful and price low.

Milch cows, good ones selling high; common, plentiful and price low. Dry cows selling good. Beef stock selling well and in good demand. Pork plentiful and price has declined some, more being raised than usual. Many young calves are being raised at present, and several carloads of yearlings and two-year-olds were sold in Monmouth county the past fall. Hired help plentiful, but quality little below average.

Farms still selling high, and some changing hands, and many tenants changing places this year.

The potato situation is a peculiar one, and many farmers are at a standstill. With the potato situation and seed potato prices so high will no doubt make a decrease in the acreage of potatoes. Many stored their own grown potatoes, and several will be planted this coming season. Peach crop little below average; price good.

D. H. JONES,
Secretary.

MORRIS COUNTY.

President, G. E. Felch; Secretary-Treasurer, E. C. Hopping.

Delegates to State Board of Agriculture.—S. E. Young, 1 year; E. C. Hopping, 2 years.

The annual meeting of the Morris County Board of Agriculture was called to order by President G. E. Felch. The Secretary reported that he had interviewed the County Board of Freeholders in regard to furnishing funds in order that a demonstrator might be appointed for Morris county, with the result that as the funds of the county at the time was rather low, the board was not able just at present to do anything for us, although the Board of Freeholders as a whole were in favor of the plan.

The regular order of business finally being finished, the meeting was open for discussion of various topics, which was entered into heartily by all present. The question of a County Demonstrator was again taken up, with the result that the Morris County Board of Agriculture went on record as being unanimously in favor of a Farm Demonstrator, and the Secretary was instructed to so acquaint the Board of Freeholders.

The Liability law was also taken up for discussion, and a resolution was carried that the County Board of Agriculture is opposed to the Liability law as it affects farm labor and domestic servants, and urges the Legislative Committee to do all in their power to relieve the farmer from this burden by amending the present law to that effect. The Secretary was also instructed to notify each member of the State Legislature of the Board's action.

Several new members were added to the Board.

The past year, in regard to crops of all kinds, has been very favorable to the farmer, as there has been harvested possibly the largest crops on record. Especially the peach crop is worthy of special mention, having for several years past been nearly a failure, has come back in the last two years and stands at the present time in the front ranks. The crop this past year being very heavy, and as many new orchards have been set out in the last five years, the supply exceeded the demand. The prospect at the present time seems to be general that Morris county is again taking its place as the pioneer agricultural county.

E. C. HOPPING,
Secretary.

OCEAN COUNTY.

President, John W. Jamison, Cassville; Vice-President, Geo. W. Smith, Cassville; Treasurer, H. R. Wills, Toms River; Secretary, R. C. Graham, Holmeson.

The Ocean County Board of Agriculture has passed another year, and while prosperity did not hit everybody, there is no reason to complain as the prospects look brighter for the coming year. The spring set in dry and everybody prepared for another dry summer, but it was the wettest summer in years, too wet for most all crops but grass and weeds, which grew to perfection. Prices ruled low for all produce except grain, which bids fair to bring good prices.

Pork is lower than last year and poultry prices are weak, but eggs bring good money, as high as sixty cents per dozen. Cranberries about half a crop, and the prices started low but raised later in the season.

As there are no established dairy farms in this vicinity, people go in for raising poultry and hogs, which seems to pay a profit.

Nobody has reason to complain that wants to work as there is plenty of work on the Eddystone Ammunition Company's proving grounds near Lakehurst (Old Manchester).

Grain and grass look promising. Also cover crops are good. Cattle, horses, and all stock wintering good, with no sickness reported to date.

At our last meeting, December 11th, there were suggestions made which, if carried out, will improve the County Board. It seems that some of the members never have time to attend the meetings, therefore miss many important subjects discussed at the meetings.

We shall put forth every effort to extend the usefulness of the County Board in every locality in the county, as we have some good speakers that will attend and lecture on the different crops raised in the county.

R. C. GRAHAM,
Secretary.

SALEM COUNTY.

President, Henry M. Loveland, Friesburg, P. O. Bridgeton R. D.; Vice-President, Maxwell W. Buzby, Woodstown; Treasurer, J. Gilbert Borton, Woodstown; Secretary, G. A. Duell, Woodstown. Executive Committee—Collins B. Allen, Salem; Jessie L. Colson, Elmer; John P. Ridgway, Hancock's Bridge; Asher B. Waddington, Lewis Edwards, and John G. Borton, Woodstown.

The Salem County Board is in good condition. Three meetings have been held, with better attendance than in 1915. Very interesting programs have been prepared, which have been of great interest and value to the farmers. Farmers' Institutes have been held in Elmer and Harmersville, Woodstown preferring a Field Meeting in the summer.

The farmers have passed through a very trying season and there have been several assignments. The corn crop was very poor, owing to a severe windstorm which blew down the stalks and scattered the pollen so that there were many hills without an ear. Potatoes, upon which many depend as their money crop, were not quite up to the average in production, and the prices were so low that the crop in many cases did not pay for the fertilizer. The prices for dairy feeds have been very high.

The great boom in Pennsgrove at the powder plant, with the high wages paid, has given work during the winter to many farmers, who will return to their farms in the spring. Wages will probably be very high, and help scarce on account of the powder works.

G. A. DUELL,
Secretary.

SOMERSET COUNTY.

President, Charles S. Hamilton, Somerville; Vice-President, E. E. Cooper, Plainfield, R. D. No. 3; Secretary and Treasurer, Ellsworth Brokaw, Somerville.

The Board held its annual meeting February 20th, 1915, at the Court House. We have held four meetings during the year, in fact five within a year, one being a special meeting to discuss the advisability of a Farm Demonstrator. The question was put to a vote and lost.

Our meetings are not largely attended, sixty being the highest number. We have had good speakers, also light refreshments and cigars, which added materially to the attendance.

Our county has a Poultry Association, a Holstein Fresian Association and an Agricultural Society in the northern part which holds an annual fair. These institutions are practically new, whereas we had only the original society to attend; this may have some effect on our attendance. The corn growing contest was tried again, with poor results—only five exhibits. Prizes ranged from $3 to $10 for best ten ears. The banks contributed

towards this fund, but very little interest was shown after giving the matter plenty of publicity.

Farm subjects have been threshed over pretty thoroughly and it may be owing to preaching of the past on dairy and poultry subjects that our attendance is small, because most of our farmers are in the dairy and poultry business and this requires their attention at the time our meetings are being held.

Alfalfa and rye are receiving more attention. The help question is the important one. Help is scarce and higher. Aversion to helpful muscular service is becoming a serious problem. Taxes is another vital subject.

This talk about farmers growing rich is all tommy-rot when we consider the average, as the fruits of his labors are not commensurate with his hard toil and disappointments, and he should be better compensated. True, he may own a buzz wagon, but if a good farmer and his family are not entitled to one, who is?

On the whole the past year has not been so productive as the preceding one

ELLSWORTH BROKAW,
Secretary.

SUSSEX COUNTY.

President, Thos. E. Inslee, Newton; Vice-President, B. B. Stanton, Lafayette; Secretary and Treasurer, Paul B. Bennetch, Newton.

Board of Directors—Three years, R. V. Armstrong, Augusta; Theo. M. Roe, Branchville; Linus Clark, Branchville; T. E. Inslee, Newton; J. S. Katzenstein, Hamburg. Two years, Gay Lawrence, Hamburg; W. W. Titsworth, Sussex; James Doty, Sussex; Edward Ackerson, Lafayette; A. G. Danks, Tranquility. One year, B. B. Stanton, Lafayette; John W. Hynard, Vernon; Jos. E. Huff, Newton; Harry Courtright, Montague; Frank Smith, Flatbrookville.

Executive Committee—R. V. Armstrong, Linus Clark, A. G. Danks, Gay Lawrence, Edw. Ackerson.

Delegates to the State Board of Agriculture—R. V. Armstrong, one year; Thos. E. Inslee, two years.

The past year has been one of average crops and prosperity for Sussex county farmers. A late spring, with heavy rainfall, was responsible for much corn being planted late and maturing relatively late, cutting down yields, and making silo filling late. The hay crop, an important one for Sussex farmers, was a fair one in spite of the unfavorable weather conditions. Peaches were more than a hundred per cent. crop, with consequent low prices, as was the case in all parts of the State. Most of the crop was marketed locally, the surplus being shipped to distant markets. Apples were below the average for the county this year.

Lime, which was at one time burned in farm kilns quite extensively over the entire county, is now purchased in large quantities, very little being produced locally. Two limestone grinders have been installed on farms during the year and undoubtedly more of these will be placed in the near future to grind the lime rock of good quality which is found extensively and in large quantities. The increased use of lime is bringing clover and showing its effect in larger crops generally.

The acreage of alfalfa has increased almost 50 per cent. during the past year, a good showing. As this is such an important crop for this section it is interesting to note this increase. That the crop can be grown successfully on practically all farms is certain. Practically all stands were cut three times during the season. Grimm alfalfa is being tried by a few farmers on soils liable to heave.

The principal line of farming for most farmers in the county is the production of market milk for New York, Jersey City, Newark and the suburban markets. The principal obstacles to larger profits in dairying at

present are: Low prices of milk, high prices for grain concentrates and labor, and inferior cows. Little relief is in sight at present from the low prices paid to farmers for their milk. A few men have apparently solved the problem by making shipments directly to retailers in the cities, receiving an average of about 4½ cents per quart, but the majority of dairymen are very much dissatisfied.

The cost of grain concentrates is advancing steadily and dairymen find their only solution to the problem in a more economical use of purchased grains, and the production of more protein on the farm in the form of clover, alfalfa, oats and peas, soy beans and vetch. Too much money is still being expended for the cheap, mixed feeds. The use of silos is increasing steadily, and especially is silage feeding during the summer months growing in favor.

The high cost of labor has been met by a number of dairymen by installing milking machines, the use of which is increasing.

Cows are high in price and good ones are hard to find. Several carloads were shipped into the county, mostly from New York State. The quality of these cows is not the highest. The use of pure-bred sires is on the increase and more heifers are being raised than formerly. A large number of dairymen are keeping herd records to enable them to eliminate low producers. Two cow-testing associations are in operation. The average production for the one association for the year finished August, 1915, was 9,414 pounds milk and 294 pounds fat.

There is pretty general dissatisfaction among milk producers, regarding the method of testing milk in creameries. Licensed testers to operate the Babcock test at all places where milk is being purchased on the butterfat basis would satisfy most of the dairymen. Some supervision must be exercised by the State to insure the reliability of the tests and to restore confidence.

Not as many peaches are being grown in the county as formerly, and the low prices received for the heavy crop of 1915 will tend to discourage further planting. Scab and brown rot were more common than usual and more thorough spraying will be necessary to produce clean fruit.

Apples this year were not a heavy crop and brought only fair prices. More attention is being given to spraying and orchard cultivation.

The Sussex County Fruit Growers' Association was organized during the year, which should bring fruit growers closer together.

Egg production is popular in many sections of the county. High prices for grain have been somewhat offset by good egg prices. White leghorns are the predominant breed.

The County Board of Agriculture was reorganized at a meeting and dinner held in Newton, December 1st, at which time the directors, officers and delegates above mentioned were elected. The dinner was successful from every standpoint. One hundred and fifty men from all parts of the county were present. Addresses were made by the Secretary of the State Board, Franklin Dye; Senator Jos. S. Frelinghuysen, President of the State Board; Alva Agee, State Director of Agricultural Extension, and Dr. John C. Sharpe, of Blairstown. It is planned to hold a summer Field Meeting during 1916. Enthusiasm ran high.

Farmers' Institutes were fairly well attended this year, four being held during November, at Newton, Branchville, Layton and Sussex.

The County Board coöperates with the Farm Demonstrator, and has elected an Executive Committee which will meet monthly for the purpose of considering farm demonstration work. Other work is under contemplation. This includes coöperation with the County Superintendent of Schools in conducting boys' and girls' club work.

The Sussex County Board of Agriculture has taken renewed life and sees its field for usefulness in the encouragement of better production, better marketing, and better living.

PAUL B. BENNETCH,
Secretary.

UNION COUNTY.

President, E. R. Collins, Westfield; Vice-President, Richard Frivett, Springfield; Secretary, C. H. Brewer, Rahway; Treasurer, Ogden Woodruff, Elizabeth.

Ten regular meetings were held by the Board during the season—November to April. A regular meeting and an Institute under the auspices of the Board was held in Springfield, March 4. Afternoon and evening sessions were held in the auditorium of the school. Special subjects—Dairyng, Pruning and Spraying, Poultry, etc.—were covered by speakers from the New Brunswick Experiment Station. Notwithstanding conditions which did not allow of time for very thorough advertising, the meeting turned out very successful, and it is expected to hold another meeting and Institute in Springfield during the 1916 season.

It is the consensus of opinion among the members of the Board that the farmers of this county should be better organized, in order to look out for their interests further along the line, and for this purpose a Legislative Committee has been appointed from this Board. Increased taxation of farm lands, and the dairy inspection and rules, as being put up to the dairymen is gradually cutting down the business, every little while someone dropping out, and I believe this is creating one of the great problems of the future.

With the ever-increasing use of the automobile, which has, and will continue to, cut down the supply of manure in the cities which has been available to the farmers and truckers, and now the increase in price, as well as that upon all other fertilizing materials, is, as I stated, creating a problem, and has somewhat the ring "of ye olden times" as I have been told, when the farmer raised his crop of flax, his wife made the garments for the family and they all enjoyed the wearing, and knew just what they had. By this I do not mean that we should go back, but to convey the idea that as the situation concerning the farmer in this county at present is, that he should endeavor to produce everything in his power for his own use and the upkeep of his land, and in this live stock of some kind must be maintained, whether it be cattle, sheep, swine or poultry.

The growing of alfalfa, clover and timothy in this section is another problem, which if it could be made a success would overcome the greatest difficulty the farmer would have in carrying out a much more successful course. From my observations I conclude it is not that we have no soil in Union county suitable for the growth of these crops, but that our climatic conditons are such that it is almost impossible to get these crops established. The lack of snow (which is had further north), and the freezing and thawing in spring (not so severe further south), are the principal causes why these crops are not grown successfully in Union county.

Concerning the crop season of 1915, as affecting this county, I will state that the month of April was the only seasonable month during the crop season. April conditions were ideal for the agriculturist; the balance of the entire season unfavorable—too cold during May, severe hailstorms and rain both in June and July. Continuous wet weather preventing planting of crops for late market, and cultivation of crops, which meant practically a failure for most of them; tomatoes, as an instance, not being so scarce in many years. Harvesting of hay and grain was done under difficulty, and considerable damage done by the wet weather regarding quality of these crops. Fruit crops were all more or less injured by hail and weather conditions. Plums were large crop, but owing to conditions at time of ripening only about one-fourth of the crop secured. Pears, failure, with exception of Kieffer, which produced 25 per cent. of a crop. Apples injured by hail in July, and again early September conditions forcing them up, both conditions causing a loss in grading and in the keeping quality of the fruit. Peaches were too numerous to mention, and some growers did not like to mention prices received. Markets for nearby fruit were injured by

outside shipments received, being picked too green, the quality poor and grading uneven. Where fruit was thinned and properly graded, prices received were more than enough to pay for the thinning. One grower, having a very fine orchard of young trees, told me that if he had not thinned the fruit it would hardly been salable at any price this season, owing to the great crop maturing during midseason. Late peaches, like Iron Mountain, were forced up during early September, lacking both size and quality, and did not bring price they would if they could have grown and stayed upon the trees until their usual time of ripening. The market problem is one ever before the grower of fruits and vegetables, and in a season of over-production of any crop for the individual grower I believe it will pay him to advertise his products, at least all produce put up and offered at first grade. All boxes or baskets should not only have the name of the grower, but a good label, something that will arrest attention and linger in the mind. For this purpose photographs of farm scenes and fruits on the package are fine. Of course this is a little expense to start with, but establishing a reputation under a good label should and will prove of great advantage to the grower. The individual grower advertising his goods under his farm name and a good picture label is bound to create a demand, and customers will be on the lookout for his label, and then it is up to the grower to see that his goods fit the label. If this is done and followed up, it will soon be found that advertising pays.

The question of a market being established in Elizabeth seems no nearer a solution than a year ago. The Board passed a resolution in favor of State Police Patrol for rural communities. This no doubt would be of great benefit, and there is no question but that something of the kind is needed in a good many places. What is greatly needed is more co-operation among the farmers of the county, and if they could only see the value of the word unity, "in halt" or "get a move on," there might be yet more power in the Union County Board of Agriculture in the State.

C. H. BREWER,
Secretary.

WARREN COUNTY.

President, James I. Cook, Delaware, N. J.; Vice-President, Ernest Race, Oxford, N. J.; Secretary-Treasurer, Chas. M. Oberly, Alpha, N. J.

The Warren County Board of Agriculture had five meetings the past year. The attendance was much better than in preceding years. At the annual meeting in February, Mr. Howard Jones, of Monmouth county, living in the heart of the potato district, gave an address on "Growing Potatoes on a Large Scale," and "Which Soil is More Adapted to the Potato." He preferred green crop covered during winter, Spaulding machine to prepare the soil. Mr. Jones said the season in Warren county was not long enough to grow two crops, also spoke about preparing the seed, potato spraying, cultivating, gathering, preparing them for market, which was sold through the Farmers' Exchange.

The potato crop in Warren county the past season was not more than half a crop. Corn did not yield per acre as it did last year. Farmers who plowed up their wheat fields last spring and sowed to oats made a mistake as the oats harvest was rainy. Alfalfa proved a good crop this year.

Milch cows do not bring as much as they did a year ago, horses also have dropped some in price, according to the sales of farm stock at this time of year. Poultry farming has proved to be a success, as price per dozen eggs is 55 cents. Some of the farmers have been raising their own horses and calves on account of the high prices.

The road-horse breeder will be compelled to change his type of breed to become successful, as the automobile has taken it. The outlook for help on the farms in Warren county next season will be scarce as the factories and

mills will give them employment, as a great number of the foreigners have returned to their own country to become soldiers. Farmers will not be able to farm on such a large scale as they have in the past few years.

CHAS. M. OBERLY,
Secretary.

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