STATE OF NEW JERSEY.

Thirty-Eighth Annual Report

OF THE

State Board of Agriculture

1910.

Printed By Order of the Legislature.

TRENTON, N. J.
MacCrellish & Quigley, State Printers, Opposite Post Office.
1911.

Letter of Transmittal.

To the Hon. John Franklin Fort, 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 1910.

FRANKLIN DYE,

Secretary.

Dated Trenton, December 6th, 1910.

State Board of Agriculture.

OFFICERS AND EXECUTIVE COMMITTEE FOR 1911

PRESIDENT.

JOS. S. FRELINGHUYSEN, ...Raritan, N. J.

VICE-PRESIDENT.

JOHN T. COX, ...White House Station.

SECRETARY.

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

TREASURER.

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

GEORGE E. DeCAMP, ...Roseland, N. J.
JOHN M. LIPPINCOTT, ...Moorestown, N. J.
THEODORE BROWN, ...Swedesboro, N. J.

STATE ENTOMOLOGIST.

JOHN B. SMITH, Sc.D., ...New Brunswick, N. J.

BOARD OF DIRECTORS.

New Jersey State Board of Agriculture.

CLASS A.

P. KENNEDY REEVES,	Bridgeton, ...	Geological Survey.
ALEX. P. OWEN, ...	Mickleton, ...	Board of Visitors, Agricultural College.
A. ENGLE HAINES, ..	Burlington, ...	
*EDW. B. VOORHEES,	New Brunswick, ...	Professor of Agriculture.

CLASS B.

GEO. W. F. GAUNT,	Mullica Hill, ...	Master of State Grange, P. of H.
JOHN T. COX, ...	White House Station,	Secretary of State Grange, P. of H.

CLASS C.

HOWARD DE COU, ...	Camden, ...	State Horticultural Society.
JAS. C. HENDRICKSON,	Keyport, ...	
FRED. STROHSALL, ...	Park Ridge, ...	Bergen Co. Pomona Grange.
AMOR GAUNTT, ...	Jobstown, ...	Burlington Co. Pomona Grange.
JOHN S. JAGGARD, ...	Haddonfield, ...	Camden and Atlantic Co. Pomona Grange.
WALTER S. YERKES,	Tuckahoe, ...	Cape May Co. Pomona Grange.
CHAS. F. HOLMES, ..	Bridgeton R. D., ...	Cumberland Co. Pomona Grange.
E. OSCAR DECAMP, ..	Roseland, ...	Centre District Pomona Grange.
S. ROGERS GRUFF, ...	Clayton, ...	Gloucester Co. Pomona Grange.
D. H. AGANS, ...	Three Bridges, ...	Hunterdon Co. Pomona Grange.
J. T. ALLINSON, ...	Yardville, ...	Mercer Co. Pomona Grange.
CHAS. S. HAMILTON,	Somerville R. D. 4, ..	Middlesex and Somerset Co. Pomona Grange.
C. C. HULSART, ...	Matawan, ...	Monmouth Co. Pomona Grange.
JOHN MOORE, ...	Elmer, ...	Salem Co. Pomona Grange.
CHAS. M. CRAWN, ..	Newton, ...	Sussex Co. Pomona Grange.
WILLIAM MILLER, ...	Washington, ...	Warren Co. Pomona Grange.

BOARD OF DIRECTORS.

NAME.	ADDRESS.	TERM.	COUNTY.
CARL SCHIRMER, ...	Egg Harbor City, ...	2 years.	Atlantic.
JOHN L. PURZNER, ...	Egg Harbor City, ...	1 year.	"
ARTHUR LOZIER	Ridgewood R. F. D., ...	2 years.	Bergen.
J. J. VAN WAGONER, ...	N. Arlington, ...	1 year.	"
CRAIG TALLMAN, ...	Burlington, ...	1 year.	Burlington.
		2 years.	Camden.
JOSEPH BARTON, ...	Marlton, ...	1 year.	"
PROF. H. W. GELLER, ..	Woodbine, ...	2 years.	Cape May.

* Deceased.

NAME.	ADDRESS.	TERM.	COUNTY.
RICHARD LLOYD,	Dias Creek,	1 year.	"
JACOB ZIMMERMAN,	Millville,	2 years.	Cumberland.
N. E. DIAMENT,	Cedarville,	1 year.	"
GEORGE M. CANFIELD,	Caldwell,	2 years.	Essex.
AUGUST W. FUND,	Chatham,	1 year.	"
AMOS KIRBY,	Mullica Hill,	2 years.	Gloucester.
JESSE MULLEN,	Paulsboro,	1 year.	"
ROSCOE DE MOTT,	Stanton,	2 years.	Hunterdon.
JAMES LANE,	White House Station,	1 year.	"
JOHN W. HENDRICKSON,	Trenton R. F. D. 1,	2 years.	Mercer.
R. E. HAINES,	Robbinsville R. D. 2,	1 year.	"
LEWIS D. WALKER, JR.,	New Market,	2 years.	Middlesex.
JOHN B. PERRINE,	Cranbury,	1 year.	"
JOHN H. DUBOIS,	Freehold,	2 years.	Monmouth.
GEORGE T. REID,	Freehold R. F. D. 5,	1 year.	"
EDGAR C. HOPPING,	Florham Park,	2 years.	Morris.
W. B. LINDSLEY,	Madison,	1 year.	"
R. C. GRAHAM,	Holmeson,	2 years.	Ocean.
C. M. RORER,	Cassville,	1 year.	"
EDW. VAN HOUTEN,	Paterson R. F. D. 1,	2 years.	Passaic.
PETER MACDONALD,	Paterson R. F. D.,	1 year.	"
JOHN RIDGEWAY,	Hancock's Bridge,	2 years.	Salem.
A. B. WADDINGTON,	Woodstown,	1 year.	"
GEO. B. RANDOLPH,	Bound Brook R. F. D.,	2 years.	Somerset.
WM. H. ROGERS,	Watchung,	1 year.	"
GEO. P. MCDANOLDS,	Branchville R. F. D. 2,	2 years.	Sussex.
THEODORE M. ROE,	Branchville,	1 year.	"
HART S. VAN FLEET,	Roselle,	2 years.	Union.
E. R. COLLINS,	Westfield,	1 year.	"
JAMES I. COOK,	Hope,	2 years.	Warren.
FRANK HOUSEL,	Broadway,	1 year.	"

OTHER ASSOCIATIONS.

J. HARVEY DARNELL,	Masonville,	Mount Laurel Farmers' Club.
EZRA EVANS, A. J. RIDER,	Marlton, Hammonton,	American Cranberry Growers' Association.
WM. W. CASE,	Frenchtown,	N. J. Bee Keepers' Association. Veterinary Medical Asso. of N. J.
J. H. WOLSIEFFER,	Vineland,	N. J. League of Poultry Raisers.
CHAS. D. CLEVELAND,	West Orange,	N. J. League of Poultry Raisers.
WALTER W. SHUTE,	New Brunswick,	E. B. Voorhees' Agricultural Club.
ANDREW MCLEAN PARKER,		Princeton Agricultural Society.

PROCEEDINGS

OF THE

THIRTY-EIGHTH ANNUAL MEETING

OF THE

NEW JERSEY STATE BOARD OF AGRICULTURE

HELD AT THE

STATE HOUSE, TRENTON, NEW JERSEY

Wednesday, Thursday and Friday,
January 18, 19, and 20, 1911.

STATE BOARD OF AGRICULTURE

Thirty-Eighth Annual Meeting

FIRST DAY—MORNING SESSION.

WEDNESDAY, January 18th, 1911.

The meeting was called to order by Secretary Dye, who said: "Friends, the morning is passing. It falls upon me to call this Thirty-eighth Annual meeting to order, in the absence of both the President and the Vice-President, and I call on the Rev. Dr. Wight to open the meeting with prayer."

Dr. Wight then offered prayer.

Secretary Dye—You are all aware, brother farmers, of the prostration of our beloved President, Dr. Voorhees, and, of course, you do not expect to see him here. This morning we received the following from our Vice-President:

WHITE HOUSE, N. J., January 17th, 1911.

DEAR BROTHER DYE—Am fast on my back in bed with grippe. Doctor forbids me going to Trenton this week.

Yours truly,
JOHN T. COX.

This is evidently written by Mrs. Cox. Now, in the absence of both the President and the Vice-President, it will be necessary for you to elect a President *pro tem.* Who will you have?

Senator George W. F. Gaunt was elected Chairman *pro tem.*

Chairman Gaunt—Mr. Secretary and members of the State Board of Agriculture: It would seem to me that the hand of affliction has been laid heavily upon the agricultural interests of our State. As you are aware, our good friend, counselor and adviser, Dr. Voorhees, has not been able to take his active place the past year, and we will miss him to-day. It seems fitting that, at as early a moment as possible, a resolution be

adopted by this body and forwarded to both the President and the Vice-President of this Board.

Being selected by you to preside over this meeting, I can assure you I appreciate it, and the confidence that you have bestowed upon me; and I want to assure you that I will do everything I possibly can to promote the best interests of the meeting during the sessions. I thank you for this honor. (Applause.)

The order of business was then presented, and adopted as follows:

ORDER OF BUSINESS.

WEDNESDAY.

First Session.

10:30 A. M.–12:30 P. M.
Prayer.
Calling Roll of Delegates. All delegates are requested to be present at the opening session.
Presenting Order of Business.
Minutes of Last Meeting.
Announcing of Committees Appointed:
On Credentials.
On Resolutions.
On Treasurer's Accounts and any other Committees.

11:30 A. M.
Reading of Executive Committee's Report.
Report of State Grange, Hon. G. W. F. Gaunt, W.M.
Report of Treasurer, Prof. A. J. Rider.
Report of Secretary of State Board.
Report of Committee on Transportation and Freight Rates, E. R. Collins, Chairman.

Second Session.

2:00–5:00 P. M.
Calling Roll of Absentees and Report of Committee on Credentials.
Address of the Vice-President of the Board, John T. Cox, Esq.
Calling Roll of Delegates and appointment of a Committee, consisting of one member from each county duly represented, to nominate officers for the ensuing year (the members present from each county naming their members of this committee). Committee will report when ready.

2:30 P. M.
Report of State Entomologist and Notes on New Spraying Materials, Dr. John B. Smith, State Entomologist.
Report of the E. B. Voorhees' Agricultural Society, Mr. W. W. Shute.

4:00 P. M.
Co-operation. Dr. George C. Creelman, President Ontario Agricultural College, Guelph, Ontario.

Third Session.

7:30 P. M.
Modern Methods in Poultry Management. (Illustrated by Stereopticon.) Prof. H. R. Lewis, State Agricultural College.

8:30 P. M.
Improvement in Country Life. Ex-Judge Algernon T. Sweeney, Newark, N. J.

THURSDAY.

Fourth Session.

9:30 A. M.–12:30 P. M.
Prayer.
Unfinished and New Business.

10:00 A. M.
New Jersey Soils in Their Relation to Fertility and Crop Production. Dr. J. G. Lipman.

11:00 A. M.
Swine Production. J. F. Gordon, Esq., Jamestown, Ohio.

Fifth Session.

2:00 P. M.–5:00 P. M.
Agricultural Education. Dr. George G. Creelman.

3:30 P. M.
Practical Dairying for Profit by Farmers. Austin Herrick, Esq., Twinsburg, Ohio.

4:30 P. M.
The Dairy Cow as an Educator. H. O. Daniels, Millbrook Dairy Farm, Middletown, Conn.

Sixth Session.

8:00 P. M.
In Auditorium of State Normal School.
Music by the Philomela Glee Club of the State Schools.
The Improvement of Plants and Animals by Breeding. (Richly illustrated stereopticon lecture.) Prof. W. J. Spillman, U. S. Department of Agriculture, Washington, D. C.

FRIDAY.

Seventh Session.

9:15 A. M.–12:30 P. M.
Prayer.
Unfinished Business.

10:30 A. M.
Report of Commission on Tuberculosis in Animals.

11:00 A. M.
Economical Dairy Feeding. Mr. Daniels.

12:00 M.
Closing the Business of the Meeting.

The following committees were appointed:

Credentials—Craig Tallman, Columbus, Burlington Co.; Carl Schermer, Egg Harbor, Atlantic Co.; R. S. Van Fleet, Roselle, Union Co.

Resolutions—J. T. Allinson, Yardville, Mercer Co.; Theodore Brown, Swedesboro, Gloucester Co.; August W. Fund, Chatham, Essex Co.

Treasurer's Accounts—Walter Heritage, Swedesboro, Gloucester Co.; George E. De Camp, Roseland, Essex Co.; John Moore, Elmer, Salem Co.

Secretary Dye—Most of you have the program in your hands. We have done the best we could in arranging a repast for the annual meeting, and I trust it will work out satisfactorily, notwithstanding some drawbacks which we cannot overcome. If it is proper, worthy Chairman, a motion to adopt the program as presented will be in order.

The reading of the minutes of the last meeting was dispensed with.

Report of the Executive Committee.

During the year past your Executive Committee has held five meetings in the interest of the Board. At the February meeting, retiring Treasurer, Hon. Walter Heritage, turned over the books to Treasurer-elect Prof. A. J. Rider, who assumed the duties of the office of Treasurer of this Board. It was decided to continue the Railroad Train work both in North Jersey as well as in South Jersey, providing suitable arrangements could be made. The desirability of preparing a concise bulletin for home-seekers, setting forth the character of the land in different sections of this State, with the price and what crops they are more especially adapted for, was discussed, and the Secretary was authorized and requested to prepare such a bulletin at his convenience.

At the June meeting, the Field Day at the College Farm was fixed, the dates for this Annual Meeting chosen and a Committee on Annual Meeting and Farmers' Institutes elected, consisting of the Vice-President, Secretary and Treasurer. Word was received from Dr. Voorhees that his health would not permit him to meet with us.

At the October meeting, we were pleased to have President Voorhees with us again. He, however, did not preside, but left that duty to Vice-President Cox, who has fulfilled all the requirements of the office since the February meeting. At this meeting a letter was received from Dr. Smith, State Entomologist, requesting that his salary be increased to $100 per month, owing to the increase in work due to the invasion of the Gypsy and Brown-tailed moths. Action on this request deferred to next fiscal year. Appropriations were made to the several County Boards and to the State Horticultural Society, as required by law. A Committee consisting of the Secretary and Treasurer was appointed to attend the meeting of the American Association of Farmers' Institute Workers, in Washington, D. C., November 14th, 15th, 1910. The Committee endorsed New Orleans as the most desirable location for the

Panama Exposition in 1915. A portrait of President Voorhees was accepted and added to those already in the office of the Board.

At the November meeting, Dr. Voorhees not present. The Secretary reported as to the meeting of Farmers' Institute workers in Washington—the best, most practical and suggestive meeting hitherto held by the Association; that he had secured two speakers for the Annual Meeting—Dr. Creelman and Mr. Daniels. The report was accepted. Dr. Smith being present at this meeting of the Executive Committee, by invitation, explained more fully the increased duties connected with his office, and that he had found it necessary to relinquish some of his other duties at the College in order to carry out this work, as a reason for increasing the pay to $100 per month. He also requested that the salary of Mr. E. L. Dickerson be increased to $100 per month. After a full and free discussion, the Committee unanimously granted both requests. The Secretary reported arrangements being made for Farmers' Week, and requested action by the Committee as to whether he should make arrangements for more Institutes immediately following the Annual Meeting, and for Railroad Educational Train work about February 1st, 1911. After discussion, the Secretary was authorized to arrange for both, if possible.

At the January meeting, held last Wednesday, committees were appointed for this meeting and other matters claiming attention were considered, and the following resolution adopted:

"WHEREAS, Our beloved President, and efficient fellow-worker, Dr. Edward B. Voorhees, is prostrated by a partial suspension of his vital functions, owing, as we believe, to unremitting devotion to the several branches of State and educative work entrusted to him; therefore be it

"Resolved, That we hereby express our high appreciation of the work done by Dr. Voorhees in advancing the agricultural and Horticultural interests of this State, of his efficient service in extending and establishing on a broader basis the work of agricultural education at the State Agricultural College, and of his chemical investigations in the matter of soil constituents and plant food, and his experiments with alfalfa and other legumes, thus showing what can be done in this State with such crops, and for his willingness to respond to every call made upon him for advice on all matters of interest to the farmers of his State; and further

"Resolved, That we extend to him, in this his affliction, our sincere sympathy, expressing the hope that he may soon be restored to health and resume to some extent at least, the work in which he is so deeply interested, and that a copy of the foregoing be sent to Mrs. Voorhees, to be read to the Doctor when he is able to receive it, and that a copy be spread upon the minutes of the Executive Committee."

The report was adopted as read.

Secretary Dye—We usually call on the Worthy Master of the State Grange, Senator Gaunt, for a report at this point, and he has usually favored us. That is the next item in the order of business.

Mr. Gaunt—In the past few years we have not written or prepared a report, as had been the custom in former years. We have simply made a verbal statement as to the condition of the State Grange. It is very gratifying at this time to be able to report that the State Grange is in a more prosperous and flourishing condition than it has ever been in the history of the organization. When I say in a prosperous condition, it has

constantly increased its membership and added new subordinate Granges in the different sections of our State. Its finances are in a good condition. But this does not tell all that can be said in a report from the State Grange. The influence that is being wielded by the organization in behalf of the agricultural interests, in bringing closer together the other interests of our State with agriculture, and having a better understanding with other interests, is a matter that we are indeed glad to report at this time. The State Grange is being looked upon by those outside of the order as an organization that stands for advancement and for the uplift of our citizenship. Therefore, any organization that is doing work of this kind, it seems to me, should be commended. We have in the past year been co-operating with the State Board of Agriculture in reference to everything that pertains to the advancement of agriculture. It was the privilege of the State Grange to be represented in the past year on the Committee of Appropriations, and in looking over the line of appropriations, and the requests that were made by the agricultural institutions, you will find that every requisition asked for was obtained. Because when that committee understood, when they had a thorough knowledge of the importance of agriculture and their needs, they were only too glad and willing to appropriate the money asked for for the good and welfare of our State.

There are many things that might be said in reference to the work of the State Grange and the State Board of Agriculture, but there is no need for me to go into details. However, we want to assure the members of the State Board that they will find the State Grange, as in the past, ready to co-operate with them in anything that will stand for better agricultural conditions in the State of New Jersey. (Applause.)

Treasurer's Report.

REPORT OF A. J. RIDER, TREASURER, FOR THE FISCAL YEAR ENDING OCTOBER 31ST, 1910.

Dr.

To cash received from Comptroller during the year, ... $5,140 01

Cr.

By payments as follows:		
Annual Meeting expenses—Delegates,	$467 01	
Speakers,	347 95	
Stenographer,	157 60	
Janitor and chairs,	21 50	
Lantern service,	20 00	
		$1,014 06
Farmers' Institutes, lectures and expenses,		2,209 99
Educational trains, lectures and expenses,		616 11
Express Company bills,		127 64
Postage,		61 71
Illustrations for and packing Annual Reports,		36 69
Executive Committee's expenses,		92 02
Farmers' Week, lectures and expenses,		157 50
Committee on Transportation, expenses,		24 55
Expense of delegate, Association Institute Lecturers,		14 74
Appropriation to County Boards,		485 00
Appropriation to Horticultural Society,		300 00
Total,		$5,140 01

REPORT OF AUDITING COMMITTEE.

The Auditing Committee have examined the account of the Treasurer and find the same correct.

WALTER HERITAGE,
GEORGE E. DeCAMP,
JOHN B. MOORE.

Secretary Dye's Annual Report to the New Jersey State Board of Agriculture, January 18th, 1911.

Although there was drought in some sections of the State, and excess of moisture in others at certain periods in crop growth during the year 1910, it was, nevertheless, a very encouraging year for the farmers of New Jersey. They are, of necessity, adding annually to the cost of production by the purchase of commercial plant food, and when the elements for any cause do not co-operate with the farmers' efforts, as a generous partner should, full average yields are not realized and partial loss results. With the increased purchase of nitrogen, phosphorus and potash, leading farmers are also adding vegetable matter to their soils by the use of green manures and cover crops. The value to our farming lands thus improved is incalculable and the sooner this course is adopted by all our farmers, so much sooner will their lands produce larger crops, and their soils improve from year to year. By this course, too, a legacy of impoverished land will not be left as an inheritance for those who come after. As in previous years, our crop statistics are based on estimates made by the Directors of the Board, and the County Secretaries, in comparison with those of the United State Department of Agriculture, Bureau of Statistics. We have placed milk at four and one-half cents per quart, average, to the farmer. Poultry and egg products are raised $250,000 above last year, and miscellaneous vegetables and fruits $130,195. We believe this is not too high. The Cranberry crop alone has a market value of $1,500,000. Much milk is sold at six cents and eight cents the year through, and poultry values and eggs keep soaring.

The following tables give in detail the estimated yield and value of the various crops. There is also added a table showing the shipments of perishable farm produce over the West Jersey and Seashore Railroad during the year 1910:

Table I.

ACREAGE, YIELD AND VALUE OF GENERAL FARM CROPS IN NEW JERSEY, 1910.

Crops.	*Acreage.*	*Yield Per Acre.*	*Total Yield.*	*Price Per Bushel.*	*Total Value.*
Corn,	290,000	36	10,440,000	$0.63	$6,577,200
Wheat,	111,000	20	2,220,000	.98	2,175,600
Rye,	85,000	18	1,530,000	.77	1,178,100
Oats,	60,000	39	2,340,000	.44	1,029,600
Buckwheat,	13,000	21½	279,500	.72	201,240
Hay.	437,000	1½	655,500	*18.20	11,930,100
Potatoes, White,	95,000	105	9,975,000	.63	6,484,000
Potatoes, Sweet,	21,000	128	2,688,000	.61	1,639,680
Miscellaneous vegetables and fruits,					11,200,000
Milk,					18,396,000
Poultry and eggs,					3,000,000
Total,					$63,811,520

* Per ton.

Table II.

COMPARATIVE STATEMENT OF THE YIELDS OF GENERAL FARM CROPS IN NEW JERSEY FOR TEN YEARS.

Year.	*Field Crops and Milk.*
1900,	$24,249,179 00
1901,	38,545,095 00
1902,	44,619,344 00
*1903,	39,453,050 00
1904,	48,222,505 00
1905,	49,964,286 00
1906,	52,460,262 00
1907,	56,403,734 00
1908,	57,743,153 00
1909,	59,357,955 00
1910,	63,811,520 00

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

Table III.

* Live stock, number and value:

	Number.	*Average Price Per Head.*	*Total Value.*
Horses,	103,000	$134 00	$13,802,000
Mules,	5,000	155 00	775,000
Milch cows,	190,000	47 50	9,025,000
Other cattle,	82,000	21 40	1,755,000
Sheep,	44,000	5 20	229,000
Swine,	152,000	12 00	1,824,000
Total,			$27,410,000

* From "Crop Reporter" of U. S. Department of Agriculture, February, 1910.

The following data relating to the number, acreage and value of farms in New Jersey, and the estimated value of buildings, implements and machinery, with the amount expended for labor and fertilizers, is taken from the "First Preliminary Comparative Statement of General Farm Data," issued by the Census Bureau, January, 1911.

It is published here for general information, as it affords a new basis for estimating the value of farming lands of this State and the various other matters connected therewith.

Summary for the State.

The preliminary comparative summary follows:

ALL FARMS BY ACREAGE VALUE OF LAND, BUILDINGS, IMPLEMENTS, ETC.

	1910.	1900.	*Per Cent. of Increase, 1900–1910.*
All farms,	33,161	34,650	*4
Total acreage,	2,562,000	2,841,000	*10
Average acres per farm,	77	82	*6
Value of land and buildings,	$213,141,000	$162,591,000	31
Improved acreage,	1,800,000	1,977,000	*9
Value of land,	122,357,000	93,361,000	31
Value of buildings,	90,784,000	69,230,000	31
Value of implements and machinery,	12,955,000	9,330,000	39
Average value per acre of land and buildings,	83.20	57.20	45
Average value per acre of land alone,	47.80	32.90	45
Expenditures for labor,	10,530,000	6,720,000	57
Expenditures for fertilizers,	4,206,000	2,165,000	94

ALL FARMS BY COLOR OF FARMER, TENURE, ACREAGE GROUPS, ETC.

	1910.	1900.	*Amount of Increase, 1900–1910.*
All farms by color of farmer,	33,161	34,650	*1,489
White farmers,	32,686	34,180	*1,494
Colored farmers,	475	470	5
All farms by tenure,	33,161	34,650	*1,489
All owners,	23,881	23,434	447
Owners free,	12,121	.....	.....
Owners mortgaged,	11,760	.....	.....
All tenants,	8,238	10,355	*2,117
Managers,	1,042	861	181
Distribution by acreage group,	33,161	34,650	*1,489
19 acres and under,	7,806	7,585	221
20 to 49 acres,	7,577	7,632	*55
50 to 99 acres,	8,181	8,882	*701
100 to 174 acres,	7,198	7,855	*657
175 to 499 acres,	2,232	2,513	*281
500 to 999 acres,	112	110	2
1,000 acres and over,	55	73	*18

* Decrease.

PRODUCE AND PERISHABLE COMMODITIES FORWARDED FROM WEST JERSEY AND SEASHORE RAILROAD DURING THE YEAR 1910.

Commodity.	*Cars.*
Apples,	66
Asparagus,	151
Berries,	440
Cranberries,	284
Fish,	498
Melons,	34
Oysters and clams,	3,419
Pears,	53
Peaches,	13
Peppers,	387
Potatoes,	7,819
Poultry,	783
Produce (mixed C. L.),	4,918
Pumpkins,	2
Tomatoes,	339
Total,	19,206

STATEMENT SHOWING DISTRIBUTION OF CARLOAD PERISHABLE SHIPMENTS FROM POINTS ON WEST JERSEY AND SEASHORE RAILROAD, 1910.

To	*Cars.*
Camden and Philadelphia,	6,808
Jersey City and New York,	4,881
Newark, N. J.,	1,083
Other New Jersey Points,	465
Buffalo, N. Y.,	415
Rochester, N. Y.,	101
Other New York points,	182
Pittsburgh, Pa.,	938
Other Pennsylvania points,	830
Boston, Mass.,	511
Other Massachusetts points,	187
New Hampshire points,	37
Connecticut points,	128
Rhode Island points,	21
Vermont points,	8
Maine points,	11
Delaware and Maryland points,	263
Ohio points,	514
Chicago, Ill.,	1,323
Illinois points,	34
Wisconsin points,	83
Minnesota points,	111
Montana points,	10
Michigan points,	125
Nebraska points,	5
North Dakota points,	1
South Dakota points,	3
Indiana points,	42
Iowa points,	14
Virginia points,	8
Kentucky points,	1
Kansas points,	4

To	*Cars.*
Washington points,	12
Colorado points,	3
Oklahoma points,	1
California points,	1
Georgia points,	1
West Virginia points,	4
Louisiana points,	1
New Mexico points,	3
Tennessee points,	2
Canadian points,	31
Total,	19,206
Total 1909,	18,891

DIVERSITY OF SOILS AND CROPS.

The farming lands of New Jersey vary in price and they contain a variety of soils. These vary in their composition, their constituents of plant food, their water-holding power, the crops best adapted to each, their requirements and the methods of cultivation; all these points should be considered in making a selection of a farm.

Questions on the above points and many more are constantly coming to the office of the Board, as also to the Experiment Station at New Brunswick. To answer each one with a typewritten letter requires so much time that President Voorhees, at a meeting of the Executive Committee held in the early summer, proposed that your Secretary prepare a pamphlet describing the farming lands of the State, their characteristics, requirements, crops, value per acre, etc., etc. Although the Secretary confessed his inability to treat the matter as thoroughly and as correctly as its importance demands, yet he has undertaken the work, and with the aid of Dr. Lipman hopes to have it ready for the printer in the early spring.

THE DAIRY—BEEF PRODUCTION.

Notwithstanding many farmers once engaged in dairying have now abandoned it, the business does and must go on. Causes that have contributed to the cost of production have also quite generally led to an improved milk supply, and it is quite probable that if the cost of production is published, as it should be, and the milk producers co-operate and continue to co-operate to secure a fair price for their products, this whole question will be satisfactorily arranged in the near future. The people must have milk and it cannot be produced at a loss. One way to increase the profits is to keep more cows that will yield very much more above the present average, which is scant 4,500 pounds a year.

With the opening up of the Great West immediately after the war, the business of producing beef was transferred from the farms of the older States to the free, grazing plains west of the Mississippi. But those free lands are about all taken up by settlers, and the production of beef cattle is becoming more costly and the price in our eastern markets for choice cuts is almost prohibitive. With such conditions prevailing, does not the situation warrant our eastern farmer in resuming the fattening of beef animals for our home markets at least? My belief is, it will pay to do so. Our unprofitable dairy cows, at least, should be fattened and sold for beef.

THE SWINE INDUSTRY.

We are not producing as much pork as we did some years ago, and yet the price of fat hogs has been such as to encourage greater attention to this branch of farm business. We have only 9,437 head more of swine now than the

farmers of 1870, fifty years ago, produced. They had 142,563 head. In 1880 we had increased to 219,069, we now have 152,000. On fruit and market garden farms the hog can be made a sort of scavenger for the unmarketable portions of any crop, and thus waste prevented and profit secured out of that which otherwise would be lost. The hog, furthermore, if wisely handled, will add to the home-manure product almost, if not quite enough, to cover the cost of his keep. This question is set down for discussion at this meeting.

POULTRY.

The New Jersey League of Poultry Raisers estimated the value of the poultry, plants and birds for 1909 to be $10,000,000. This is a large sum. I have no means of substantiating, nor do I wish to question their estimate, it is certain that the industry is increasing rapidly in this State. There is more attention being given to it by farmers and their families, and there is a steady increase in the number of plants devoted exclusively to the business. The subject of Poultry and Egg Production, when presented at the Farmers' Institutes usually receives close attention.

The addition of a Professor of Poultry to our Agricultural College staff will be of special value to the students, and the teachings worked out in practice on the farms should add to their revenues from this source.

One division of the poultry industry, that of turkey production, should receive special attention. The diseases affecting need to be studied and means found to prevent or cure them, if possible. A fine flock of turkeys put on the market at Thanksgiving time should reimburse the farmers' wives and daughters for their work and care in raising them, and replenish their purses for the holiday purchases.

This Board, in my judgment, should give its endorsement by resolution, and its support by individual effort to secure a suitable appropriation to establish a chair of Poultry Husbandry on a safe financial basis, at the State Agricultural College.

THE FRUIT INTERESTS.

The present tendency is to increase the acreage to fruit. This is particularly so with the peach. Possibly because some have made a signal success in the business, others in increasing numbers, are encouraged to venture in the same line. Care should be taken, however, to attend to every *detail* necessary to success or partial failure will follow. The essentials *must be applied* from start to finish each year. The apple, too, should be grown much more extensively than it now is. Results of doing it right, shown at the State Horticultural Society for the past two years, prove beyond question that New Jersey has the men, the soil and climate suitable to produce the finest of this fruit. If all the land suitable for the production of applies in this State were set to this fruit, we would not produce enough to dull the market, providing the fruit was first class. The demand is increasing, and the market extending.

THE CRANBERRY.

The production of this fruit is in a class by itself. Land that is of but little, if any value, for other purposes, is utilized for it. By intelligent management and careful attention, the growers of this fruit have greatly improved it, both in size, quality, color and yield. The crop of 1910 is in excess of any previously recorded. It is estimated by those in position to know, to have been 600,000 bushels. The market value is believed to be $2 per bushel.

With this fruit as with the others named, a knowledge of its requirements, and a timely application of each requisite is absolutely necessary, and even then partial failure may occur.

FARM WAGES, MILK VALUES, ETC.

Secretaries of the County Boards report that the number of farm laborers has not increased the last year, with the exception of Essex and Burlington counties.

Farm wages per month, with board, run from $18 to $25, average $20.60; without board, $32 to $36 per month, average $34.50.

Few changes are reported in the kind of crops grown.

Number of silos reported are:

Cape May,	11
Cumberland,	56
Middlesex,	125
Salem,	40
Somerset,	14
Union,	30
Monmouth,	8
Bergen,	2

There are many more not reported.

Six counties only report spraying fruit trees on the increase.

The wholesale price of milk paid farmers by retailers runs from three cents in Warren county to five cents in others, *the average for State is 4.7 cents per quart.*

The retail price runs from six cents in Warren to nine cents in others, *the average being eight and one-half cents per quart.*

The price paid at creameries runs from two and one-half cents in Warren to four cents in others, *average three and one-half cents.*

THE CANNING INDUSTRY.

The number of canneries for all farm products in the State as given by the Bureau of Statistics is 43. Total capital invested $817,116. Total persons employed 5,388, of which 2,173 are men and 3,215 are women.

The selling value of all products is $2,219,152. Largest amount in any one establishment, $200,000; lowest, $1,000. Average, $19,003.

Total pounds of fruit canned, 3,617,016.

Total pounds of vegetables, all kinds, in 1909, 75,171,912, of which the tomato, as heretofore, leads.

From the above figures it is evident the canning industry is an important factor in the disposition of the fruits and vegetables of our farms. When we consider the vast amount of canned goods of this character put on the markets every year, and sold, it would seem that New Jersey might well increase the industry.

CROPS—POSSIBLE YIELDS.

It would be interesting information to all farmers to have a statement of their methods of growing their several crops and the yield of same, cost of production, etc. I have received the following statement from Mr. R. B. Harrison, of Chesterfield, N. J., as to his potato crop for the past year:

"I planted eighty acres and dug and sold from same eighty acres, twenty thousand one hundred and seventy-seven bushels of first size potatoes, and besides these we have on hand six hundred bushels of nice second size, and four hundred bushels of culls, these latter we are boiling for our hogs. We had 70 acres of Aroostook Prize, and the remaining 10 acres were planted in Peach-Blows, Mammoth Pearl, Cobblers and Green Mountains. My best yield for one acre was of old-fashioned white Peach-Blow, which gave me a yield of 350 from a measured acre.

"I used 850 lbs. of Mapes potato fertilizer per acre and 13 bushels of seed. We began planting on March 18th, and finished April 11th.

"Our entire crop, including seconds, will yield $11,000.

"The Peach-Blow seems to do as well as it did years ago and when planted early ripens before frost."

FEED INSPECTION.

We have received from Mr. Charles S. Cathcart, Chief Chemist of the State Agricultural Experiment Station, the following report covering this work for the past year:

"During the year 1910. 643 samples of the various feeding stuffs were received at the Station, 634 of which were received from the stock of 147 dealers who were doing business in 86 cities and towns; the remaining 9 samples were forwarded by farmers.

"As the law recognizes two classes of feeding stuffs, one of which must be accompanied by a guarantee of its contents of protein and fat and the other being exempt from this requirement, it was ascertained that 482 samples of the total number received belong to the guaranteed class and the balance, 161, to the second class. Four hundred and ninety-one (491) samples of this total number received were examined, 340 of which belonged to the guaranteed class.

"The guarantees were fulfilled in 257 samples or 75.6 per cent. This result compares very favorably with the results the previous years—in 1908 this percentage was 74 and in 1909 it was 72.2. Of the 83 samples that were deficient, 29 were low in protein, 34 in fat and 20 in both protein and fat. Many of these deficiencies are due to the high guarantees given rather than to an inferior quality of the product.

SUMMER FIELD DAY.

The Fourth Annual Summer Meeting and Field Day of this Board was held at the College Farm, New Brunswick, August 9, 1910. The attendance was larger than at any previous meeting of this character, and from the interest shown, not only in the brief addresses that were given in the judging pavilion, but more especially in inspecting the stock and the various crops grown on the farm, it was evident the farmers of the State are taking a very deep and practical interest in the work inaugurated by Dr. E. B. Voorhees and so ably carried out in practice by those associated with him in the experimental work there. This is as it should be, and a secondary effect of the scientific work done on the College Farm should be seen in better farming throughout the State.

FARMERS' WEEK.

This period for agricultural instruction was begun December 28th, 1908. It was organized as a sort of round-up of the Farmers' Institutes previously held. It occurs during holiday week, when the Short Course students are away and when the farmers themselves can go to the school for a little while. The farmers appreciate this opportunity. The attendance, as well as the interest in the lectures, has increased from year to year. The meeting for 1910 occurred December 26th to 30th. The attendance was larger than heretofore, although the weather was very unfavorable. The total attendance for all sessions was 1,731; average for each session, 61. Largest one-day attenance, 105.

FARMERS' INSTITUTES AND TRAIN WORK.

Thirty-six Farmers' Institutes were held during November and December, covering fifteen counties, comprising 41 days and 117 sessions. In most of these a good interest was shown and the work appreciated. Owing to local causes, the attendance at two or three places was not so large as formerly By request, several new localities were visited with encouraging results.

For January 21st to 28th, six more such meetings have been arranged for. In the same line of work, but by a different method, arrangements have been made with the West Jersey and Seashore Railroad, the Camden and Amboy, and the Belvidere Divisions of the Pennsylvania Railroad, for running an Educational Train from January 31st to February 3d, inclusive.

This train is scheduled to make twenty-two stops of from 50 to 70 minutes each, during which time 88 lectures will be delivered by the Professors of the Agricultural College and others, four lectures of 25 minutes duration at each stop, allowing time for questions.

In relation to the regular Institutes in the counties, my belief is that their efficiency would be increased could we have a working committee in each, organized from the County Boards and Granges, to co-operate with the Executive Committee of the State Board in deciding the places where the Institutes should be held, the topics most important to be treated, and to advertise the meetings, distributing notices of same, and in various ways to popularize this movement and encourage the farmers and their families to co-operate in the work this Board is aiming to carry forward.

COUNTY BOARDS OF AGRICULTURE.

While agricultural and horticultural societies, farmers' clubs, and poultry associations existed in most of the counties of the State prior to the organization of the State Board in 1872, and subsequently reported to it, County Boards of Agriculture, as such, did not then exist. In 1883, Mercer County organized a County Board and in 1884 Atlantic, Burlington, Camden, Essex, Gloucester and Union counties organized their County Boards. In 1887 the first State Board law was superseded and a new law making provision for the organization of County Boards, auxiliary to the State Board, with representation in it, was enacted. Every county in the State except Hudson, has a County Board organization at this time. Some of these are active in advancing the agricultural interest in their counties, and where farmers throughout the entire county take interest in these Boards, they are, and can be made practical and helpful. The influence of some of these Boards is too local for the greatest good. Is it not possible to extend the work in some way? Possibly a Summer Field Meeting would arouse a deeper interest. These have worked well where tried. An occasional meeting in a different section of the county has extended the influence and usefulness of the Board where tried. Farmers need to co-operate in all their organizations for the advancement of the interest they represent—the agriculture and horticulture of the State.

ORGANIZATION AND PURPOSES OF THE BOARD.

The New Jersey State Board of Agriculture held its first meeting at the College Farm, New Brunswick, N. J., September 4th, 1872, under an act approved April 4th, 1872, constituting the Board. The Hon. Joel Parker, then Governor, was the first President of the Board, and Dr. George H. Cook the first Secretary. At the second meeting, held March 5th, 1873, by-laws were adopted and the following outline of the "Aims and Duties" of the Board was approved:

"The Board of Agriculture finds its duties in investigating and recording whatever concerns the agricultural interest of New Jersey.

"Its investigations should include all facts relating to the various soils of the State; their chemical and mechanical condition; their productiveness and susceptibility of improvement; their means of access to the cheapest and best natural or artificial fertilizers; their adaptability to crops and fertilizers; the best methods of rearing, improving and fattening stock, including the prevention and eradication of all forms of disease among them; they should include also the examination of new implements and processes of working the soil, and the best methods of drainage; the economy of farm management as applied to market gardening, farming or forestry; the proper laying out

of a farm into pasture, meadow, tilled land and woods; the location, construction and economy of farm buildings and fences; the methods and principles of beautifying rural homes; and the consideration of what legislation may be needed to secure the interest of farmers.

"It is no part of its work to exhibit farm products, stock or implements; but on the contrary it seeks to maintain communication with all societies, associations and clubs organized for such purposes within the State; to gather from them the results of their observations and experiments, and to furnish them in return results obtained from other societies or digested material drawn from a comparison of the whole of the results together.

"It should make its investigations and results useful to the whole State by printing and distributing as widely as possible its reports and papers, and the results of experiments conducted under its advice in various parts of the State."

The growth, history and present status of the Board show most conclusively that the line of work so comprehensively marked out by the founders has been consistently followed by their successors through the thirty-eight years that have followed. The aim of the Board has been to improve the agriculture of the State by investigating the soils and showing how to improve them by determining the best natural and artificial fertilizers by chemical analysis and by their effect upon soils and crops; by investigation of farm stock, including milch cows, swine and poultry, with a view to determining the most profitable breeds and the best combination of feeds for a given result; and such requirements of breeding and stabling as would prevent or overcome disease; by testing, in order to recommend or discard the best implements and farm machinery; by the same methods to determine the best spraying materials and machinery for applying the same for the destruction of the enemies to fruit and other farm crops (this latter was not included in the list outlined by the founders of the Board); by teaching economy of farm management and the methods and principles of beautifying rural homes; by considering and advancing such legislation as may be needed to secure the interests of farmers; by keeping in touch with all agricultural organizations within the State and by making its investigations and results useful to the whole State by printing and distributing as widely as possible its reports and papers and the results of experiments conducted under its advice in various parts of the State.

And I may add, by all the above-named agencies and a number of others, to improve the intellectual and social conditions of our farmers.

But not only has the Board as an organization been diligent in the promotion of the farming interests, many individual farmers throughout the State have responded to the teachings of science in the improvement of their lands, their stock, their crops, marketing and co-operation.

Knowledge is valuable as an attainment; it is useful when applied in practice. Thus the knowledge gained by scientific investigation and experiment becomes valuable when applied by the farmer in the widely diversified field of agriculture. Hence to make the present stock of knowledge concerning agricultural practice bring a larger increase, more of our farmers should avail themselves of it, by conducting their farming operations according to its tachings. Furthermore, every farmer's son and daughter should, as far as possible, have access to those sources of agricultural knowledge which will interest them in its study, and enable them to practice it so understandingly as to reach maximum results with inspiring profits.

In order to reach a result so desirable, this Board, in my judgment, should organize an advance co-operative movement with kindred and affiliated agricultural, horticultural and educational organizations to stimulate a wider and deeper interest in agricultural research among the farmers of the State, with the purpose of reaching every farmer and his family. To do this effectively we should encourage the formation of local and circulating libraries of suitable books in the farming centers. We should endeavor to enlist the young people of the farm, the boys and the girls, in the study and practice of agriculture in some one or more of its many branches. Each county and school district should have a boys' agricultural club. They

should be encouraged in trial plots by rewards of some kind for good work, which should be given at the annual show of results, either at the Farmers' Institute or some other suitable time and place. To this end I suggest that a committee of five persons be appointed to take up this matter, one from this Board (to be appointed by the President), one from the State Grange (to be appointed by the Worthy Master), one from the State Horticultural Society (to be appointed by the President), and one from the Department of Public Instruction (to be appointed by the Superintendent), and one from the State Agricultural College (to be appointed by the President). This committee to enlist the co-operation of the school superintendents in the counties, the teachers, the granges and the county boards of agriculture.

COST OF FOOD.

The one and only remedy for an abundant food supply is better farming and more of it. We cannot add very much to our tillable area, but we can increase the yield of the acres we now have. By the use of legumes and other deep-rooted plants we must draw up the mineral elements from the subsoil and extract from the atmosphere and utilize the stores of nitrogen existing there. These, with green manuring and rational cultivation, will lay the foundation at least for advanced agricultural practice. The improvement of the soil is the first step.

THE FARMERS' SHARE.

We have heard of the high price of food stuffs, and some have endeavored to make the farmers responsible for the lately increased price, but they are wrong. The consumers are increasing, and agricultural crops are not keeping pace with this abnormal increase. An increase of population, not only by births, but by an addition of nearly one million a year from foreign lands (in ten years eight and a quarter million immigrants have arrived in the United States, and 50,000 of these stop in New Jersey, a larger number than is received by any other section of the same size in the United States), few of whom take to the soil and become producers. The increase in the cost of foods, therefore, is natural so far as the producer, the farmer, is concerned. What commodities may be affected by combinations that deal in our food supplies I do not attempt to state. They doubtless have their influence, but the farmer, according to Mr. Collingwood's investigations, receives only about 35 cents out of the consumer's dollar. In other words, when the consumer buys $1.00 worth of any agricultural product, the farmer has received but 35 cents for his share, the other 65 cents has been tolled off between the producer and the consumer. It would seem that from this vast number of immigrants coming annually to our shores, and to our State, there would be an abundance of farm laborers, but such is not the case, and the scarcity of efficient farm help at a price commensurate with the market price of farm products, adds to the cost of production and limits the total annual output of our farms.

COST OF PRODUCTION, MACHINERY, LABOR.

The great increase in the number and variety of farm implements and machinery adapted to every need of soil preparation, crop cultivation and harvesting, and of spraying outfits for insect and fungus pests are of incalculable value to the intelligent farmer, although to equip a farm properly with them involves a large expense. Yet these in the hands of ignorant employes are of little, if any, use. The great need in our farming operations now is men trained for farm work—men who have grown up in the business and expect to make farming their life occupation. When such help in sufficient abundance is available at a reasonable price, our farms will produce crops more nearly equal to their full capacity.

The cost of production varies with the crop grown and its requirements of plant food, cultivation, harvesting and cost of marketing; so, also, the market price received varies with the kind of crop, whether general farm crops or market garden products. The inference is there will not be any great reduction in the price of farm food stuffs so long as consumers continue to increase so abnormally above the producers and the present cost of production continues. It is quite probable, however, that the cost of production will increase. The essential elements to vigorous plant growth, nitrogen, phosphorus and potash, as commercial commodities, are increasing in cost to the farmer. A part of this is due to natural causes, a limited supply, a part is due to artificial causes, as the purchase of the natural deposits by syndicates, and then curtailing the output so as to secure a continuous profit acceptable to them.

FARMING AND COUNTRY LIFE.

In various ways, notably by the press and by speakers at conservation and other conventions, public thought has been directed to country life and the farm. Men of means are buying farms as a speculation or for residential purposes; laboring men, too, in the cities are considering the question whether they could make a living for themselves and their families if they removed to the country and engaged in farming.

The question of *knowing how* enters largely in the decision of this matter. While it is true that men with little skill and small means may make a living from the soil—all honor to agriculture—it is, nevertheless, true also that those who would succeed to the full extent in agricultural life must have a fairly comprehensive knowledge of its requirements. Agriculture is a business of many branches, intricate and involved, so much so that capable farmers are taking up special lines only in order to fully master the principles and work out the details into profitable practice. If these things are so, what are those men to do, and their number is legion, who have spent half their lives already in the city, but now desire to live in the country and become farmers? The following letter received by me is significant:

"DEAR SIR—I observed in the papers some time ago that the State Senate had passed an appropriation to enable farm specialists to lecture in the various towns and cities to lead city people to take up agriculture. I and several friends who are interested would like to know if there will be any lectures around here this fall and winter. We are all working people who cannot afford the time or money to go to the Agricultural College, and our only way of learning is by reading, etc. I am sure there are hundreds of people the same way who lack, not the ambition, but the practical knowledge which even a few demonstrations would give. The railroads run farming trains through South Jersey, but the North is ignored. Any information about above lectures will be appreciated by

Yours truly,

_____."

The writer was wrongly informed as to the Senate making an appropriation for this work—they passed a resolution only—and that will not help on the work of agricultural education very much. The author of the above letter represents a class, he says: "There are hundreds who lack not the ambition, but the practical knowledge, etc." In some respects this communication is pathetic. Here is a large number of people, a part of our body politic, with whom the State must deal, but how? They are hungering for such knowledge as will help them to become more profitable and better citizens to themselves, their families and the State, by engaging in the great occupation of agriculture. This problem is more than helping a few hundreds or even thousands of men to earn their living in the country; it is an economic question of great importance, and merits the serious consideration of the leading men and women of the State, *whatever their occupation*. In

its solution is involved, to some extent, the question of feeding the multitude, or our food supply. More than this, it is a question of helping those people to become contented, self-supporting and prosperous citizens.

EDUCATION NEEDFUL.

In the great uplift needed, this Board should do its part by extending such means of agricultural education as are within its power to every locality in the State, so as to reach every farm family, if possible. To do this we should ask and receive from the State a larger appropriation than we now receive. Eight thousand dollars is a very small sum for our State to devote to the improvement of its agriculture, while hundreds of thousands are expended in other directions from which the State receives but little return. The annual income from our farms in new products, products that did not exist as such the preceding year, is over sixty million dollars, and if the knowledge of the essential principles and correct practice of agriculture were more widely disseminated and applied, the aggregate would soon reach a hundred millions a year. In order to carry on our work as it should be done, sixteen thousand dollars at least is needed. The Board should not be required to lean on some other department in order to exist. Shall we reorganize our work on broader lines? We must go forward and make the business of agriculture attractive financially, intellectually and socially, not only to the young people of our farms, but also to that class referred to in the foregoing letter—able-bodied men and women, physically capable of taking up farm life, and there bring up their families away from the evils of city life. We need such people in the country. "The cities have grown enormously in the last ten years, and the rural districts have gone on shrinking in the element of human life. Every county in the land with any city of considerable size is marked for a gain in the census returns, and almost every county without a city is marked for a loss. The problem of rural decline and urban overcrowding is therefore to-day more acute for America than ever before. The peril of the trend is too manifest to demand analysis. It openly challenges the thought of every patriot who has the historical sense, to appreciate how completely all stable national life has everywhere grown out of the soil. Especially it challenges the thought of the church, which in America, at least, has lived so largely by the life of its country congregations."—*The Continent.*

THE COUNTRY CHURCH.

Much consideration is being given in these days by our religious denominations to the problem of the country church. Shall it abide and grow, and if so, what are the means to be used to secure so desirable a result?

The country church is essentially a farmers' institution; it merits and should receive their united and earnest support. The value of a well-supported, vigorous church in a rural community is incalculable. The pioneers of our civilization in these eastern States organized and supported the church and with it the school. These two should go hand in hand with the home life of every farm community. Make the church the centre of religious, moral and social influence in the neighborhood; and the church as an organization should through its pastor and officers take active interest in every suitable organization and movement in the community for the betterment of farm life. Establish reading courses, a debating society, the old-fashioned singing school, athletic games; invite the Farmers' Institute, and start domestic science courses, scientific farming, etc., keeping well to the front the religious organizations. Thus working together, church and people may build up a model community into whose life the principles that make for a true manhood and a pure womanhood shall abide as a benediction to succeeding generations. A living up-to-date agricultural community should have a living up-to-date church.

The report was adopted and became a part of the record.

The Chairman—Do you want to discuss the report at this time? Any questions?

Mr. A. J. Rider—In listening to the report of the Secretary, it occured to me that there were some things perhaps that would be interesting for the members of this Board to know concerning the cranberry industry. Some years ago, as far back as 1875, New Jersey led the country in its cranberry industry. I have before me some figures from an old report.

In 1872 New England produced 40,000 bushels of cranberries; New Jersey produced 100,000 bushels.

In 1873 New England produced 105,000 bushels; New Jersey produced 110,000 bushels.

In 1874 New England produced 105,000 bushels; New Jersey produced 90,000 bushels.

In 1875 New England produced 75,000 bushels; New Jersey produced 110,000 bushels.

In 1876 New England produced 65,000 bushels; New Jersey produced 90,000 bushels.

In 1877 New England produced 164,000 bushels; New Jersey produced 152,000 bushels.

Note that New England continued to increase, while New Jersey scarcely held her own. There was a cause. The cause was a disease which affected plants and fruit, the character of which we were unable for a long time to discover. The result was that millions of dollars invested in the business was lost. The cranberry growers of New Jersey did not ask financial assistance from the State, but sought scientific investigation from Washington and our own State Experiment Station. To Dr. Halsted, of the New Jersey Station, is due the credit of discovering the enemy—a fungous disease, and to Prof. Shear, of Washington, its habits, and means and methods of attacking it. Thus efforts, covering a period of twenty years, were finally rewarded. The result has been very satisfactory to the cranberry growers, and as a citizen I should say that it ought to be to the State of New Jersey; I quote from the official railroad movement of New Jersey cranberries for 1910, aggregating 725,000 bushels, which have an estimated value of $1,500,000.

You may be interested to know how Massachusetts and Wisconsin appreciate this industry. Both have established, at State expense, experimental stations for the development and advancement of the industry, expending large sums of money. New Jersey has never made any special appropriation for this industry. Not disparaging any other, I think we have more money invested in the cranberry than in hen fruit.

Massachusetts has gone on increasing her crop until last year, 1909, she produced about 1,000,000 bushels, and New Jersey only produced half of that amount. This year, 1910, Massachusetts produced 825,000 bushels, while New Jersey had produced 725,000 bushels—only very little behind Massachusetts. Since discovering cause and remedy for our ills our output has gradually increased. And I am sanguine that even without any help from the State, New Jersey is going to take her place again as the leading cranberry-producing State. We have more land suitable for cranberry cultivation than all the rest put together. We have the natural streams of water for flowing and irrigation, which they have not.

Personally, I would not feel that I had any interest in an appropriation for the advancement of the cranberry industry. As a matter of civic pride, I would like to see something done to promote and help along the cranberry industry as is done in Massachusetts and Wisconsin.

Now, it may not be known, outside of people familiar with this trade, that the *best* Cape Cod cranberries are grown in New Jersey. They bring a dollar more per barrel than the same varieties grown on Cape Cod. Cape growers were first to separate varieties for size, color and periods of ripening. New Jersey growers have, for many years, imported Cape Cod vines, and the term "Cape Cod" has come to mean variety, rather than locality where grown. The consequence is that all the plantations of any size are growing Cape Cod varieties, and those Cape Cod varieties are grown to a higher degree of perfection in New Jersey than they are on Cape Cod. New Jersey is coming back to her own, and will again be the leading cranberry-producing State of the country.

Mr. Fort—The gentleman has been talking about cranberries and I would like to talk about turkeys. A few years ago I was enabled to raise from seventy-five to one hundred turkeys for a year's killing. Now, I am lucky if I get ten. The principal trouble in my town is dogs, and I think we will all have to go out of the turkey raising business, so everybody can keep plenty of dogs. Last year, in May, at setting time, a dog came along and killed three of my hens, and four were killed during the summer. One hen had seventeen young turkeys in the field and he killed the hen. There were nine gobblers in the brood, and in the latter part of October, when they were almost full grown, a dog came in and killed four of them and a hen, and scared and worried the rest almost to death, so that two more died.

I can't raise turkeys. One day a dog came on the 6th of July, two years ago, and killed fifty-one turkeys out of about ninety that I had at that time. One of my neighbors a few years ago had occasion to go down in the field, and there were two dogs in the field; he took a gun and shot one of the dogs and wounded him. Then he was called before a twelve-men jury and sued for fifty dollars damages for shooting a dog trespassing on a man's farm.

I would like to see the Legislature pass some law so a man can go out and protect his turkeys and chickens from dogs; if a dog is running at large without a muzzle it ought to be killed. There ought to be some protection to our turkeys and poultry in the field.

Report of the Committee on Transportation and Freight Rates.

Mr. President and Gentlemen of the State Board of Agriculture—Transportation conditions have been very much unsettled and uncertain the past year. Claiming the high cost of living and advancing wages as the cause, freight rates have been advanced all along the line and on nearly all of the farm commodities. Rates on passenger traffic have also been advanced by the railroads. It is safe to predict that there will be still further advances unless in some of the contests now pending before the Interstate Commerce Commission it is established that the railroads have no right to arbitrarily advance rates.

While any disturbance in freight rates is bound to affect the farmers, up to the present we of New Jersey have not been severely affected.

Since its last report nine cases of alleged overcharge on freight have been submitted to this committee. In seven of them the claim of overcharge was found to be just, and when the facts and circumstances of the cases were laid before the railroad companies restitution was made without any contest.

Only small sums were involved, the largest being twenty-eight dollars. In the other two cases an overcharge was caused by the shipper not forwarding the consignment by the most direct route between the points covered, and, of course, there could be no recovery in these cases.

In two cases joint traffic rates have been secured where none was in force covering seed potato shipments from Maine to New Jersey.

The question of transporting small packages from and to the farm is gaining in importance. The express companies do not attempt to serve us. Outside of a small radius in the cities and larger towns, the goods must be delivered at and taken from the express offices. The policy of the express companies in dealing with the people differs considerably from that of the railroads in handling freight. With the latter there seems to be a desire to conduct the transportation in a manner satisfactory to the shipper and consignee, but with the express companies you have to take the service you can get, and if you do not like it, what are you going to do about it? When the law permitting street railways to carry freight and express matter was enacted, it was confidently expected that on the lines of the suburban street railways, at least, this would afford relief, but that expectation has not been realized. Only a few of the lesser lines of the State have taken advantage of the law. The larger companies that seemed anxious to have the privilege of carrying freight and express matter have not made any attempt to take the matter up for the benefit of the general public, though they continue to carry their own freight, a privilege which the most of them hold under their franchises.

There is no reason why a parcels post, with the weight of the package confined to a reasonable weight, could not afford a great measure of relief in this matter. The rural delivery routes are far reaching, and the returns from a parcels post would wipe out the deficit in the postoffice department and also increase the pay of the rural carriers. In this connection it seems that the establishment of a parcels post is desirable, and your committee recommends that this Board demands the enactment of the Wert law.

Early in the year your committee took up the matter of securing a reduction of the freight rates on lime for agricultural uses. In most instances the rising tide of freight tariffs drowned all efforts for a reduction on lime. Three roads took the matter under consideration and have it there yet. Mr. T. B. Koons, freight traffic manager of the Central Railroad of New Jersey, was favorable to a reduction in the rates on lime for agricultural uses over the lines operated by his company, and prepared a schedule covering all of the shipping points on the lines operated by this company in New Jersey and Pennsylvania. The schedules were submitted to the Interstate Commerce Commission and approved, becoming effective July 31st, 1910, as Interstate Commerce Commission Schedule No. 1747. At the same time schedules regulating the rates between points within the State were issued, being local schedules numbered 5683, 5702 and 5703. In these schedules the minimum car-load weight was 20,000 pounds. After these schedules went into effect it was decided that a reduction in the weight of the minimum car load would be of decided advantage to the farmers, so the entire matter was taken up again and a new schedule was submitted to the Interstate Commerce Commission. No change was made in the rates as issued in the former schedule, but the minimum car-load weight was reduced to 16,000 pounds. This was approved and went into effect September 10th, 1910, as Interstate Commerce Commission Schedule No. 1965, superseding No. 1747. The minimum car-load weight between points within the State was reduced at the same time. The reduction in the car-load weight was a further reduction in charges.

While these schedules covered all kinds of lime, the reduction in freight rates was on agricultural lime, borate of lime, land lime and ground limestone dust. The rate on construction lime remained the same. Two or three instances will give a general idea of the difference. From Jersey City to Dover the rate is 85 cents per ton for the agricultural limes and $1.00 for the

construction lime. From Jersey City to Lakewood the rate is $1.25 on agricultural limes and $1.45 on other lime. From Jersey City to Annandale the rate on agricultural lime is 85 cents per ton and on construction lime $1.10. It is readily seen that the reduction secured in favor of agricultural lime is quite substantial. These schedules are on file at all freight offices on the lines of the Central Railroad, and anyone can consult them who desires to.

This committee would again call attention to the wisdom of ascertaining what the rates are likely to be before a shipment of any consequence is forwarded. It is far easier to get an understanding concerning rates before the shipment moves than it is to adjust an overcharge. Always be sure that there is a published rate between the points to be covered, and where the shipment is to travel over the lines of more than one road see that it is sent by the most direct route between the points to be covered. Attend to these matters before the shipment starts, and the chance for trouble is greatly reduced.

Another suggestion is, see that your shipments are properly prepared for transportation. The manner in which goods are packed sometimes makes a difference in their classification and a consequent difference in the cost of transportation. To illustrate, one of our people packed his eggs in oat hulls in barrels; the freight agent, somewhat mystified by the combination, forwarded them classified as oat hulls in barrels; the classification was fifth class, about the cheapest on the list; they got fifth-class handling, and when they arrived at their destination their condition was lower than tenth class and their value lower yet; in fact, it was mostly oat hull omelet. You cannot be too careful in preparing your goods for shipment.

Respectfully submitted,

E. R. COLLINS,
A. J. RIDER,
THEODORE BROWN,
Committee on Transportation and Freight Rates.

This report was adopted and made a part of the record.

At this point a recess was taken until 2 o'clock P. M.

FIRST DAY—AFTERNOON SESSION.

The meeting was called to order by Chairman Gaunt.

The Chairman—There were two members that have been appointed on the Committee on Credentials that have not answered to their names, and it seems necessary that they should be appointed so they can get together. I would, therefore, appoint in the place of Amor J. Agens, Craig Tallman; and in the place of John B. Perrine, Carl Schermer. If the Committee will please come forward and take their places, there will be some matters referred to them.

Secretary Dye—We have here, gentlemen, the certificates of election of all that I have classified, and those who have not

handed in their certificates had better hand them in to this Committee. Here are blanks on which you will make out your bill of expenses and collect them from the State when you can.

The Chairman—I see the next order of business is the address of Vice-President Brother John T. Cox. The Secretary has asked me to read this address:

Address of Vice-President J. T. Cox.

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

We meet at this annual session under peculiarly sad conditions. I am sure I express the sentiment of every one present when I say that we all lament that circumstance that makes it necessary for me to present this annual address. The work of those engaged in agricultural pursuits has reached the end of another year, and it is well for us to look over the results of the year's work and plan for the future, that it may bring to us better returns four our labor and toil.

The past year has been one of reasonable fruitfulness for the farmer, and fair, if not adequate, prices have prevailed. These conditions, coupled with that education which enables the progressive farmer to economize in the cost of the production of his crops, permits him to occupy a position of greater influence than that hitherto enjoyed. It is an encouraging sign that a greater number of farmers in our State are learning to grow nitrogen, conservation crops, rather than to purchase that very expensive, although necessary fertilizer. This one lesson alone, if it were well learned, would save the farmers an immense outlay. Farmers are beginning to see that the relations of cause and effect apply to *crop production* with as much force, perhaps, as they do to crop *distribution*. A system of farming which continually leaves the farm in a more fertile and productive condition, is to be extolled, and should be more universal.

Ten years ago, when our highly honored President assumed the duties of this office, agricultural production was quite a different thing from what it is to-day in our State, as witness these figures, viz.:

The value of the corn crop at that time was a little short of $4,000,000, now it is nearly $7,000,000. Wheat was then about $1,900,000, now it is $2,200,000; rye about $600,000, as against $1,100.000; oats about $850,000, as against $1,025,000; buckwheat about $85,000, as against $200,000; hay about $7,500,000, as against $12,000,000; potaties about $1,800,000, as against $6,500,000.

When we add to these figures a product of $2,000,000 worth of sweet potatoes; $12,000,000 worth of vegetables and fruits; 18,000,000 worth of milk and cream, and $3,000,000 worth of poultry and eggs, which is more than twice the product of ten years ago, then we can begin to realize not only the importance of agriculture to the State, but the great work that he, with his counsel and direction, together with a class of more progressive farmers, have done to increase the output of New Jersey farmers.

This work merits and should receive the support and encouragement of every right-minded person in the State.

The work of our Agricultural College and Experiment Station is proving to be of greater value year by year, and this Board has great reason to be proud that through its efforts, in co-operation with others, the short course in agriculture has been established, and that annually a number of the boys and young men are turned loose in the various sections of the State with a better knowledge of how to conduct farm operations, a clearer understanding of questions of fertilization, and a higher appreciation of farm life than was possible before.

And when we realize that each one of these, as he goes back to the farm, will be a continuous example, and will exert an influence for good upon the farmers of his community, leading them into better methods, we cannot help but feel that a greater love for the farm will be instilled into the minds of the growing boys, and that later on the farms will not be depleted of all the best and brightest ones as heretofore. If these institutions, then, are capable of doing so much good, they should be fostered and assisted by our legislators, and any demands for financial assistance should not be refused.

The appropriation made by our State Legislature for the Board of Agriculture is $8,000, and for nursery inspection, $3,000 to $5,000, which is very meagre as compared with other States.

Massachusetts appropriates,	$61,400
Michigan appropriates one-tenth mill on all taxable property, which is,	173,410
Maine appropriates,	32,000
New York appropriates,	656,918
Pennsylvania appropriates,	138,520
Kansas appropriates,	$20,00 to 35,0000

No measure of value can be placed upon the good work done by our Farmers' Institutes, and the money expended in that direction should be very materially increased, so that this school of instruction may be made to reach a larger number of our farmers.

An improved agriculture is plainly in evidence where these institutes have been held during past years, and the interest of the farmers of these various communities is growing year by year.

THE RURAL SCHOOLS.

I believe that under present day methods the rural schools of the State are not making as rapid strides as we have had a right to expect, when we consider the increased cost of our public schools. The centralization idea has been so prominent among our educational authorities, that the efficiency of our rural schools has depreciated, they have been unfairly deprived of funds which they need for their development. The high schools of the towns and cities have been developed upon the funds which I think should have been retained in the country, and the taxpayers of the townships have been burdened unnecessarily to send scholars to the towns and cities that the high schools might draw from the State increased appropriations which the rural schools consequently have to lose. Upon this question I may be somewhat of a heretic, but I know from a personal observation that our rural schools do suffer because we do not have money enough to maintain their former efficiency, so that the pupils to-day leave both the country schools and the high schools as poor spellers, poor readers and poor writers, and these I believe should be made the fundamental principles of an education.

Then, again, the multiplicity of books, of grades, and of branches so divides and distracts both pupils and teachers that they are unable to concentrate thought or study in such a way as to secure best results, and while the children are no doubt enabled to get a little knowledge upon very many subjects, they are unable to learn any one thoroughly.

AGRICULTURAL EDUCATION IN THE RURAL SCHOOLS.

This question may be somewhat of a hobby with the farmers of the State, but we believe that the rural schools should furnish an education along the line of the life work of our boys and girls, as well as the city school does in their direction, and that the aim of the public schools should be to qualify our children for each or any walk in life. I am pleased to note that the educational authorities of the State are beginning to appreciate this need, which we have annually been bringing to their attention for years past.

FRUIT GROWING.

Fruit growing, as an adjunct to the farm, separate from fruit growing as a business proposition, should receive the attention of the farmers of the State. It is certainly being neglected in a way that is almost painful. There are many farms throughout our State that have scarcely a fruit bearing tree upon them that deserves that name. Every farmer should devote a small piece of land, at least, to this purpose. An acre of land, if planted with good varieties of apple, peach, pear and plum, with reasonable care and fertilization, might easily become the most remunerative part of the farm, but aside from any pecuniary gain, these articles of sustenance so much needed by the human family, and so highly appreciated by the children of the home, would be always at hand, and the sorry sight of the farmer returning *from* town with packages of these things under his arm would be no longer seen.

Among other agricultural organizations in our State, the State Grange has been first in its support of the State Board; it has always used its influence to extend the operations of the State Board, it has encouraged and assisted wherever it was possible to do so, and upon many questions it has blazed the way and the State Board has followed, notably in advocacy of Free Delivery of Mails, Agricultural Education in Rural Schools, Parcels Post, and Postal Savings Banks, but whichever may have taken the ititial step, entire harmony and unity of action have been characteristic of every movement, and I trust that during all the years to come there may be no division of sentiment as between these organizations.

HIGH COST OF LIVING.

This question has assumed great proportions, and is being discussed by almost everybody, so I may be pardoned for introducing it here. Politicians would have us believe that the other party is responsible for it. Professional men tell us the tariff has caused the trouble. Tradesmen are quite sure the farmer is responsible for it all. It seems to me the great fundamental principle is overlooked, viz.: that consumers and consumption are increasing in greater ratio than production. For a number of years the farming industry was depressed, and what could be more natural than that those employed on the farm should engage in some more profitable business. Then again, when the price of labor necessary to produce any one thing advances, the cost of that article is increased, whether it be produced in the factory or on the farm. But after all this question is a far cry when we consider the higher wages received, and the shorter hours of service given by the working man, so called, he certainly has no cause for grievance.

Then, too, when we compare the prices received by the farmer for his products with the prices paid by the consumer for these same articles, it needs no argument to prove that the farmer is not responsible for the high cost of living; this one fact alone shows the great need of bringing the producer and the consumer into closer business relations with each other. Let us then take courage. The wide-awake farmer of to-day has everything to make him contented with his lot in life; he is surrounded with comforts in his home the equal of his city cousin; he draws the pure breath of a free and independent life; among the necessaries of life he has the best for himself and his family; he has the best place in all the world to rear his children; he is surrounded with refining and elevating influences, his religion is the purest, and his home is the happiest.

IN CONCLUSION.

The work of this annual session is before you, take it up with zeal and earnestness and a determination to advance the interests of agriculture. The serious affliction of our honored President will make it necessary for you to select a successor to him. May this matter receive your wisest

judgment and your calmest deliberation, that this Board may not lose its present prestige and renown.

Very respectfully,

JOHN T. COX,
Vice-President.

This report was received and made a part of the record.

The Chairman—Members of the Board, there has been a question that has been discussed considerably among the members since their arrival in Trenton, and the matter will, perhaps, receive much attention during the present session of the Legislature; and I believe that it is eminently proper that the agricultural interests be prepared to meet this question when it comes before the Legislature. I have reference to the matter of legislation that will affect the present motor vehicle laws of our State. As you all are aware, there are a number of bills now introduced before the Legislature that practically mean that we are to open wide the doors, that all outside motors may have free use of our highways. I am not sure whether or not the agricultural interests of our State are ready and anxious to increase their taxes in maintaining our highways, and in conversation with a number of the members here present, it has been considered advisable to ask the Commissioner of Motor Vehicles to come before this session sometime at the convenience of the Board and at his convenience. I have his assurance, in talking the matter over with him, that he would be glad to come before this Board and answer any questions that may suggest themselves to the members, and give us some little idea as to the method now in vogue, and what may happen if the law is repealed. If you desire to have him come at this time, a motion to send a committee to wait upon him would be in order.

A Delegate—I move that a committee be appointed to wait upon Mr. Smith, and invite him to be present.

(The motion was seconded, put to a vote, and carried.)

The Chairman—I will appoint on that committee, Mr. Rider, Mr. Agens and Brother Fred Lippincott.

I notice the next order of business is the calling of the roll of delegates for the appointment of a committee consisting of

one member from each county duly represented, to nominate officers for the ensuing year. The members present will name one to serve on that committee. The Secretary will call the roll.

The roll was called and committee was nominated as follows:

Atlantic County—Mr. Carl F. Schermer.
Bergen County—Mr. Arthur Lozier.
Burlington County—Mr. Charles Collins.
Cape May County—Mr. Richard Lloyd.
Cumberland County—Mr. Charles F. Holmes.
Essex County—Dr. J. B. Ward.
Gloucester County—Mr. Theodore Brown.
Hunterdon County—Mr. E. H. Agens.
Mercer County—Mr. R. E. Haines.
Monmouth County—Mr. John H. DuBois.
Morris County—Mr. Edgar C. Hopping.
Ocean County—Mr. C. P. Rorer.
Salem County—Mr. Asher B. Waddington.
Somerset County—Mr. George B. Randolph.
Sussex County—Mr. George P. MacDonald.
Union County—Mr. Howard S. Van Fleet.
Warren County—Mr. James I. Cook.

The Chairman—We appointed a committee a few minutes ago to wait upon the Commissioner of Motor Vehicles. That committee have preformed their duty and have brought with them Mr. J. B. R. Smith, the Commissioner of Motor Vehicles, who will give us some information in reference to the motor laws of New Jersey, and perhaps answer some questions that may be asked.

Mr. J. B. R. Smith—Mr. President and members of the New Jersey State Board of Agriculture: I think I may very honestly say, "This is so sudden." I did hear something last night about a possible invitation, but I did not take it seriously, and this afternoon, when Senator Gaunt called at the office and said that probably I would be sent for in about a half hour, I did try to get a few thoughts together, but interruptions prevented me, and I have suggested to the Senator that after outlining my position it might be well if we adopted the question method. It seems to me that that plan will probably be better. In any event it will bring out the points in which you are doubtless most interested.

The subject is such a broad one that I might needlessly take up your time in reciting facts in which you are not interested, even if I had prepared an address, which I have not.

In the first place I want you to bear with me while I undertake to make my own personal position clear. I am, as no doubt most people know, thoroughly opposed to the admission of non-resident automobilists either indefinitely or for a limited time, without registration or without execution of a power of attorney, either with or without fees. This proposition has been erroneously called reciprocity. It fails to possess the first principles of reciprocity. This proposition and reciprocity, instead of being the same, occupy, as I think, opposite fields. I labored throughout the summer and the fall, devoting a very large part of my time in trying to convince motorists that their plans did not amount to reciprocity; that reciprocity meant giving as well as receiving; that New Jersey already was giving more than it received, and this plan would make the inequality still greater. In those efforts I was temporarily unsuccessful, and the result of the election, as I am very reliably informed, was to elect a majority of members who are pledged to the adoption of the motoring clubs' proposition.

This proposition, I think, is stated in these words: "We favor the adoption of legislation which will enable non-residents to run their automobiles within the State of New Jersey for a limited time without the execution of a power of attorney and without registration." To this proposition all Legislative candidates were asked to make favorable pre-election pledges, and, as I have said, apparently a majority of the successful ones did so. If I may digress just a moment, I might draw some conclusions regarding this unworthy custom of asking our legislators to pledge themselves in favor of some particular special interest. It seems to me that that is in itself at the root of most of our evils regarding special interests, and in that I want to be perfectly free to say that those who are engaged in agriculture, as well as those who are engaged in other pursuits, are by no means free from fault. They are very often found saying, "We must pledge our legislators in advance to adopt a method or an act of legislation which we want, without regard to whether in the opinion of the legislator the policy be sound."

Now, in this case, we see how this plan has worked, and that is just the way it works in every other instance. The

special interest is alert, aggressive, revengeful; the general interest is dormant, indifferent, ungrateful. I think there is hardly a doubt that the great majority of the people of New Jersey are opposed to this motor clubs' proposition, but they did nothing. The Associated Automobile Clubs of New Jersey, representing certain clubs, and the New Jersey Automobile and Motor Club, a local Newark club, working separately from the Associated Club, requested of every member of the Legislature and, it is alleged, received from the majority, pledges of support. Now, the reasons those members of the Legislature made those pledges, if indeed they were made—and I have the statement of the secretary of one of the clubs that they were made—is because the automobilists threatened to exert themselves to prevent the election of those members if they did not do as they demanded; while nobody used threats or coercion to secure the defeat of the members of the Legislature if they did make the pledges, except in maybe one or two counties. In Mercer county the candidates of both parties repudiated the program and rebuked the motorists, but it is eminently true that in the more populous counties in the northern part of the State the pledges were obtained. The people were not awake to their duty.

The pledges having been made, however, a burden rests upon me as the executive officer and as a member of the executive branch of the government, different from that which rests upon you as citizens. I still hold to the doctrine that the executive branch should not undertake to tell the legislators what they shall do, particularly to change a specific pledge which they may have made. None of us would think of undertaking to repudiate a bad bargain which we might make, and if we did undertake it, a way would be found to prevent us from doing it. The law would compel enforcement; and a pledge by a member of the Legislature, a pre-election pledge, has all the elements of a bargain.

Besides that, according to the standard of ethics, I strive to attain the first essentials of duty—sincerity and truth. Even though the legislators make a mistake, it is better that they pay the price of their error. It is better that they be sincere and truthful at the cost of a policy we regard sound, than that that

policy should succeed through insincerity or through breach of faith.

But this does not mean that the fight cannot be won. I think there will be nothing found so distasteful to motorists, to say nothing of the non-motorists, to say nothing of the public generally, as the adoption of this very proposition. I shall be glad, if you desire, to elaborate on my reasons for saying that. I will not, however, take up your time until I have heard what questions you may desire to ask. I believe, however, that as soon as the new measures are tried, motorists, as well as non-motorists, will seek the repeal of the act at the very first opportunity. I am thoroughly convinced that motorists and non-motorists are very much alive to the importance of the subject. The only difference is that the motorists have studied the subject from the selfish standpoint, the non-motorists have studied it in a disorganized, rather than an organized and cohesive way. One non-motorist has an idea that the thing should be effected in one way and another in another way, and they have not got together on any common ground of action.

Whether, of course, the pledges which I have just referred to by the legislators will be kept, will depend, I think, very largely on the condition of motorists or the requests and the activity of the motorists themselves this winter. You are probably aware of the disagreement that has already developed between the Associated Automobile Clubs and the large Newark club. They have separated completely. The differences may be stated, I think, briefly, by saying the Associated Clubs, which is a branch of the American Automobile Association, is officered and managed by people whose interests are primarily those of the American Automobile Association, and have little or no interest in New Jersey as such. They have forgotten, or have allowed, for the time being, their citizenship in New Jersey to be subordinated to the American Automobile Association; while that of the Newark Club, I think, may be properly stated as the interests of the New Jersey motorists as Jerseymen. While they are, in my opinion, more or less misguided, they place the interest of the Jerseyman, whether motorist or non-motorist, first; while the American Automobile Association places the in-

terest of the motorist, whether Jerseyman or non-resident, first. With such principles, the Newark Club cannot, in the end, go very far wrong.

The desirability of more convenient registration laws, I think, is generally admitted. I think those of you who run automobiles, and especially those of you who have occasion to run them outside of the State, know that some more convenient method of registration than that which now exists should be in vogue, but still it should be registration, and not exemption from registration. Registration is the great protection which the State gives to motorists. So many of our motorists, so many who are not motorists, look upon the scheme of registration as a scheme of punishment. As well might they look upon the policeman as a scheme of punishment. It is a scheme of punishment for those who do wrong, but it is a scheme of protection, as the policeman is a protection, for those who do right; and the motorists themselves should be among the first, and I think very shortly they will be among the first to seek a scheme of registration, instead of trying, as they now are doing, to avoid registration..

The principal objection to our law with the motorists is that they hate the annoyance and inconvenience which is caused them when they desire to hurriedly take a short trip through a neighboring State. Other States, you know, do not afford registral agents located at convenient places, as New Jersey does, and the time taken to get licenses from Albany, Harrisburg or Boston is very annoying.

I devised what I thought was an entirely practicable scheme, that I am still sure is an entirely practicable scheme, of automatic registration; a scheme whereby, when a vehicle is registered in one State, it may thereby be automatically registered in all the other States in which the owner of the vehicle may desire to have it driven; the question of regulation and the question of fees to be determined by the other States; the scheme being very similar to that employed by railroads in hauling goods or in selling passenger tickets over other lines. The initial railroad acts as agent for the other railroads, and charges the purchaser or the shipper in one bill the cost of transportation

or passage over all the other lines which he may desire to use to reach his destination, or the point of destination of the shipment. In that way registration, with all the benefits that accrue from registration, would be obtained, and it would be done at a minimum amount of annoyance to the person seeking registration. In other words, he would be troubled no more than he is now troubled. The State would undertake to attend to the bookkeeping and the entering of the records in the other States, and he would have all the protection which registration would insure in any other State in which he desired to travel. I do not know whether I have made this point clear or not, but if not, I shall be glad if you would ask any questions on that, and questions on any other subject.

I shall not undertake to go further by way of address, but will be glad to answer, if I am able, any question which may have suggested itself to you, either now or at any other time.

The Chairman—What is the amount of money expended for maintenance and construction of roads and revenues derived from licenses?

Mr. Smith—The amount of money spent for maintenance in New Jersey, in 1910, has not been tabulated in whole, but it will amount to practically $1,300,000. In 1909, it was practically $1,000,000. The year before that it was $800,000 and the year before that about $600,000. So that you will see the rate of increase has been in the neighborhood of 25 per cent. per annum. That covers the period in which the present Frelinghuysen law has been operating. Before that I have not the statistics. Those figures are in the rough. The complete figures, except for this year, however, are available.

The Chairman—And the revenue derived from the licenses, how near does that come?

Mr. Smith—That has also increased during the six years about the same rate, namely, 25 per cent. per annum; and has amounted to just about one-fourth of 25 per cent. of the actual amount. I mean to say the net revenues—if you care to remember those the way I remember it—I start with this in

this way: The road charges in 1907, figured with the automobile license revenues, net revenues, devoted to defraying that cost, amounted to 25 per cent. of the amount, in round numbers, and each year each item is increased at the rate of 25 per cent; so that this year we will spend approximately $1,300,000 in repair charges, and the net revenues were just a little under $300,000. It is not quite 25 per cent. this year; but for rough calculation, I think 25 per cent. answers the question. Does that answer it?

The Chairman—Yes, I think so. How do the improved roads of New Jersey compare with those of the neighboring States in quality and quantity?

Mr. Smith—Well, they don't compare; or rather, the other States don't compare with New Jersey. I have gathered together, for an address which I made in New York, before the Automobile Club of America, last fall—I think it was that address—some quite complete statistics on that subject. I cannot undertake to quote them in detail, but as I remember, there are now approximately 3,000 miles of improved roads in New Jersey, about half of which has been improved by State aid; the other half—a little more than half by State aid and a little less than half by county taxation alone. Of course, the roads that are now being built are almost wholly by State aid, but earlier roads were built by county aid. Those roads cost something over $16,000,000. New roads are being built at the rate of about $1,000,000 per annum cost. This million dollars for new work, you understand, is not a part of the $1,300,000 repair charges. So that this year we are spending approximately $2,300,000 on our improved roads; $1,000,000 for construction and $1,300,000 for repairing.

The other States, with the exception of Massachusetts and New York, have about an equal number of roads, approximately 1,000 miles—I am giving those figures in round numbers, because I think we can remember them a good deal easier than if we undertake to get actual figures on those. I haven't them with me, and if I remember—I think my recollection is correct—each of those States has approximately 1,000 miles of improved

roads. New York is building roads, according to reports, very rapidly. I am not sure that I am correct in this statement, but my understanding is that they are building at the rate of about $5,000,000 a year; and they point to the fact that they will soon outrun New Jersey roads at that rate of construction. They overlook, however, the fact that New York has an area of approximately six times that of New Jersey, and if other conditions are similar, they would have six times the road mileage that New Jersey has. Thus at that rate you will see, being six times as large, they are not building roads even in New York as rapidly as we are building them proportionately in New Jersey, because if they were, it would be necessary for them to spend six times as much or $6,000,000 a year, based on the New Jersey rate, not to consider the making up of the 2,500 miles of road which existed at the time they began their work. They must spend more than $100,000,000 before they can catch up with us, and then spend $600,000 a year to keep up with us. After this, if they had the wear and tear, mile for mile, that we have in New Jersey, they would have to spend this year over $8,000,000 to repair them. If New York would consider what these figures mean to us; what they mean to them; if their conditions were like ours, they would view our problem in a different light.

Of course, Massachusetts is a much better State to compare with New Jersey than New York, as its size and population is more nearly similar to New Jersey. In Massachusetts they have about 1,000 miles of improved road, of very excellent road. Now, aside from those States, there are practically none of the States which have begun to build improved roads. By that I mean improved roads of the standard of the State of New Jersey, or of the standard maintained in New Jersey.

Now, of course, there may be those who argue against New Jersey, as I have heard them argue, that the roads in other States are superior to those in New Jersey. It may be true that there are roads in some sections built by municipalities, a few miles long, which are of a higher standard of perfection than our New Jersey roads; but the great majority of the improved roads that you read about in the papers are not improved roads in any sense in which that term is used, either in New

York, Massachusetts or New Jersey. Take the Connecticut roads, which you have no doubt heard a good deal about. They are improved, are undoubtedly very fair roads; but little or no attention, with the exception of the famous Shore Road, in that State, has been paid to alignment, grade or drainage.

Now, another point before I leave that subject, which I think attention ought to be called to. New Jersey, as you know, is making rapid strides in the construction of resilient binder roads. While I do not believe that a perfect road has yet been found, I think they are approximating it; and when it has been found, then, of course, the wear and tear from motor vehicles will not be great, and they ought to have credit for that fact. I had almost forgotten to tell you about the highways of Pennsylvania. The automobilists of that State, as you know, have been our strongest critics. In some seventeen of their counties they have not got out of the toll roads stage, and automobilists who travel in Pennsylvania find very often on a reasonably extended trip that they will spend more money on toll charges than registration costs in New Jersey.

The Chairman—That is a good point to jot down.

Mr. Smith—I have been told that a vehicle containing five people in traveling from Morrisville to Gettysburg will pay $8.65 in tolls if they get caught at every toll gate; from Trenton to Ardmore, $2.04—trips frequently taken. There are sections in Pennsylvania, I am told, where the rate of charge approximates two cents a mile for a considerable distance.

The Chairman—What is the proportion of resident owners to non-resident owners of automobiles used in New Jersey?

Mr. Smith—I just had that information tabulated and I brought it along with me. For last year there were 19,274 resident owners, 8,838 non-resident owners taking out regular licenses and 15,863 non-resident owners taking out special eight-day licenses. You understand the special eight-day licenses. They are supposed to admit the non-resident under a special license for eight days.

The Chairman—Won't you bring out clearly the difference between the eight-day and the regular?

Mr. Smith—To-day there are approximately 19,000 resident owners, last year's registration. There were approximately 9,000 non-resident owners taking out regular licenses, and approximately 16,000 who took out eight-day automobilists' licenses. That made an aggregate of approximately 26,000 non-resident owners to 19,000 resident owners using the roads of New Jersey. Of course, it will be immediately stated that 16,000 of these were only eight-day men. The eight-day rule is honored more in its breach than in its observance. As a matter of fact, I do not think, although the law requires it, and elaborate schemes have been provided for checking up the dates which the tourists are in the State, I do not think one-tenth of one per cent.—I think it is fair to say that not more than one-tenth of one per cent. of those 16,000 pay any attention to that; and, of course, that being the case, those checks are only made by motor vehicle inspectors, and generally the motor vehicle inspector has got to catch a man eight times before he uses up his license. By that process you can see that if they see fit they can use them, and they do usually make use of them as long as they want to, and usually do make them last a year. I think there are probably not more than ten—although this is not certain, there is no way that I can check it up—not more than ten persons who are compelled to take out regular licenses because their tourists' license had been overrun. They always take that chance, and generally win with it.

Now, there is another point about this that I ought to mention. The large cars, those which pay the heavy fees, are very largely among the non-resident cars. Now, for instance, of the one to ten horse-power cars, 2,900 belong to residents and 1,300 to non-residents; twenty to twenty-four horse-power, 4,600 to residents and 1,200 to non-residents; thirty to fifty horse-power cars, 6,500 to residents and 5,300 to non-residents. You see the non-residents are crawling up as you go higher in the scale. Now, of the cars above fifty horse-power there were only 264 residents and 413 non-residents; which shows entirely that of those 15,000 eight-day licenses, the majority of them were of the high-powered type, because they are the cars owned by the people who are engaged more extensively in touring. The little

cars do not get far away from home. It is the big cars that go into the other States.

Mr. Rider—If I may be permitted to ask a question, are they not the cars that destroy the roads more than any other cars?

Mr. Smith—That is possibly a question for a road man to answer. I should think they were.

Mr. Rider—And it occurs to me that those high-powered cars ought to pay a higher license, because they do, as a matter of fact, destroy the roads.

Mr. Smith—There was a law introduced last year, which the Senator has just mentioned to me, which provided that the higher-power cars should pay, instead of $10, $20, and the medium-powered cars—that is, say the law provided for a re-classification—instead of having the medium-powered cars, as we now have, that is, say a $5 class running from ten to twenty-nine horse-power, we divided that up; we made the $5 class stop at twenty horse-power and from twenty to thirty-five horse-power we made $10, and above that, above thirty-five horse-power, made it $20. And I think it well just to mention, if you think best, something about the fate of that bill. It had in it a scheme for registration, a scheme whereby the $1 fee might be eliminated for registration, and very drastic measures were provided for the owner's failure to live up and obey the law in that respect. In fact, I had something to do with framing the bill, and the Senator had something to do with it. By that scheme we would be able to obtain a greater revenue than we have been able to obtain, by compelling those who violate the $1 privilege to take out a new license, for which they should pay a multiple of the regular license; that is to say, if they were running a $10 car, they should pay a multiple. We fixed that at $5; so that if they were caught abusing their free privileges they should take out a new license, for which they should pay five times what they would have paid if they took it out at the time they should have done so. We thought that by that means we would increase our revenues very much beyond what they would be with the $1 feature included, and it would please the

men who were clamoring for free privileges. That arrangement was put through the Senate in modified form, with the expectation that the motorists in the House would amend it and put it through and send it back to the Senate for concurrence in the amendment. But, to my surprise, the friends of the automobilists then promptly told me that it was not the free privileges that they desired; that they did not mind the $1; that that could be paid without embarrassment; but what they did object to was registration. And, of course, that being the case, the measure failed. But that scheme would have increased the revenues of the State, according to our estimate—of course, that was only an estimate—some $150,000.

The Chairman—What have other States to give New Jersey motorists?

Mr. Smith—Well, they don't have much of anything to give. I have just stated what Pennsylvania has to give, and New York has not much more to give, except this 1,000 miles of road, which, as you can conceive, if you are not acquainted already with the distances there, if we have 3,000 miles in New Jersey spread over an area of 8,000 square miles, and if New York has only approximately 1,000 miles spread over an area of 47,000 square miles, that an ordinary tourist traveling through New York would not get very much by way of improved roads. They would get some, of course, if they picked the right territory. Of course, the main thoroughfares are the ones which are being improved and macadamized first.

But more than that, it seems to me, is the protection which our laws give to the cause of motorists. That comes only by our ability to obtain jurisdiction over motorists because of the registration and execution of power of attorney, which makes it possible for us to deal with the motorist after he has left the State, at his convenience and at our convenience. And if that were abrogated, as it is proposed that we do, this jurisdiction, and that protection which motorists get, will have to fall, and they will have to rely on the local authorities; and the only way the local authorities can enforce the law, that is, the only known way that they can enforce the law against motorists,

is by the arrest without warrant, and that means the return to the speed traps, and that is, I think, where the motorists themselves will find, if the proposed legislation is enacted, that they have committed an error against their own interests, which they will seek to overcome at the first opportunity.

The return of the speed traps will be inevitable; and speed traps always exist, other conditions being equal in proportion to the amount of traved on the highway. Now, motorists tell me, when I state this to them, oh, well, while they don't like speed traps, yet they get along with speed traps in other States, and there is no reason why they should not get along with the speed traps in New Jersey. I think there is a very great difference. Because of the condition and location and situation of New Jersey, the number of motorists running per mile on the roads of New Jersey is many fold that of the average mile in any other State. That has been variously estimated and guessed at—and of course the best anyone can do is to approximate and largely guess at it—from five to thirty fold. I have estimated—I have inquired pretty closely—my figures are on the basis of about eighteen fold. That is to say, there are about eighteen times as many automobiles running on every mile of road in New Jersey as there are on every mile in any other State outside of the metropolitan district; that is to say, outside of Long Island, or the nearer points to Long Island, in New York; outside of the very close sections to Philadelphia, and outside of the metropolitan district of Boston.

Take it throughout Massachusetts, of course, excepting the Pittsfield section—and even there there are only three or four roads where travel is heavy—I figure there are about eighteen times as many running in New Jersey as there are per mile in any other State. Therefore, I figure that there will be approximately eighteen times as many speed traps set up in New Jersey.

Now, those of you who run automobiles are interested, naturally, because when a speed trap is once established you are just as apt to be caught in it as anybody else. The State cannot protect you from the speed trap after it is once set up. The only way whereby it can protect you is by the exercise of its authority,

which it has exercised successfully during the past year, in handling cases outside of the local courts.

Mr. Rider—Isn't it a fact, as an honest automobile owner, that we do not care for speed traps? An honest man does not care, does he?

Mr. Smith—No, no honest man fears an honest constable. The unfortunate part of it is, with so many speed traps as that there is so much illegitimate and dishonest work in connection with it.

Now, in answer to that—and that is an important point, too, which almost slipped my mind—the automobilists say that under the New Jersey schedule of fees for justices and for constables in making automobile arrests and convictions it will not be profitable to set up illegitimate traps. Now, that may be true. The fees, as you may recall, were cut down two years ago, and, of course, it did do away with a great deal of the illegitimate and the so-called grafting by the magistrates. But it will not prevent, indeed, it will make more necessary that the municipalities themselves maintain speed traps. For instance, in your own municipality, Mr. Rider, through which there are a great many automobiles most every day, you will no doubt find it necessary to have official speed traps maintained by the municipality for the purpose of holding down the speed of those automobiles coming in from Pennsylvania.

Now, another feature about that is this, that while a speed trap, as it is generally conducted, will consider the question of speed only, which would be considered and taken cognizance of under the automobile law, yet if a man were arrested and it were found that he was intoxicated, for instance, the charge against him would not be for excessive speed, or would not need to be for excessive speeding, but for disorderly conduct, and then he would come under the disorderly conduct act.

Mr. Rider—And he would be fined in proportion?

Mr. Smith—He would be fined in proportion, and the fine would then go to the municipality; and in that way the municipality would find a way to at least in part reimburse itself for

the cost of maintaining speed traps. That is a point to which I tried to call the attention of the motorists in New York, but they did not pay much attention to it.

A Delegate—In our city I guess there are 15,000 automobiles go by every day from New York. There is no way hardly to stop them, but they go up the road at about forty miles an hour. And there is a place where they get coffee, and they come back at the rate of about sixty miles an hour, and the constables have positively refused to arrest, and it is worth their lives. Both constables have resigned and both justices have resigned. There is nothing in it. They tried to hire men especially to police those roads. There is no way by which a policeman or constable, after he arrests them, can get anything for doing his work unless the county gives it to them.

Mr. Smith—They get something from the State?

The Delegate—It won't pay enough to keep them in salt. A man cannot devote his whole time to it, and I think the law was very foolish in refusing these men pay for this work. It is the only way they can curtail these men from going over these new roads. The biggest automobiles that ever grew go up there. I think they have written you asking if there is not some law that can be passed whereby the constables can be compensated for making these arrests.

Mr. Smith—Of course, you know the executive authorities do not pass the laws.

The Delegate—No, but asking you if you cannot suggest some way of paying constables around that section. If a man does make an arrest and does not get anything for it he is not likely to make another arrest.

Mr. Smith—Well, that is just the point which Mr. Rider was discussing. Of course, if they cannot get any compensation they will not make the arrest, and that is the reason it will become necessary for the municipalities, if there can be no other jurisdiction to be found, for municipalities to set up speed traps of their own at their own expense; and it was a suggestion on my part for turning the complaint from that under the automobile

act to that under the disorderly act that the municipality might find a way to reimburse itself; and if your friends have been to this coffee house the chances are they would be amenable to the disorderly act rather than the automobile law.

A vote of thanks was tendered Mr. Smith for his address.

Report of the State Entomologist.

JOHN B. SMITH, SC.D.

During the season of 1909-1910 the situation in the matter of danger from Brown-tail and Gypsy moths became critical. After the first discovery of infested stock in New York State, in January, 1909, an arrangement was made by the Department of Agriculture in that State, with custom house brokers at the port of New York, whereby notice of all nursery stock cleared, was sent to the officials of the Department. These officials then notified the inspectors of adjacent States, for which the stock was intended, and in that way a fairly good supervision could be kept. A statement of my work in that connection appears in my previous report, and also the number of infested shipments found.

During the session of the New York legislature in the spring of 1909, an amendment to their laws made it compulsory upon custom house brokers to give notice of shipments cleared for New York State points, and imposed certain other duties upon them. What had been previously a matter of favor, was now a duty and the brokers in general confied their reports strictly to the required points and included nothing concerning shipments ultimately intended for points outside of New York. This was a severe handicap upon my service because the funds at my command were not sufficient to establish an inspection system comprehensive enough to cover the foreign importations in addition to the required nursery inspection work.

Nurserymen were therefore cautioned concerning foreign purchases, they were requested to keep me advised to the firms from which they expected to derive stock, and an attempt was made to secure the co-operation of the custom house brokers in New York City. All the foreign nurserymen shipping stock into New Jersey were warned that unless they secured reliable local inspection, their material would be held up for examination at the point of destination.

In this matter the United States Department of Agriculture made strong representations through its entomologists, Dr. L. O. Howard, to the French government, alleging that the inspection system in that country was a mere farce, and that no pretense was made of any real compliance with the requirements of our State laws. These representations were well receivd and a material improvement in French shipments was noted; but they were still found dangerous and no French certificate could be accepted at its face value.

In the face of the handicaps already detailed, the control of fall shipments from European countries left much to be desired. It is more than probable that a considerable amount of stock was received and distributed of which I did not hear until much later. Fortunately, however, this was of a character little likely to be infested and largely ornamental, from countries other than France.

The nurserymen were kept under close observation and, in general, they co-operated cordially with this office. In fact most of them reduced their French orders to the lowest possible point, securing stock from other countries whenever that could be done.

After the legislature assembled in January, 1910, I was assured of additional support, and later $1,000 was added, in the supplemental bill, to the amount available for the then current fiscal year. Acting on this assurance, I was able to improve my organization and, when spring shipments began to come in, I was in position to receive notices from custom house brokers, from the Entomological Division of the United States Department of Agriculture, and finally, from the nurserymen themselves.

From the beginning of March to the middle of May, shipments came in more or less continuously, and the entire office force was, at times, engaged in the work of correspondence or inspection.

A small portion of the actual inspection work was done by myself; the larger part was done by Mr. E. L. Dickerson, assisted at times by Mr. J. A. Grossbeck and Mr. H. H. Brehme, who were in some cases independently assigned and made inspections co-incidently in different parts of the State.

The following is a statement of the stock received, by countries:

Holland,	2,925	cases.
Belgium,	1,473	"
France,	473	"
Central America,	105	"
England,	57	"
Germany,	50	"
Japan,	25	"
Scotland,	7	"
Austria,	1	"
Norway,	1	"
Total,	5,117	cases.

Some of these cases contained thousands of plants, and it is within bounds to say that the actual number of individual stocks ran into millions. In addition to the above enumeration there were several importations that were not discovered until they were unpacked and set out, notably one containing 127,000 seedlings for the Newark water-shed reservation, and altogether over 200,000 plants can be added to the previous estimate from these sources.

It may be interesting to note that 844 cases of stock were imported by 31 individuals other than nurserymen; much the largest proportion going to the Duke estate at Somerville, while the balance of 4,073 cases was imported by 35 nurserymen. Of these, six are responsible for 3,824 of the cases, leaving only 249 to be divided among the other 29. In the course of the inspection work all sections of the State were visited, and sometimes two or even three calls were made in connection with a single consignment.

Only French stock was found infested by Brown-tails, and of the 28 distinct shipments not over six proved to be infested. In these lots, representing about 125 cases, about 50 nests or parts of nests were seen. In almost every case it appeared that the infestation had been recognized by the shipper and an attempt had been made to pull off the nests. What remained were fragments of nests with few caterpillars; but extremely dangerous because easily overlooked by any save a specialist, and because of the temptation to the caterpillars to leave the nest fragments for the packing.

In this matter New Jersey escaped better than New York and some other States, because very little fruit stock was imported by our nurserymen, and fruit stock has proved the most dangerous of the imported stock. So, also, largely as the result of my cautions, roses which are next in point of danger, were largely ordered from Holland rather than France. Finally, the great bulk of the French stock received was of good grade, comparatively high-priced and intended for high-class landscape work. As such, it was, of necessity, well selected, and much of it as fine and clean as anything I have ever seen.

From Germany, forestry stock and roses were chiefly received. Conifers are not subject to Brown-tail infestation, and none were found on the roses, although practically every shipment was traced and examined.

Of the comparatively few shipments from Japan, the largest lot, containing several cases with many hundred hemlock plants each, was condemned because it was infested by a scale very like the San José scale, but infesting Conifers instead of deciduous trees, and also with a web-worm from which we bred out large numbers of a very pretty little moth thus far not known in this country.

The scale was submitted to the experts of the United States Department of Agriculture, and proved to be a heretofore unknown species. Judging from the thoroughness with which it infested the plants received, it is evidently one likely to prove dangerous if it once finds establishment here.

The little Tineid was submitted to Mr. W. D. Kearfott, who is a specialist in this group and his report appears elsewhere. Altogether this shipment was deemed too dangerous to be admitted.

Several other small lots, containing cherry trees principally, proved to be infested to some extent by the Japanese cherry scale. These trees were thoroughly fumigated and admitted in each case.

Belgium sent us chiefly greenhouse stock, and stock used for forcing in greenhouses and that arrived, as a whole, in good condition. The method of handling such material for use makes it practically impossible for insects like the Brown-tail to escape detection and destruction.

From Great Britan the returns are probably very imperfect and incomplete. Only 64 cases are reported and that, I am sure, is far below the truth. The difficulty is that orders to England, Ireland and Scotland go largely from individuals, mostly gardeners to estates. Much of it also goes by express or post and is so handled that practically no notice comes to me through the ordinary agencies. At the nurseries I can get track of it easily enough; but on the enormous number of private estates employing gardeners the matter is more difficult, especially as small lots are frequently sent by parcels post. Fortunately, neither the Brown-tail nor the Gypsy moths are likely to come from these countries, and the character of the stock imported is generally such as to guarantee its safety. Finally, it almost invariably goes into the hands of men whose business it is to look after and care for the plants and who usually clean up very thoroughly before setting. It should be, in fairness, added also, that the leading English and Irish nurseries have had very careful inspections made of their premises by men whose work can be relied upon.

The Central American stock received is almost entirely for indoor use, and the shipments recorded do not include the enormous numbers of orchids received by some of our large greenhouses.

The single cases from Norway and Austria were both examined and found clean. The largest shipper of nursery stock into New Jersey is Holland, and practically all of it comes under the general heading, "ornamental." Roses by the hundred thousands, Rhododendrums by the tens of thousands and Conifers in great numbers. Holland has an excellent inspection system, conscientiously administered, and not a case of Brown-tail or Gypsy infestation was discovered.

One case of stock, examined by Mr. Brehme, contained a pupa of the European red-tail moth, *Dasychira pudibunda*, and from that an adult moth was bred. A full account of that species and its history in this State is published in my report to the Experiment Station.

Finally, so far as the importations are concerned, we have reason to congratulate ourselves upon our escape from infestation so far. I believe that with the experience of the past season as a guide, and with the understanding established with the nurserymen, the danger for the ensuing year will be materially less, and inspection work more easy. The greatest remaining danger is in the individual importations, and just how best to get track of these without a system of notifications from common carriers, similar to that of New York, is yet a question.

During the winter of 1908-1909, a source of danger developed in Maine through woodland products and that was briefly noted in my report for 1909. The situation has been met by the combined action of the Maine and the United State government authorities, and no shipments are now accepted by the railroads out of the infested districts without a certificate of inspection.

INFESTATION NEAR RINGWOOD.

During the early days of May a serious condition developed near Ringwood, on a large estate owned by a New York lawyer. The estate is very close to the New York State line, and it was through the agents of the New York Department of Agriculture that information was obtained that a shipment of *Crataegus* had been received from New England, infested by both Gypsy and Brown-tail moths. The shipment was made by the Arnold Arboretum, of Boston, Mass., which does not rank as a nursery, and has never been inspected as such. Nevertheless, plants are occasionally sold, and this carload lot, containing 500 well-grown *Crataegus* plants, was consigned to Sloatsburg, N. Y., but intended for the New Jersey estate. This complication resulted in no notice being given to the New York Department of Agriculture until long after the plants were delivered and actually planted out, and when the New York inspectors did learn of the matter, they communicated with me at once. In company with Messrs. Van Buren and Hustead, of the New York Department, the estate was visited, both Brown-tail nests and egg-masses of Gypsy moths were found, and the fact was noted that the eggs were hatching and the caterpillars of the Brown-tail were on the move, leaving their nests. The plants had been set out at a number of rather widely separated points, and some of them in such a way as to endanger the surrounding woodland. The owner was seen and expressed himself as ready to consent to any action taken by this office.

May 5th, Mr. Dickerson went to Sloatsburg, fully instructed, and on the 6th and 7th, minutely inspected every plant of the series. Every plant was taken out of the ground for examination; every one so far advanced in growth as to make close examination impossible was burnt; every plant that showed any signs of infestation was burnt and the ground where it had stood and for some distance about, was thoroughly sprayed with "Scalecide" diluted with two parts of water. Altogether 95 out of the 500 plants were destroyed, and all the others were sprayed as a precaution, even though nothing could be found on hand inspection.

June 15th, Mr. Dickerson made another visit and a very careful inspection of the *Crataegus* plants and their surroundings. At this time nothing developed that gave any reason to believe that anything had escaped observation in early May. No trace of either Gypsy or Brown-tail caterpillars could be found, and at that time both these species would have been well advanced in growth and easily seen.

It is intended to inspect again, thoroughly, after the foliage is all off, and for this purpose the aid of one of the trained scouts of the New England service has been promised by the officials of the United States Department of Agriculture in charge of the work.

CONTROL OF NEW ENGLAND STOCK.

The experience just recorded seemed to indicate that there was something lacking in the guard against introductions of these pests from New England, and that our doors must be as carefully closed against our eastern neighbors as against European ports if infestation is to be entirely avoided.

After some correspondence with Dr. H. T. Fernald, the nursery inspector of the State of Massachusetts, and with the officials of the New York Department of Agriculture, it developed that as inspection work was now, of necessity, conducted in Massachusetts, no guarantee was possible that stock from nurseries in the Brown-tail area was free from these pests. This condition of affairs led to a conference in New York City, in which Mr. George G. Atwood, Deputy Commissioner of Agriculture for New York; Dr. Henry T. Fernald, State Inspector for Massachusetts; Dr. C. Gordon Hewitt, Dominion Entomologist for Canada, and the writer representing New Jersey, met with representatives of the New England Nurserymen's Association, to agree upon some method of making shipments from infested New England

points reasonably safe to neighboring States. By some re-adjustment in the period of inspection; by a system of notices to the inspectors of the conferring States, and by arranging for a late re-inspection, it is believed that a sufficient guard has been set to make Massachusetts safe until additional legislation can be obtained. But it puts upon this office the additional burden of keeping track of other New England importations during the early part of the shipping season, at least.

WOODLAND PRODUCTS.

The danger from woodland products coming out of districts infested by the Gypsy moth is not a fanciful one. Shipments from twelve localities were made into the State of New Jersey during the winter of 1909-1910, as follows:

Camden,	2
Edgewater,	1
Edgeworth,	1
Helmetta,	1
Hoboken,	1
Irvington,	1
Jersey City,	2
Keyport,	1
Newark,	3
New Brunswick,	2
Passaic,	3
Paterson,	1
	19

All of these were inspected at the point of origin, and as matters are now arranged the railroads will not receive for shipment woodland products without a permit from a government inspector.

Up to the date of this report, 51 notices of shipments of nursery stock from New England points have been received, and, in most cases, where the character of the stock did not preclude the danger of infestation, the shipments were followed up. It is a satisfaction to be able to say that no infestation was discovered.

FOREIGN NURSERIES.

The enormous shipments of foreign nursery stock received, and the tendency to import forestry stock and seedlings in ever greater numbers, made it seem desirable to know more definitely in just what condition these nursery districts were.

As the study of the relation of the Azolla to Mosquito breeding also demanded personal investigation in Holland, I determined to combine the two objects, and, therefore, spent about five weeks in Northern Germany, Holland and Belgium, at my own expense, for the benefit of the work.

Germany maintains an elaborate quarantine and inspection system at Hamburg against fruits and plants of all kinds, and rigidly excludes everything that might by any possibility cause injury to her agricultural or horticultural interests. But she takes not the slightest care in guarding the character of her *exports,* and has no inspection system that will prevent the spread of insects or disease from her extensive nursery districts throughout the world.

By the courtesy of Dr. C. Brick, who is in charge of the Quarantine Station at Hamburg, I was enabled to become familiar again with the very complete system of protection enjoyed by the German horticulturalists, and he afterward accompanied me also to the important nursery districts at Halstenbeck.

There are there, several hundred acres of nurseries adjoining each other, most of them devoted to the raising of shade and forest trees, although

ornamentals of many kinds are also propagated. But the important feature here is the very large scale on which seedlings are produced, of species native everywhere in the temperate zone. All the American forest trees are planted by the hundred thousand, and the Douglass fir and other conifers of the Pacific north-west as abundantly as our White Pine. And not only conifers, but oaks and other deciduous forest trees in American species are grown here in quantity. A single one of the firms claimed to be able, in 48 hours, to fill an order for two and one-half million seedlings of the commoner conifers, and I believe that to be the truth.

In this area the seedling oaks of many varieties suffered frightfully from mildew, and out of this region the white pine blister rust has come in former years. They claim that it has been stamped out there, and that may be true; but there is no supervision, nothing to prove it, nor scientific inspection to confirm it.

From the Entomologist's standpoint, this region is in very fine condition, and I do not consider the plants coming from there a particular source of danger—but the plant pathologist has a different tale, and from his standpoint, that region is a dangerous one, and all stock originating there must be kept under observation, Our chestnut trees are fast succumbing to one disease. It would be the height of folly to permit the introduction of others on other trees, and here this Board can do something to strenghten the hands of the U. S. Department of Agriculture, by indorsing the National Inspection Bill, now before Congress, and requesting our Senators and Representatives to urge and facilitate its passage.

In Holland matters are quite different; they have an efficient and effective phyto-pathological service in conection with the Department of Agriculture and the supervision over nurseries and plant growers is close and satisfactory. Dutch stock can be received with a reasonable assurance of safety, and that is a matter of very great importance to my service, because by far the largest percentage of stock coming into New Jersey originates in Holland. By the courtesy and co-operation of Dr. J. Ritsema-Bos, Director of the Dutch service, I was enabled to visit the principal stock-growing regions at Boskoop, Oudenbosch and Naarden. The only point at all dangerous is at Oudenbosch, which is very near the Belgian border, and subject to infestation from that country. Boskoop and Naarden are both in the dyked regions, and free from both the Gypsy and Brown-tail moths.

Belgium is a danger point, and not a parcel of stock coming from that country can be considered safe. Their inspection is a farce, and the certificates from that country are not worth the paper they are written on.

Fortunately most of the stock coming in from that country is for in-door use and forcing, hence easily kept under observation. All other stock, for out-door planting, must be most rigidly scrutinized, and even some of the greenhouse plants should properly be denied admittance.

No other countries were visited by me, and nothing need, therefore, be added to what was already said.

STATE NURSERIES.

The nurseries within our own State are in better condition than ever before. One hundred and six certificates in all have been issued, including those to dealers: but real nurseries are only 89 in number.

For the first time since the work of inspection began, nearly all the nurseries were found clean at first inspection, and at present there are only three nurseries from which certificates have been withheld for any reason.

The following certificates were issued for 1909, subsequent to the date of the last report:

No. 106. W. A. Manda, Inc., South Orange, (special).
" 107. Warren Shinn, Woodstown, (dealer).
" 108. Charles Apgar, Califon, (peach).
" 109. Lewis E. Gerard, Washington, (dealer).

No. 110. Johnson Seed Co., Moorestown, (dealer).
" 111. W. S. Perry, Delaware, (general).
" 112. Warren Shinn, Woodstown, (peach).

Up to date of this report the following certificates have been issued for 1910:

No. 1. Henry A. Dreer, Inc., Riverton, (general).
" 2. J. T. Lovett, Little Silver, (general).
" 3. George A. Steele, Eatontown, (general).
" 4. Hiram T. Jones, Elizabeth, (general).
" 5. Red Towers Nurseries, Hackensack, (general).
" 6. Ellsworth Pedrick, Bridgeton, (strawberry).
" 7. K. Herman Stoye, Eatontown, (general).
" 8. Henry E. Burr, East Orange, (general).
" 9. Wm. Rose, Red Bank, (general).
" 10. John Moore, Little Silver, (general).
" 11. C. B. Horner & Son, Mount Holly, (general).
" 12. W. H. Forristel, Plainfield, (general).
" 19. Elizabeth Nursery Co., Elizabeth, (general).
" 20. Willard H. Rogers, Mount Holly, (general).
" 21. Arthur J. Collins, Moorestown, (general).
" 22. I. C. Townsend, Merchantville, (general).
" 23. T. E. Steele, Palmyra, (general).
" 24. J. Murray Basset, Hammonton, (general).
" 25. American Nursery Co., formerly F. & F. Nurseries, Springfield, (general).
" 26. Samuel Brant, Madison, (peach).
" 27. Samuel C. De Cou, Moorestown, (general).
" 28. Alvah L. Reynolds, Madison, (general).
" 29. W. A. Manda, Inc., South Orange, (general).
" 30. Charles Black, Hightstown, (general).
" 31. Jos. H. Black, Son & Co., Hightstown, (general).
" 32. J. F. Noll & Co., Inc., Newark, (dealer).
" 33. Benjamin Connell, Merchantville, (dealer).
" 34. Wm. Henry Maule, Hightstown, (dealer).
" 35. D. de Haas, Plainfield, (dealer).
" 36. Wm. W. Lukens, Plainfield, (dealer).
" 37. Charles L. Stanley, plainfield, (dealer).
" 38. John F. Randolph, East Rutherford, (dealer).
" 39. North Jersey Nurseries, Newark, (general).
" 40. J. T. Garrison & Sons, Bridgeton, (strawberry).
" 41. Peter Henderson & Co., Jersey City, (general).
" 42. K. E. de Waal Malefyt, Ridgewood, (general).
" 43. Stumpp & Walter, Dumont, (general).
" 44. R. D. Cole, Bridgeton, (general).
" 45. George A. Shultz, Jamesburg, (peach).
" 46. John Casazza, Vineland, (general).
" 47. Michael N. Borgo, Vineland, (general).
" 48. James H. Vliet, Gladstone, (peach).
" 49. James Apgar, Fairmount, (peach).
" 50. Willard Apgar, Fairmount, (peach).
" 51. Mrs. E. B. Conover, Fairmount, (peach).
" 52. Fleming Bros., Califon, (peach).
" 53. Mrs. E. P. McColgan, Red Bank, (general).
" 54. J. H. O'Hagan, Little Silver, (general).
" 55. W. G. Eisele, West End, (general).
" 56. J. C. Williams, Montclair, (general).
" 57. James A. Hall, Farmingdale, (dealer).
" 58. A. S. Wallace, Montclair, (dealer).
" 59. T. C. Kevitt, Athenia, (dealer).
" 60. I. D. Cole & Co., Rutherford, (dealer).
" 61. Theo. A. Ball, Mountainside, (general).

No. 62. P. V. Drake & Co., Hopewell, (peach).
" 63. Charles Momm, Irvington, (general).
" 64. Hartung Bros., Jersey City, (dealer).
" 65. Richard Evans, Jr., Wenonah, (dealer).
" 66. Charles A. Baird, Freehold, (general).
" 67. F. E. Beugelaar, Rutherford, (general).
" 68. Wadley Nursery Co., Bound Brook, (general).
" 69. Edwin Allen & Son, New Brunswick, (general).
" 70. Frank A. Breck, Vineland, (privet).
" 71. Joseph Sbertoli, Vineland, (dealer).
" 72. S. T. Hillman, West Cape May, (dealer).
" 73. Wilfred Everingham, Woodsville, (peach).
" 74. Max Rumprecht, Fort Lee, (general).
" 75. Garfield Williamson, Ridgefield, (general).
" 76. H. C. Steinhoff, West Norwood, (general).
" 77. The Julius Roehrs Co., Rutherford, (general).
" 78. John Ryan, Basking Ridge, (general).
" 79. Peter Henderson & Co., Jersey City, (special).
" 80. Charles Bird, Arlington, (general).
" 81. David V. Higgins, Ringoes, (peach).
" 82. Stanton B. Cole, Bridgeton, (general).
" 83. John McCleary, Sewell, (general).
" 84. Wm. C. Evans, Sewell, (general).
" 85. C. A. Conover & Son, Lebanon, (peach).
" 86. Henry S. Yawger, Lebanon, (peach).
" 87. John W. Henry, Lebanon, (peach).
" 88. Mansfield Eick, Bissell, (peach).
" 89. Isaac Hildabrant, New Germantown, (peach).
" 90. J. H. Lindsley, White House, (peach).
" 91. Luther A. Apgar, High Bridge, (peach).
" 92. Samuel H. Wilson, Lebanon, (peach).
" 93. W. S. Perry, Delaware, (peach).
" 94. Victor J. Humbrecht, W. Windsor township, (privet).
" 95. James W. Farley, Fairmount, (peach).
" 96. Frank Lenz, Irvington, (general).
" 97. Wm. F. Bassett Nursery, Hammonton, (general).
" 98. S. T. Pullen, Englishtown, (peach).
" 99. Chas. W. Schneider, Little Silver (general).
" 100. J. D. Lindsley, Mendham, (general).
" 101. Joseph J. Ayars, Williamstown, (dealer).
" 102. W. S. Pullen & Co., Princeton, (peach).
" 103. Mrs. N. P. Creely, Burlington, (strawberry).
" 104. Ralston Bros., Allenhurst, (general).
" 105. Samuel E. Blair, Nutley, (general).
" 106. Charles H. Totty, Madison, (greenhouse stock).

It may be of some interest to give a few statistics concerning the extent and value of the nursery business within the State, premising that they are approximations only and mostly under statements.

The number of nurseries actually growing stock is	89
They cover a total acreage of over	2,500
The largest containing an acreage of about	400
While the smallest has only	¼ acre.
These nurseries handled during the season of 1909-1910 over	15,000,000
pieces of stock of a total valuation of over	$2,000,000
Of nurseries growing peach stock only, there are	23
with a total of a little less than	1,000,000
or the smallest lot in many years.	
Of other fruit stock there was about	700,000
Of nurseries carrying shade and ornamental stock there are	53
and these carry a stock of nearly	5,000,000

Privet is an important stock and is grown on 38
nurseries carrying altogether over 5,000,000
plants. The herbaceous stock is almost beyond reasonable estimate and in the inspected nurseries has been listed as over ... 3,000,000

We do not inspect such stock, however, and much of it is grown on establishments that do not rank as nurseries from our point of view.

These inspected nurseries have over 1,500,000 feet under glass; but that does not include the immense rose houses in Essex, Morris and parts of Hudson county, nor the great florists' establishments whose valuations far exceeds the actual nursery business.

This report was received and made a part of the record.

Mr. Cleveland—I have a resolution to be read from the floor.

The Chairman—The resolution is for reference?

Mr. Cleveland—No, sir; it is to be read from the floor and referred to the committee, if necessary, but I think it may not be necessary. The resolution is in reference to an appropriation for poultry experiments.

The Chairman—I think we all can agree with the matter of the resolution, but it would be more in conformity with the usages of the Board to let it go to the Committee on Resolutions. There may be some other suggestions. If I were going to make one I would suggest that the resolution be sent to the various granges of the State, also. The county boards meet quarterly, and if you send them to them you know how soon they will get around to the Legislature. I think it is a good method to refer that to the Committee on Resolutions, who will take it up and deliberate upon it at their convenience and report back here. We have arrived at the point in our program where Dr. Creelman is to address us. There has been a request made, however, which I will state to the Board and see what their desire is in the matter. I have a card of Miss Lucy Page Gaston, of Chicago, superintendent and founder of the Anti-Cigarette League, who desires to appear before the Board at this time; and if it is the wish of the Board they will so manifest their sentiments. I understand that Miss Gaston only wants five minutes, and if I hear no objections from anyone she will be presented to the Board at this time. I hear no objections and I take it for granted that you desire to hear her at this time.

Miss Lucy Page Gaston—I wish to say that my terminal facilities are excellent, if I am a woman, so I know how to stop

when my time is up, and I greatly appreciate this privilege on your crowded program. I notice the use of the word extermination in your counsels. You are bent upon the extermination of certain pests. I come before you to ask why not exterminate another pest, not a pest that is attacking your turkeys, like those dogs that I heard about this morning; not a pest that is attacking the corn and sweet potatoes and other products of trees and different things, but a pest that is attacking the boys of New Jersey; a pest that is making weaklings and degenerates of thousands of boys in this State, and not a hand being lifted to prevent that? Do you wonder, men and women of this State Board of Agriculture, that I felt that it was rather fortunate that I happened to be in Trenton to-day when you were in session, because if there is any class of people whose help I covet in this great America-wide fight that we are making on this pest of society it is the kind of men and women who are represented here to-day. There is not much love lost or sympathy lost on the American Tobacco Company, is there? The other day down at Washington, Justice Harlan confronted an attorney of the American Tobacco Company who was exploiting the virtues of that monstrum horrendum, as I call the Tobacco Trust, "Will you explain to me why I can't get any chewing tobacco any more that is not rotten and unsound and adulterated?" He put it right up to him right there. The American Tobacco Company have cornered the American chewing tobacco business as they have the cigarette business.

Do you know that the American Tobacco Company covers the United States and Cuba; the Imperial Tobacco Company covers Great Britain; the British-American Tobacco Company covers the rest of the world? It is a world menace to-day. And the stock of that British-American company is held, two-thirds by the American Tobacco Company and one-third by the Imperial. The entire valuation is over $400,000,000, and annual dividends of over $80,000,000. And those cigarettes are to-day destroying the youth, I say, not only of America, but all the world. And they figure that they can afford to give from fifty to one hundred cigarettes away to every one of the 420,000,000 population in China, while that heathen country is shaking herself, trying

to get free from the opium curse and get in line with modern civilization. The American Tobacco Company, or the British-American, is establishing hundreds of factories, sending in shiploads of cigarettes that are being given away to form the habit. That is just a sidelight here in New Jersey.

I am here to secure the introduction of an anti-cigarette bill, a bill that will exterminate the cirgarette by prohibiting the manufacure and sale and giving away of cigarettes and cigarette papers in the State of New Jersey. We are having such a bill introduced in New York, where the stock grows. I was in a factory one day where 6,000,000 cigarettes are turned out every day. I stood by machines that turned out three hundred finished cigarettes every minute, and there was row after row of the machines, floor after floor filled with them. They are going to-day, and as those machines go clip, clip, clip, three hundred times a minute, it is a drip, drip, drip of the life-blood of the nation. And I want you men who are here, you men who are close to mother nature, to rise up and help us.

Now, I do not know just who is going to introduce the bill here in New Jersey; maybe the honored Chairman of this meeting. I was on his track. (Applause.) But no better man could be found to do it. But we are going to stir this State from one end to the other; and I ran up from Camden, or the engine ran me up here, to get my lines laid for the work here in this Legislature, as we have got them laid in New York and other States. We are establishing headquarters at Camden, New Jersey, and have a division of the Anti-Cigarette League with headquarters there; we want about $5,000 to help fight this battle, and people who want to come there and help can do it. Just send it in to Camden. This is not a begging speech. But you people will be glad to know that there are ten states of the Union which have already outlawed the cigarette by prohibiting the manufacture and sale. (Applause.) And we have the United States Supreme Court back of this legislation. The court held that a state has the right, in the interest of public health and morals, to absolutely prohibit the cigarette for the sake of the health and the morals of the people, in the exercise of its police power.

Now, I thank you very much. If you want to include a resolution on the anti-cigarette question it would be a wise thing to do. (Applause.)

The Chairman—The time has already arrived and is past when we were to listen to our good friend the Doctor from Ontario. It gives me great pleasure to introduce Dr. George C. Creelman, President of the Ontario Agricultural College, of Guelph, Ontario. His subject is "Co-operation." Dr. Creelman.

This is a question which has occupied the attention of political and social economists for many centuries. It has gained little ground among farmers in this country and has dominated the whole system of farming in some of the countries in Europe.

In Denmark, and parts of Germany, co-operative methods have given the farmers charge of the banks, the telephones, the railroads, and even the governments. Money may be had at from two to three per cent. and the poorest citizen, if he is but honest, has the same chance to promote his business and sell his goods in the best market, as has the largest farmer in the land.

In America it looks as though our farmers will be forced almost to the wall, our farms worn out, and our land desolate before we give up our small jealousies and petty suspicions of one another.

With so many people rushing from the country to the city, and so many people coming into our cities from foreign lands, it is not surprising that prices of all foodstuffs are dearer. Fewer people producing and more people consuming easily accounts for the present conditions of high prices.

The question then arises: How may we, with more mouths to fill, and inefficient as well as insufficient help, meet the increased demands?

The Colleges and the Experiment Stations have done their part, and done it well. They have, by experiment, proven absolutely many things that if put into general practice would easily double our present output. They have taken a certain number of students from towns and cities and country places and have taught them the best methods of farming.

I think it is lack of organic union among ourselves, whereby every farmer on his own farm may obtain information at first hand, not only as to raising a crop, but the marketing and transporting and delivering of it to the consumer.

MARKETING.

Of all the questions of the farm, *marketing* is the most intricate and difficult with which to deal. It involves *efficient production, manufacture and preparation,* and *business methods in distribution.* Here are three distinct divisions of the industry, yet they all have their bearing on *prices* to the *producer on the one hand,* and to the *consumer on the other.* Moreover, each of these divisions so re-act on one another that it is becoming impossible for the farmer to longer take the advice of a certain class of people who tell him to *stick to production* and some one else will see to the other acts. The inexorable laws of economics are steadily forcing more and more farmers to the conviction that they must control the means of manufacture and distribution of their products. These same facts are being brought home to the worker in scientific lines of production, and also to the intelligent consumer. Last year we, in Canada, threw two million dozen of eggs into the dump heap, while we imported one and one-quarter million to supply

our needs. The blame for this condition rests, in part, on all of the parties concerned in their production, beginning with the farmer, through the country store-keeper, to the cold storage companies and retail dealers. The cure for this condition lies in a discriminating market. We have ample evidence that consumers are ready to pay a good price for fresh eggs; the trouble evidently lies with the dealer. But the dealer finds he cannot discriminate in price. This is evidently a problem for the producer. Likewise the bacon industry has suffered terribly by the fact that the manufacturer has found himself unable to discriminate in price to the farmer between a good and poor type of hog. Experience in this and other countries has shown plainly that the farmer must become the owner of the factory and the means of distribution, if quality is to be secured in his goods and he is to get a fair price for his labor and capital invested.

In these days of high prices the consumer asks himself: Is not the farmer getting too much already for his products? This is a serious and proper question, and the farmer must justify himself to the consumer before he can expect the over-charged dwellers of the towns to look with favor on him receiving better prices for his goods.

The annual report of the Secretary of Agriculture for the United States, for 1910, is important; not so much for the statement that nothing short of omniscience can grasp the value of the farm products of this year, as for the array of figures showing what part of the consumer's dollar the farmer gets. The tiller of the soil is set right before the great consuming public. Heretofore Secretary Wilson has simply set forth the tremendous value of farm products year by year, and the impression has been created that the farmer is becoming fabulously rich. The figures secured by careful investigation, and which are given in the report of 1910, will serve to convince the consuming public that the farmer is not responsible for the high cost of living.

In the case of milk, in seventy-eight cities distributed throughout the United States, where the subject was investigaed by the Department, the farmer receives a scant 50 per cent., or one-half of the price paid by the consumer. The railroads get about 7 per cent.; so that the remaining 43 per cent. of the consumer's price is received mostly by the retailer.

The farmer receives hardly more than half of the consumer's price in the case of poultry; 69 per cent. in the case of eggs; cabbage, 48 per cent. when bought by the head and 65 per cent. when bought by the pound; celery, 60 per cent. when bought by the bunch.

The apple grower receives 56 per cent. of the consumer's price when the purchase is by the bushel, and 66 per cent. when by the barrel.

The strawberry growers get 49 per cent. of the consumer's price in purchases by the quart, and 76 per cent. when by the crate. When the consumer buys a peck of onions at a time the farmer receives 28 per cent. of the retail price; when he buys a barrel the farmer receives 58 per cent. So in the case of oranges. When the purchase is by the dozen the grower receives 20 per cent. of the consumer's price, whereas, when the purchase is by the box the grower gets 59 per cent. The rule seems to be, the smaller the retail quantity the smaller the farmer's share of the consumer's price.

Among the many other products represented in the list are oats, with 74 per cent. of the consumer's price going to the farmer when bought by the bushel; melons, 50 per cent. when bought by the pound; parsnips, 60 per cent. when bought by the bunch; potatoes, 59 per cent. when bought by the barrel; string beans, 80 per cent. when bought by the barrel; sweet potatoes, 21 per cent. when bought by the barrel; turnips, 60 per cent. in purchases by the bunch; water melons, 34 per cent. when bought singly.

After presenting many details in regard to the increase of prices on farm products between farmer and consumer, the Secretary of Agriculture declares that "The conclusion is inevitable that the consumer has no well-grounded complaint against the farmer for the prices he pays." The farmer supplies

the capital for production and takes the risk of losses; his crops are at the mercy of drought and flood, heat and frost; to say nothing of noxious insects and blighting diseases. He supplies hard, exacting, unremitting labor. A degree and range of information and intelligence are demanded by agriculture which are hardly equalled in any other occupation. Then there is the risk of over-production and disastrously low prices. From beginning to end the farmer must steer dexterously to escape perils to his profits, and indeed to his capital, on every hand. At last the products are started on their way to the consumer. The railroad, generally speaking, adds a percentage of increase to the farmer's prices that is not large. After delivery by the railroad the products are stored a short time; are measured into the various retail quantities, more or less small, and the dealers are rid of them as soon as possible. The dealers have risks that are practically small, except credit sales, and such risks as grow out of their trying to do an amount of business which is small as compared with their number.

In continuation of this subject, the Secretary of Agriculture suggests that the problem of high prices is one for treatment by the consumer. "Why do not consumers buy directly from the farmers?" he asks.

But the problem is not completely one for the consumer; the producer, the farmer, must do his share towards its solution. He must study his markets and determine the best method of reaching the consumer. The shortest road will be the best nine times out of ten. It is the grower's business to see to it, not only that he gets more of the consumer's dollars, but also that the consumer gets more for his dollars.

Why should we need co-operation?

(1) Because we have fallen off in production.

We have time to cite but one illustration. The northern part of the North American continent is supposed to be specially adapted to the growing of cereals, and yet the annual production of wheat in the United States to-day is but twelve bushels to the acre. Canada, which is a newer country, has twenty-two bushels to her credit, while old Germany produces twenty-seven, and England thirty-two bushels per acre, on the average, annually. When we realize that Sweden, with her inhospitable clime, produces on whole fields seventy-five bushels of wheat to the acre, and in experiments ninety bushels, we see what work is to be done to improve our cereal crops.

(2) Because our conditions have changed.

New weeds, new insects, new plant diseases have come into attack our crops. Our land, which is not as good as it once was, does not give us the strength of straw to withstand their ravages. The scarcity of farm help and the desire to work too much land have left our farms in poor shape to produce anything like a maximum crop. Therefore, unless we get co-operation for the destruction of weeds, insects, fungous diseases, and to bring our farmers closer together that we may farm in a more intensive way, we need not expect much prosperity in farming circles.

(3) Because there has been too great a loss between the producer and the consumer.

As we quoted from Secretary Wilson's report, the farmer who grows oranges in California gets but twenty per cent. of the retail price to-day in the towns and cities of New Jersey. And the farmers who produce milk in the State of New Jersey get but fifty per cent. of the consumer's money when marketed in their neighboring towns and cities. Surely co-operation is necessary in order that a lot of the intermediate stages may be cut out and the producer and consumer get closer together.

REMEDIES.

(1) To meet the falling off in production the farmers must organize, and through their Experiment Station, State Board of Agriculture, or Agricultural College begin to procure good seeds.

In Ontario, some twenty-five years ago, an institution was formed called the Agricultural Experimental Union. Farmers were invited to conduct

simple experiments on their own farms, until now there are 4,856 farmers reporting to us every year the results of their work, and in all, 54,345 such experiments have been conducted in country places. We here give results covering the work of twenty years:

Classes and Varieties.	*Average Yield Per Acre.*	
	Lbs.	*Bushels.*
Oats (20 years)—		
Siberian,	2,982	87.7
Joanette,	2,972	97.4
Egyptian,	2,564	75.4
Black Tartarian,	2,431	71.5
Barley (20 years)—		
Mandscheuri,	3,451	71.9
Oderbrucker,	3,125	65.1
Mensury,	2,899	60.4
New Zealand Chevalier,	2,731	56.9
Winter Wheat (14 years)—		
Dawson's Golden Chaff,	3,288	54.8
Imperial Amber,	2,976	49.6
Turkey Red,	2,682	44.7
Treadwell,	2,676	44.6
Spring Wheat (Flour) (20 years)—		
Saxonka,	1,878	31.3
Red Fife,	1,872	31.2
Colorado,	1,686	28.1
Spring wheat (Durum or Macaroni) (17 years)—		
Wild Goose,	2,892	38.2
Medeah,	2,046	34.1
Ontario,	1,410	23.5
Potatoes (20 years)—	*Tons.*	
Empire State,	6.7	221.7
Rural New Yorker, No. 2,	6.0	200.9
White Elephant,	6.0	200.6
Stray Beauty,	4.8	160.1

(2) How to meet changed conditions.

We must be sure that our land is adapted to the crops we grow; we must insist on more help from the State Department; we must use our College and Station men at every opportunity; we must have special bulletins on weeds, insects, and plant diseases; we must have drainage experts who will go right to the farm of the ordinary farmer and give him a drainage plan for his place.

In this latter connection we started a campaign in 1906 for draining the farms of the Province of Ontario. The first year fifteen farmers asked for help and fifteen farms were drained; the next year, 126, and the next year, 166, and in 1909, 302. In this last year the farmers drained 5,157 acres at an average cost of $25 an acre. Since we started this campaign only six years ago, 193,436 acres have already been drained in this Province. Where farmers cannot afford to drain, a township law has been passed enabling the farmers to borrow money on the land for drainage purposes. Seven dollars and thirty-six cents per year, for twenty years, pays for a cash loan of $100, and as $100 will drain four acres, this means but $1.84 a year per acre for twenty years, to cover the entire cost of tile draining the land. Watching carefully the result of this work we find that the increased returns on ordinary farms when thoroughly underdrained have been from $11 to $30 per acre. Our tile

factories are now working day and night and the output is increased from 15,000,000 tile in 1905 to 29,000,000 in 1909.

Another way we may change our conditions is to have short courses in country places, where experts will give special information for a few days at a time, on such subjects as the farmer is particularly interested. What we need is practical demonstrations on such subjects as the judging of live stock, with the animals right there; the judging of good seeds and the identification of weed seeds, every farmer having a sample before him; fruit packing by those who understand the needs of the market; butter-making, and the feeding, killing and plucking of poultry. The day has come when the farmer must be shown how to do things, and we believe that only in that way will we secure co-operation of the right kind.

(3) The subject of marketing I have discussed pretty fully in the early part of this address. I want to say that sometimes we farmers are to blame ourselves for not putting our stuff in attractive form; in not co-operating with our neighbor to get a large quantity of product from the same neighborhood; in not finding out the exact requirements of the market, but rather insisting on forcing on the people food products that we think they should have; rushing everything on at once instead of distributing our goods over the year; exploiting our nearest market and building up a trade, rather than looking to far off cities; trying to produce something just a little more tropical than our climate will permit. These are some of the mistakes we make, and if through our experience I have been able to point out to you anything that will help you to make more money on your own farm, I shall feel that my visit to New Jersey has not been in vain.

A vote of thanks was tendered Dr. Creelman.

Mr. Rider—I have a resolution which I wish to offer.

The Chairman—Mr. Rider desires to offer a resolution—as I understand you, for immediate passage?

Mr. Rider—For immediate passage. Most all of you heard the remarks of Mr. Smith, the Commissioner of Motor Vehicles, and we thought, while this thing was fresh in our minds, we had better have a resolution on that point. Those of you who are here to-night can better act upon it than those who will be here to-morrow and did not hear Mr. Smith. The following is the resolution. I will try to read it carefully, so that you may understand it. If there are any criticisms of it, we would be glad to hear them:

"WHEREAS, The improved roads of this State, built and maintained at enormous costs, excel in mileage and excellence those of any of our sister States, and contribute materially to the comfort and prosperity of our citizens, and

WHEREAS, The extension and maintenance of our system of improved public roads should be fostered and encouraged in every possible way; and

WHEREAS, The automobile, while it has become a necessary and a permanent factor in transportation and travel, is one of the most destructive agencies to the highways upon which it is used, entailing great loss upon the State for the repair and maintenance of such highways; and

WHEREAS, Persistent attempts have been, and are now being made, to so amend and change the automobile laws, as to permit non-resident automobilists to use our improved roads without cost to such non-residents; and

WHEREAS, The non-resident automobiles used upon our highways exceed the resident automobiles, both in number and in horse-power; and

WHEREAS, We have learned that a large number of the members of the present Legislature of this State have either been pledged to favor so-called reciprocal legislation authorizing the free use of our improved roads by non-resident automobilists without registration or the execution of a power of attorney, or have been threatened with opposition for re-election, in case they oppose such legislation; and

WHEREAS, We believe that this State, because of its peculiar conditions and its close proximity to two of the largest cities upon this continent, cannot afford, in justice to its citizens, to enter into such reciprocal legislation with neighboring States relative to the use of highways by automobiles; therefore, be it

Resolved, That we hereby express our condemnation of any attempt by automobilists or others to coerce the members of the Legislature in dealing with the subject of the free use of the improved roads of this State by non-resident automobilists; and be it further

Resolved, That we believe such legislation to be harmful to the best interests of this State and its citizens, and hereby register our protest against the enactment of any law having for its object any additional concessions to non-resident automobilists; and be it further

Resolved, That these resolutions be published, and that copies thereof, duly authenticated, be presented to the Governor and to the Senate and General Assembly of the State of New Jersey."

The resolution was unanimously adopted.

The Chairman—We have arrived at the point where we usually take a recess. Have you any announcements to make, Mr. Secretary?

Secretary Dye—The program is before you for this evening. That is as far as we will go in announcements now. I think the Chairman of the Committee on Nominations should call the committee together, perhaps, for conference, if not for organization, to-night; and then I would like the Committee on Treasurer's Accounts to come forward and take the Treasurer's papers, so that they can report to-morrow.

The Chairman—I would announce that Mr. Carl Schermer is the Chairman at the present time, as the Committee on Nomination of Officers for the ensuing year were appointed, and I presume it would be up to him to get the Committee together for organization.

At this point a recess was taken until 7:30 P. M.

FIRST DAY—EVENING SESSION.

The meeing was called to order at 7:30 P. M. by Chairman Gaunt.

The Chairman—The next on the program is "Modern Methods in Poultry Management," illustrated, by Prof. H. R. Lewis, of the State Agricultural College.

Prof. Lewis—I am not going to bother you this evening with a long talk about the good points that New Jersey has for poultry raising, because you all know it, and it is a fact. There is one thing that I want to mention, however, before going on with the slides, and that is you have noticed in the last two weeks how the prices of poultry products have dropped, much faster than we are accustomed to seeing them drop at this time. And I might say it is not due to increased production or decreased production, but it is due exclusively at this time to the holding in cold-storage by professional middlemen of large quantities of eggs; and some go so far as to say that some have been held for a number of years. That I don't know; but at any rate, they are unloading poultry and eggs on the market and have forced the prices down. The price that the consumer pays is not affected much, compared to the price that the producer gets, whereas the producer gets much less than he did a month ago. This goes to show it is a manipulation of the market, but will not last any great length of time. As soon as the present supply is unloaded it will go back. It is bankrupting some of the dealers. Three large middlemen failed last week in Chicago on account of this large drop in prices. They are not able to get the price they paid for them.

I am going to speak this evening about a branch, or a system, of poultry farming which I think will be especially adapted to the poultry farms of New Jersey.

Modern Methods in Poultry Management.

BY PROF. H. R. LEWIS.

Undoubtedly one of the most remunerative branches of the poultry business for the average poultryman is the production of eggs, combined with the sale of market broilers as a side line. If the greatest profits are to be realized, these eggs must be produced during the winter months, when the prices are high, and at a season when under natural conditions the birds lay but a small number. Winter eggs cannot be produced without giving special attention to the birds and endeavoring to reproduce spring conditions in as many ways as possible.

This is not such a hard proposition if the following factors are given careful attention.

STOCK.

The best way to start is to build up one's own flock with winter egg production as the main object in view. The parental stock is of utmost importance. In view of the fact that our markets are willing to pay a premium of from three to eight cents a dozen for a white-shelled egg, the breeds best adapted for winter egg-laying are either the Leghorns or Minorcas. Yearling hens of whatever breed selected will give the strongest chicks.

The health of the adults is of great importance, as strong, vigorous chicks can only be gained by having strong, vigorous birds, free from any kind of disease, hence the necessity of having the breeding stock full of life and stamina. The adults should be cared for with the purpose in view of producing fertile eggs which will hatch a large percentage of strong, healthy chicks. They should not be crowded in small, unsanitary houses, nor should they be forced to an extensive egg production during their pullet year. When it approaches time for hatching they should be mated to strong, vigorous males which are known to come from big egg strains. Not over ten birds should be mated to one male if the best results are to be gained. The alternation system of changing the males each day is a very desirable method where a high percentage of fertility is desired. It should be the aim to get as big a per cent. of fertility as possible, for we cannot afford to waste the time or space in the machine or under the hen with eggs which can never hatch chicks. They should be fed an abundance of green food and given free range if possible. It will pay every poultryman, regardless of the number of birds he keeps, to select the best shaped birds, those resembling the egg type, and keep them separate from the rest of the flock and use their eggs for replacing the laying birds each year. We know that like produces like, that we expect the offspring to resemble the parents, and in that way the quality of the flock can be gradually improved at no extra expense for stock or eggs for hatching.

The selection and saving of eggs for incubation should begin about the last of February, and great care should be exercised to select those that are about medium in size, uniform as to color of shell (white), and they should be kept in a cool place (forty degrees), with an even temperature, and so arranged that they can be easily turned each day to keep the germ from sticking to the shell.

The young chicks which are to make our winter layers should be hatched from the middle of March to the middle of May, depending on the breed. If the heavier breeds, as the Plymouth Rocks, the first to the middle of April is none too early; with the Leghorns they can be hatched as late as the middle of May, but the middle to the end of April is the best. The incubator is undoubtedly the best method of hatching, except where a man has only a small number to raise. Chicks can be hatched artificially for a

Figure 1.—Exterior view of modern incubator cellar. There is nine feet head room, five feet below and four feet above. This brings the machines all below the level of the ground where there is a much more constant temperature. Note the double sash, the outer ones hinging at the top and the inner ones hinging at the bottom, thus preventing any draft from blowing on the machines.

Figure 2.—Exterior view of same cellar. Showing operator in the act of turning the eggs; also note method of supplying moisture by keeping the humidity of the room to the desired amount by placing water on the floor.

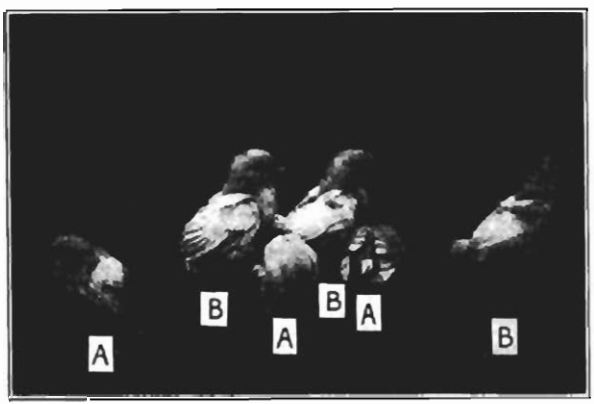


Figure 3.—Chicks ten days old, showing common differences in vigor and vitality. Note that in group (B) the chicks are of larger size, with better developed wings and tail, with feathers held close to the body; as compared with the smaller bodies, and more ruffled, less developed plumage of group (A). [*By courtesy of Prof. Rice, Cornell University.*]

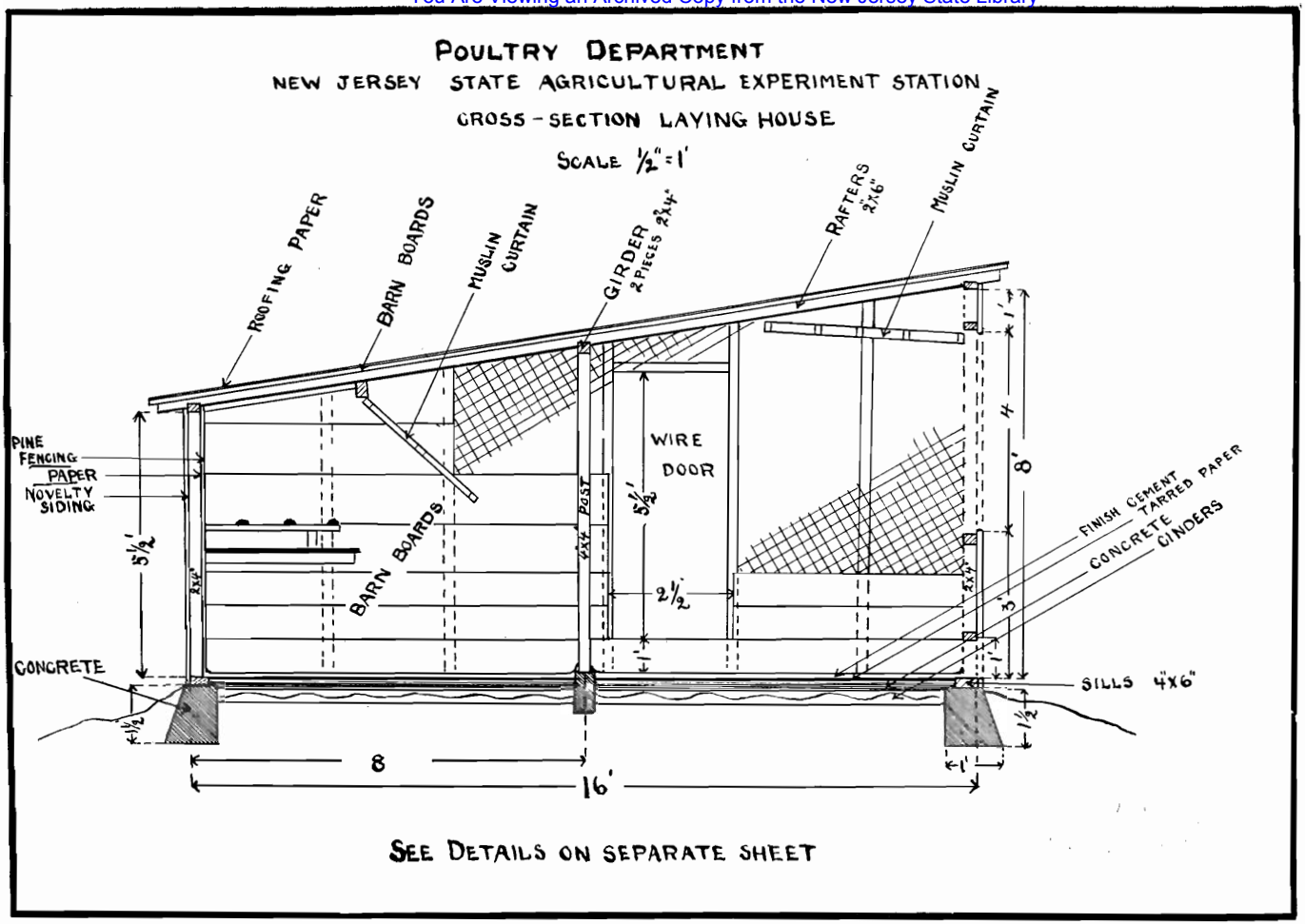


Figure 5.—Cross-section of laying house giving details of construction. This type of building may be used for one or two pen houses or may be extended indefinitely to make a long laying house.

long period of years with no deterioration in vitality or size, and during that time their egg-laying qualities may be greatly increased. Great care should be taken, whether hatching with hens or machine, to be sure that everything is kept perfectly clean and sanitary. White diarrhœa is known to be infectious and to be handed down from the adult *or* parent stock, so that it will always pay to disinfect the incubator between each hatch by thoroughly washing all internal parts with a five per cent. creolin solution.

Figures 1 and 2.

When taking the chicks from the incubator the strong, healthy, vigorous ones should be separated from the weaker ones and given special attention, as they are the ones from which the pullets are to be selected. Every one has noticed that when a lot of chicks are hatched there will be a certain percentage of them which show lack of vitality and vigor and which are especially susceptible to diarrhœa, while the rest will be strong and active, showing strong constitution and vigor. It has been proved by experiments which have been carried on at Cornell University that these week chicks will never pay a profit and are the robber members of the flock, laying very few eggs. This early selection for vigor is one of the quickest and best method for improvement which the average poultryman has at his disposal; it does away with the necessity of trapnesting, and at the same time accomplishes very nearly the same result, considering the flock as the unit.

Figures 3 and 4.

The others, together with the surplus cockerels, which should be separated from the strong chicks as soon as sex can be distinguished, should be forced for a rapid flesh growth and turned off for broilers as soon as they reach market size; the earlier this age can be reached the better.

The pullets should be brought to maturity as rapidly as is consistent with normal development and body growth. Great care must be taken that this growth be uniform and that they be given no set-back, as this will often cause the birds to develop too late for winter laying. The best development is gained on free range with an abundance of shade and green food. Dry mash should be within their reach at all stages of their growth. Maturity should be reached in from six to eight months, the Leghorn being the quickest in this respect. All birds which are to be depended upon for winter egg production should be brought to the laying age by the middle of October at the latest, and they should be put into winter or laying quarters by the first of September, so that they can get accustomed to them and that their development can be more closely watched just previous to laying. It is not advisable to mature the birds too early in the summer, as they will often molt the same season and be useless for winter egg production.

HOUSING.

The open or curtain-front house furnishes as near ideal conditions to the birds as it is possible to get. The following is a type of house especially adapted to our New Jersey conditions: A shed-roof house twelve to sixteen feet wide; if twelve feet wide, the proper height will be seven feet for the front wall and five for the back; if sixteen feet, eight for the front wall and five and one-half for the back. The main point is to give head room enough so that the work may be done with confort. The roof should be single boarded and covered with two-ply paper. The walls are best double boarded on the north side, which should be the back, with paper between. The front walls are boarded up three feet from the ground, and the remainder of the front left open, except for two-inch poultry netting and muslin-covered frames, which can be let down to cover the opening at night and during stormy days. A small sash is advisable in the center of each frame to admit of light at such times.

Figure 5.

In planning the interior the roosts are best placed along the back wall over dropping boards, and in front of these a curtain should be provided to lower

in front of the birds on very cold nights. All internal fixtures should be raised from the ground, giving the birds all of the floor space possible, in this way increasing the capacity and decreasing the cost per bird.

In determining the capacity of the house at least five square feet should be allowed per bird. A cement foundation and floor is the best in every particular. This is best constructed by laying a rough coat of a mixture of sand, gravel and cement (six to one), leaving the top rough, and before it is entirely dry cover this with one thickness of tarred building paper, and nail to the rough coat with roofing paper nails, allowing the heads to project out of the cement about one-quarter of an inch. Over this lay the finish coat, about one inch thick, of a mixture of sand and cement (one to one), and finish it perfectly smooth. This gives a floor which is perfectly sanitary, easy to clean, moisture proof, vermin proof and economical in cost. This type of floor should be kept covered with two or more inches of fine sand, above which is kept four to six inches of good scratching litter.

Figures 6 and 7.

A good house should furnish the following conditions:

First. It should allow the sunlight in every part of the house as much of the day as possible.

Second. It should supply an abundance of fresh air at all times without causing a draft to blow directly upon the birds Curtain fronts with curtain mid walls every twenty-five feet in the case of long houses will do this.

Third. It should give the birds an abundance of room for exercise.

Fourth. It should protect them from the cold, and yet not keep them too hot. The temperance should not go below thirty-eight at night or above sixty for the best reseults in regard to the health of the fowls.

Sanitation is an important factor in winter egg production and the capacity of a house is governed largely by the sanitary precautions which the poultryman is willing to practice. About four times a year, and oftener is necessary, the house should be thoroughly sprayed with the following disinfecting solution: Cream of lime, 5 quarts; creolin, 1 pint; kerosene, 1 quart.

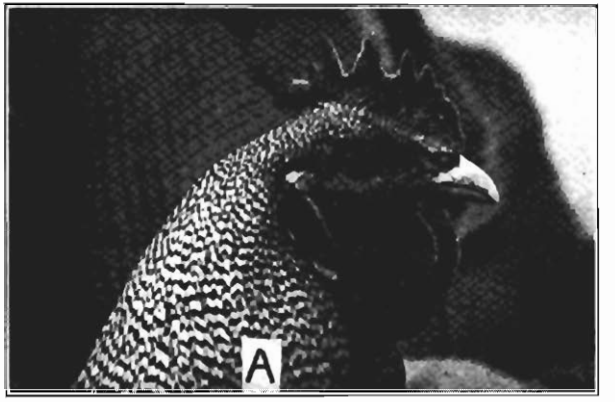
Dilute with equal parts of water and apply with a force pump with a fine spray. Thus with one operation the house has been given a good coat of white-wash which lasts much longer than if put on with a brush and looks much better and is much easier to apply. Also the creolin has acted as a disinfectant, killing any bacteria which may have been present and the kerosene has acted as an insecticide, killing any lice or mite with which it has come in contact.

The litter on the floor should be changed whenever it becomes finely ground or whenever it gets wet or damp. As long as the droppings on the boards are dry there is no need of removing them, but just as soon as they become wet they give off odors and from a sanitary standpoint should be removed immediately. The use of absorbant material as land plaster or dry loam on the dropping boards is very important.

The presence of a dust box in which is kept sifted hard coal ashes, dry sand, lime and tobacco dust is very desirable, as the birds will in this way keep themselves free from vermin. It is a very good practice to keep some tobacco stems in with the nesting material for the same purpose; the best material for nests being sawdust or planner shavings.

If it is necessary to yard the birds, a system of double yarding will give the best results. This offers an opportunity for a system of rotation in the growing and feeding of green food without the expense of harvesting and carrying to them. Single yards necessitate the supply of a large amount of green food from outside sources.

The following system of crop rotation has been found to work out very satisfactorily where double yards are used:



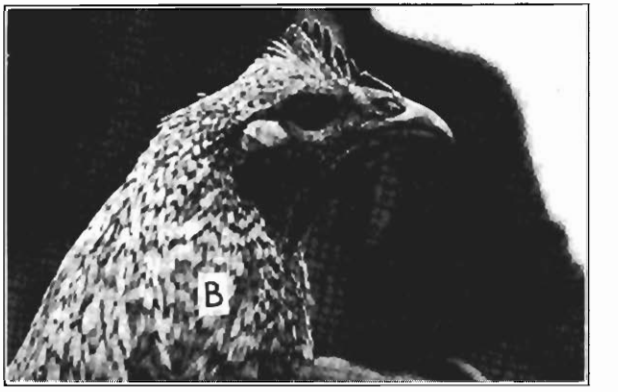


Figure 4.—Showing sex characteristics and signs of vigor in males. (A), Head of Barred Plymouth Rock Male showing sexual vigor and masculine qualities. (B), Head of Barred Plymouth Rock capon showing feminine characteristics and lack of sexual vigor. Note small comb, wattles and elongated beak. [*By courtesy of Prof. Rice, Cornell University.*]

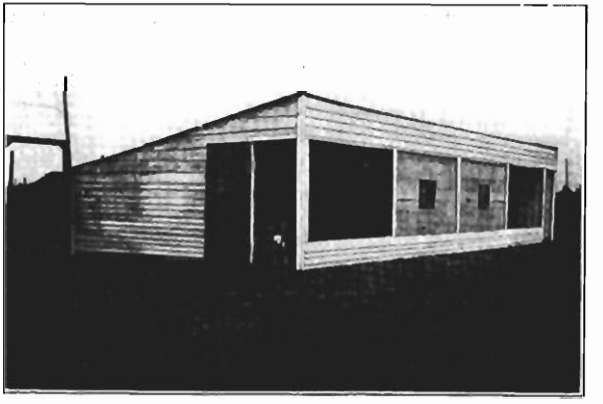


Figure 6.—Exterior view of open front house showing style of construction outlined above. Note the two center curtains are lowered, showing the sash in the center to admit light.

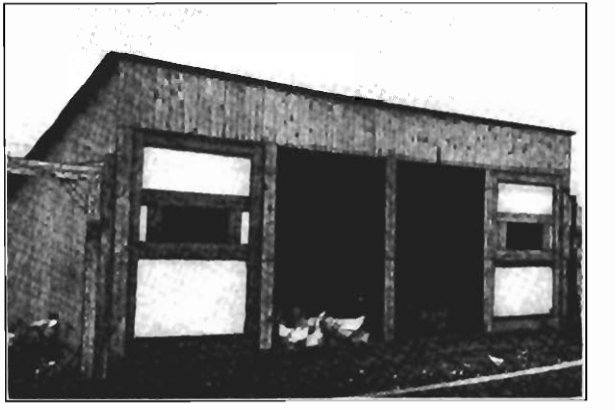


Figure 7.—Open-front house, showing wrong method of construction. The openings come too close to the ground, offering no protection to the birds on windy days. If this were boarded up about three feet from the ground it would be a very desirable type of house.

PEN NO. I.

Date.	*Yard A.*	*Yard B.*
March 25 to April 30.	Peas and Oats.	Feeding.
April 30 to May 25.	Feeding.	Peas and Barley.
May 25 to June 15.	Dwarf Essex Rape.	Feeding.
June 15 to July 10.	Feeding.	Buckwheat and Oats.
July 10 to August 1.	Buckwheat.	Feeding.
August 1 to August 20.	Feeding.	Cowpeas and Millet.
August 20 to Sept. 20.	Rye, Vetch and Crimson Clover.	Feeding.
Sept. 20 to Dec. 1.	Feeding.	Rye and Vetch.

The dates in the above will vary slightly with location, but the crops mentioned will grow well in all parts of New Jersey. The birds should not be allowed to feed on any crop until it is from four to six inches tall, if allowed on the feed before this age it will not last but a few days.

The average cost of growing and feeding succulent green food by the above system was found by actual experimentation to be only five cents per 100 pounds. Where the food was grown on outside land and carried to the birds the cost per 100 pounds was found to be eleven cents.

In following out the above scheme the rye and vetch which was seeded in yard B, about September 20, should be allowed to grow until planting time in the spring, at which time they will furnish an abundance of green food until the spring planted crops are ready.

It must be remembered that some form of succulent feed is necessary for a maximum egg production during the winter months. This may well be supplied in the form of cabbage, beets, mangels, etc., if they have previously been grown and properly stored, but this is not often done, and many of us will find ourselves without any sources of succulence in the middle of winter, and to overcome this difficulty sprouted oats may well be used. The sprouting of oats at all times before feeding is the most economical way in which they can be fed. The following is the method which is at present generally employed and which every poultryman will do well to follow.

Construct a slatted rack out of light material, making places for seven slide shelves, one for each day of the week. These shevles are best made about thirty inches square with three-inch sides out of some durable material about one-half inch thick.

The oats to be sprouted should be first treated for twenty-four hours with a three per cent. formalin solution, which is sprinkled over them with a watering pot and then they should be dried thoroughly and will keep indefinitely. The object of this treatment is to kill all spores of mould or fungus which is apt to develop while the oats are sprouting.

To sprout the oats allow them to soak in warm water (70 degrees) for thirty-six hours, after which spread them out about one inch thick on the movable shelves of the rack, sprinkling them every day with warm water and keeping the rack in a room where the temperature is between sixty and seventy degrees, for the most rapid growth. It is advisable to start one shelf each day, in that way a continuous supply will be available. When feeding the sprouted oats, one square inch per bird per day should be allowed. Under ordinary conditions it will take about seven days to get a three-inch sprout.

It must be remembered that some form of succulent feed is very desirable and that sprouted oats offer one of the best and most economical ways to supply same. Succulence in the ration not only increase the digestibility of the other food materials fed, but also increases the palatibility of the ration as well as offering a means of getting a large amount of water into the bird's body which would be possible in no other way. The large amount of water necessary is shown by the following table.

FEEDING.

An abundance of the food best suited to produce the greatest vigor of the reproductive system is necessary. This applies more especially to hens kept in the best possible health. Other things being equal, suitable food, properly fed, has much to do with egg production. The kind of food determines, to a large extent, the character of the product; therefore there must be a close relationship between the food consumed and the product desired.

TABLE NO. 1.

RAW MATERIAL OR FOOD.

	Water.	*Ash.*	*Protein.*	*Carbo-hydrates plus fat × 2¼.*
Corn,	11.0	1.5	7.9	76.4
Oats,	11.0	3.0	9.2	56.8
Meat scraps,	10.7	4.1	66.2	31.1
Green clover,	71.0	2.1	2.9	16.4

FINISHED PRODUCTS.

				Fat %.
Hen,	54.8	3.8	21.6	17.0
Pullet,	55.4	3.4	21.2	18.0
Capon,	41.6	3.7	19.4	33.9
Fresh egg,	65.7	12.2	11.4	8.9

Note the relatively high proportion of protein in the finished product. This explains why we cannot expect a large yield of eggs from an exclusive corn diet, and why other foods besides corn must be fed to mature a pullet into good laying condition.

The following ration is especially adapted for the feeding of laying hens during the winter:

MIXTURE NO I.—DRY MASH.

Kind of Food.	*Pounds.*	*Protein.*	*C. H. + fat.*	*Cost.*
Bran,	200	24.0	92.0	$3.00
Middlings,	200	25.0	116.0	3.06
Ground oats,	200	18.4	114.0	3.60
Corn meal,	100	6.3	71.0	1.42
Gluten,	100	32.1	47.0	1.73
Meat scraps,	100	58.0	82.3	3.10
Alfalfa,	100	14.3	48.2	2.20
Total,	1000	178.1	570.5	$18.11

Nutritive ratio equals one to three and two-tenths.

Keep this mash always before the birds in self-feeding hoppers. During the moulting period substitute oil meal for the gluten in the same proportion to hasten the growth of feathers. When the birds are on green food the alfalfa may be omitted; clover leaves may take its place at any time.

MIXTURE NO. II.

Kind of Food.	*Pounds.*	*Protein.*	*C. H. + fat.*	*Cost.*
Wheat,	100	11.9	74.4	$2.05
Oats,	100	9.2	57.0	1.80
Total,	200	21.1	131.4	$3.85

Nutritive ratio equals one to six and two-tenths.

Feed this ration at ten A. M. at the rate of five pounds to each 100 birds. This should be fed in a scratching shed or building where the litter is deep and dry and where the birds are protected from cold winds. The main function of this ration, besides the nutritive value, is to cause the birds to exercise.

MIXTURE NO. III.

Kind of Food.	*Pounds.*	*Protein.*	*C. H. + fat.*	*Cost.*
Cracked corn,	200	12.6	142.0	$2.90
Wheat,	100	11.9	74.4	2.05
Oats,	100	9.2	57.0	1.80
Buckwheat,	100	10.0	70.0	2.00
Total,	500	43.7	343.4	$8.75

Nutritive ratio is one to seven and eight-tenths.

Feed in deep litter at four P. M. ten pounds to every 100 birds. The object of this feeding is mainly to give the birds a food suitable to furnish heat for the body during the night.

Twenty birds, or 100-pound live weight, will receive, if fed the preceding ration, the following food nutrients per day:

Lbs. Feed.	*Protein.*	*C. H. + fat.*	*Cost.*
8.0	1.1	4.87	$0.14

It must be remembered in feeding that there is no best ration for all conditions, and that accurate amounts of any ration cannot be given beforehand, but that the feeder must use his judgement; a good rule being to feed the birds all they will eat up quickly, at least never to leave any lying around on the ground.

Coarse grit, shell and charcoal must be kept before the birds all the time. Also an abundance of fresh pure water.

MARKETING.

When one has succeeded in producing the products, his entire profits are not yet secure, and it rests largely with the producer how large he is going to make them. It is important to remember that a good product sells itself, if properly handled, sorted and packed in neat packages for shipment.

The following facts should always be borne in mind when shipping eggs:

I. Study your market and know how and where the best prices can be obtained.

II. Much anxiety and misunderstanding is avoided by having a fixed price for the year; this may be based on:

a. A certain price per dozen delivered daily, weekly, etc.

b. A certain per cent. above the market quotations for a superior product.

c. A fixed price per dozen for the various months.

III. A neat package is an excellent investment. The one-dozen carton, designed to fit the 30-dozen cases, make the best. These can be purchased, printing included, for from $6.00 to $8.00 per 1,000. *Figure 8.*

IV. A neatly stenciled crate is a guarantee of good quality within.

V. All eggs packed for shipment should be spotlessly clean.

VI. A careful grading of all eggs according to size and color will always pay.

VII. Cleaning, crating and packing must be done at a regular place and time, and done each time with the same amount of care.

VIII. The extra care and skill in packing eggs and poultry for market will always bring a large increase in selling price.

In order to determine the actual increase in price paid to the producer for care in marketing, the following shipments were made during the last week in February to a wholesale house in New York. The following table will describe the products and packages and also gives prices received for same:

No. I. One ordinary light weight case mixed eggs, brown and white, not washed or sorted according to size. Price realized per dozen was $0.27.

No. II. One heavy re-inforced crate with lock; eggs all brown in color, washed and assorted to size by eliminating all which were exceedingly small or large. Each dozen eggs was packed in guaranteed cartons. Price realized per dozen was $0.30.

No. III. One heavy, re-inforced crate with lock; eggs all clear white in color, washed and assorted to size similar to crate No. II. Each dozen eggs was packed in guaranteed cartons, as was crate No. II. Price realized per dozen was $0.34. *Figures 9, 10 and 11.*

The cartons in the above experiment cost $7.00 per thousand, and allowing one cent per dozen for time spent in sorting and packing, and one-half cent for the extra cost of remodeling crate, we find an extra cost per dozen for improved method of marketing of $0.022. All of the above allowances are very high, so that under average farm conditions it would be much lower.

A small shipper, who markets two cases of eggs per week, would clear the following extra amount from his eggs if the above method of marketing was followed.

Two cases of eggs mixed, at $0.27 equals $16.20.

The same eggs sorted to size and color and washed would show the following values:

One case, browns, in individual cartons, at $0.30 equals, ...	$9 00
One case, whites, in individual cartons, at $0.34 equals, ...	10 20
Total, ...	$19 20
Less $1.32 for increased cost, ...	1 32
	$17 98
Less value received for shipping in bulk, ...	16 20
Total profits for improved methods (or three cents per dozen),	$1 78

This three cents would give to the shipper interest on the lower price of over eleven per cent. How could we better invest our time?

Always bear in mind that the extra price per dozen which is paid for appearance and quality is one hundred per cent. clear gain.

The Chairman—I am sure that we have all of us enjoyed very much the lecture given by Prof. Lewis, and we all of us hope in the near future to see New Jersey properly equipped with a poultry plant at our experiment station.

Secretary Dye—I hope we will all unite in trying to correct the condition which compels the Agricultural College to turn applicants away who are coming for instruction. As I said in my report to-day, people are asking for instruction how to do things and we are not able to supply it. Let us have a poultry addition at the State College, so that every one who wants to

Figure 8.—Desirable types of cartons, which offers the best method of shipping guaranteed eggs to any market.

Figure 9.—The New Jersey State Carton. The cost and use of which is explained above. This is the best type of carton which we have been able to find after trying over ten styles. It is quickly and easily fastened together and loss from broken eggs is reduced to a minimum.

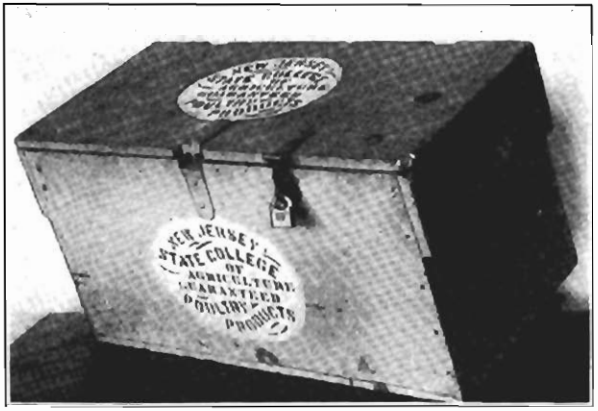


Figure 10.—Type of case which was used in the above experiment and which brought the increased price for care in marketing. Note the small lock which makes it impossible to change the eggs in the case

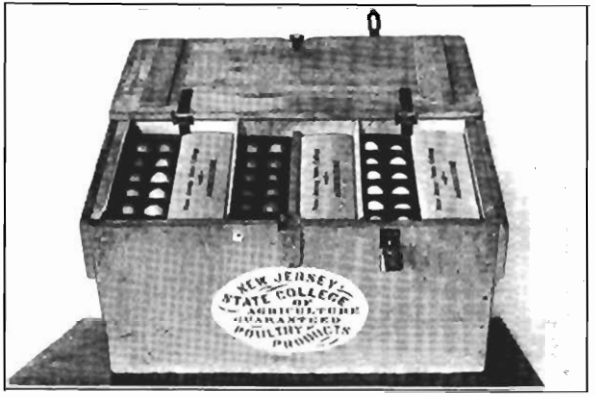


Figure 11.—Reinforced crate showing the way the cartons fit in without the use of paste-board fillers. In the above crate there were fifteen dozen brown eggs and fifteen dozen white ones, which is a very desirable way to ship if a mixed lot of eggs are produced. Each carton itself

go there and get a knowledge of it can get it. And so on every line; let us try to expand and increase New Jersey products.

An adjournment was taken till Thursday morning, January 19th, 1910, at 9:30 o'clock.

SECOND DAY—FOURTH SESSION.

Mr. Gaunt in the chair.

If there is any unfinished business at this time we will take it up.

Any new business or resolutions for reference would be in order; is any committee ready to report?

Mr. Heritage—On behalf of the Auditing Committee we wish to report that we have examined the Treasurer's accounts and find them correct. The report of the Auditing Committee was adopted.

The Chairman—Any other committees ready to report or anything to bring before the Board?

Secretary Dye—It quite frequently happens, gentlemen, towards the last of the session, that we are crowded for time. If you have all got your thinking caps on you will bring up something for this morning worthy of discussion.

Dr. Lipman—We have been discussing, among the farmers of this State, the lime question to a great extent. There is a good deal of demand made on the station for advice as to the kind of lime and where to get it and what to pay for it. The interest in liming seems to be growing more and more, which is but natural in any country that is growing older, and whose need for lime is greater. And we feel that we are not getting satisfactory transportation rates on lime and that this is, to a great extent, a serious question. To cite an example, in Illinois they get ground lime in the cars at sixty cents per ton. We, on our part, have not been able to buy ground limestone at a reasonable price. And furthermore, we think that the freight rates on

ground limestone are entirely too high. This is a matter, perhaps, for the Interstate Commerce Commission to consider; or for the farmers of the State to consider, and then to bring up before the Interstate Commerce Commission. But there is no doubt that there is no justification for the rate that exists on ground limestone. There is an excuse, as I can see it for relatively higher rates on burned lime, because the railroad companies cannot ship quicklime in open cars. We understand that. But as far as ground limestone is concerned, wetting does not injure the product, and there is nothing inflammable about it. It can be shipped in open cars, hence the rates should be a good deal lower than they are. I am not offering a resolution, but I think it is proper to state in this place that the farmers of New Jersey, and the farmers of the east, ought to make an organized effort to get better rates on ground limestone. As far as the railroads are concerned it would be not only a generous policy, but a profitable policy to them; and I feel that the more ground limestone they transport to the land the more freight in the shape of crops they will transport back to the market.

The Chairman—Is there any question to ask the speaker? It is a very timely suggestion that Dr. Lipman has made, one that New Jersey especially should be vitally interested in.

Mr. Roe—I would like to ask Dr. Lipman if he considers ground limestone very much superior to the stone lime, as we call it.

Dr. Lipman—No, I do not consider ground limestone superior to stone line for some purposes. I do consider it superior for other purposes. If the land is acid, ground limestone will not neutralize the acid as quickly as will stone lime, properly slaked. On the other hand it has advantages that the other has not. We know that, in the lighter soils, burned lime has eaten out the humus and we feel that it is detrimental. In other words, quicklime will encourage the burning out of the humus faster than is necessary in the open soils, and for that reason ground limestone is preferable for those soils. And then, again, ground limestone has an advantage in some soils in that it can be distributed more cheaply and with greater facility. We use an ordinary ground

limestone in the fertilizer distributor, set it for a certain amount per acre and go over our fields and it is done, and there is no dust. We fix it so it is delivered close to the ground, with an oilcloth or canvas or something like that over it, and it does not blow at all. This is a simple process as compared with the hauling and slaking of stone lime.

A Delegate—I come from the northern part of the State where we have a heavy clay soil. In that case would you consider that ground limestone was the best?

Dr. Lipman—Yes, if sufficient amounts are used ground limestone would prove entirely satisfactory. But, if the soil had been neglected for a number of years and has become strongly acid I would prefer using quicklime, properly slaked.

The Delegate—We can get it more cheaply than we can ground lime.

Dr. Lipman—That is the reason why I raised this question, it is because under present conditions ground limestone is too expensive.

Mr. Diament—I would like to ask Dr. Lipman what is the value of quicklime after it becomes air slaked compared with ground limestone?

Dr. Lipman—It is superior to ground limestone because it is finer. Pound for pound it is the same thing. That is, quicklime, after it is thoroughly air slaked goes back to the ground limestone form and falls to a fine powder, which is much finer than we could make it by mere grinding. In that sense it is superior, mechanically, not chemically.

Mr. Roe—Do you consider that ground limestone deteriorates, if its use is delayed long enough, by changing to a rather sticky form?

Dr. Lipman—No, sir; ground limestone, chemically, does not change on exposure. If it does cake in storage it is very easy to powder it again by pounding. It is not injured in any way by being wetted.

Mr. Darnell—Do we get much benefit from ground limestone? Is it slower acting?

Dr. Lipman—Yes, it is slower in its action, especially on the heavier lands. It does not act there so quickly.

Mr. Darnell—Is there much practical good from it the first year?

Dr. Lipman—Yes, I could show you plots at the College Farm, alfalfa plots, that had not been cultivated for thirty or forty years. We applied to this land just one ton of ground limestone to the acre. The treatment in every other way was the same, yet where we left out that one ton of ground limestone the alfalfa gradually disappeared. Where we put on that ton of ground limestone the alfalfa is still good, after three years, even though no special effort was made to get a stand in the first place.

Mr. Haines—You say this is the fourth year. Did you see any better condition in the soil the second or third year than in the first, which went to show that you did not get the full benefit of the lime during the first year? Was there any difference in the second and third year?

Dr. Lipman—No, I see the point you are trying to make. There is a belief, of course, reflected in the literature of the old countries—England, Scotland and Germany—that lime does not give the best results in the first year. But this depends on the soil. If the soil is acid and enough lime is used and properly distributed we see results at once, from even very small applications. But with alfalfa, I cannot see that the second year's crop is better than the first year's crop, and I will tell you why. The stand of alfalfa that we secured was good, but it began to deteriorate because grass was crowding out the alfalfa. You must remember that the land had not been cultivated for thirty or forty years and had not been prepared as it should have been prepared by previous cropping. We simply tried that experiment and brought out the point we wanted to make. And for that reason the crop has not been better in the second year, but it was good, nevertheless. It will add this much: in our rotations with different crops, we find that the lime in the first year did not show on oats, but in the following year showed on corn. In the third year when we grew rye and wheat it showed on the

rye, but not as much on the wheat. Then we put in vetch and the lime showed in the vetch. Generally speaking, vetch or any other legume showed the effect of the lime, at once, whereas, under the same conditions the cereals did not show at all, or to a slight extent only.

Mr. Crane—I wish to ask Dr. Lipman whether in top dressing alfalfa sod, where the alfalfa has not turned out very well, would you use the ground limestone or quicklime? I wish to give a top dressing of lime and then plow it under. Which would you use?

Dr. Lipman—I should prefer the slaked lime, because it is cheaper. I know that you can buy burned lime from Hamburg, delivered at $4, $4.50 per ton. On the other hand, the cheapest ground limestone, delivered at your station, would cost $3.50 per ton; however, you might be able to secure ground oyster shell from Jersey City, delivered at $3.00 per ton. Even at this price the burned lime would be somewhat cheaper, since two tons of ground limestone or of oyster shell may be regarded as equivalent to one ton of burned lime.

Mr. Crane—We have been trying to get our people in Morris to furnish this ground limestone, but they want about $6.50 per ton, which we think is too much.

Dr. Lipman—We took it up with Mr. Edison before Dr. Voorhees became ill. Mr. Edison seemed to think that he could utilize his cement grinding machinery at certain times of the year for making ground limestone. We advised him that a flat rate of $2.50 for ground limestone delivered at any point in New Jersey would create enough of a demand to enable him to market the product at a profit.

Mr. Denise—May I ask one question? Is ground oyster shell more valuable than ground limestone?

Dr. Lipman—Ground oyster shell is preferable to ground limestone, not only because it is a pure form of lime, but also because it contains small amounts of phosphoric acid and of nitrogen. As to ground limestone itself, we recognize two classes, magnesian and non-magnesian, the former correspond-

ing to blue limestone, the latter to white marble limestone. One is probably as good as the other for most soils, except where the land is quite light in character. In this case, ground oyster shell or ground non-magnesian lime should be preferred.

A Delegate—Do you consider the Hamburg better than the Portland lime?

Dr. Lipman—No, sir; I do not.

The Delegate—Portland lime may be had in the northern part of the State. I have used Portland lime. We can buy Portland lime f. o. b. at $2.25 and the freight rate is $1.

Dr. Lipman—I confess that I was rather surprised on hearing the opinions of some Sussex county farmers on different grades of lime. You may not be aware of the fact that we are making a soil and agricultural survey of this county, and that we have already gathered thirteen hundred reports. Well, in this survey we are asking questions about lime. One farmer said, "We would rather pay for the long haul on Portland lime than get it from the Jersey Lime Company, at Hamburg, and haul it a short distance to our farms." I said, "That is prejudice." Even though I knew that there are sections abroad where magnesian lime gives better results than non-magnesion. But after half a dozen people told me, the same I thought there must be something in it. I do not profess to know what the reason is, but I know that in some soils magnesian lime gives better results, while in others non-magnesian lime gives better results. In Sussex county there is a prejudice against non-magnesian lime and the farmers there would rather pay more for the magnesian lime. I asked, "What is the reason? Why do you object to the Hamburg lime?" Some of them seemed to think it burns the vegetable matter out of the soil too fast, and that it acts too quickly. If that were the only objection I would say use less. Again, in Sussex county some of the farmers have lime resources that are almost inexhaustible and I have been surprised that these are not utilized. There are numerous areas in the county of black muck soil underlaid by shell marl. This marl contains seventy-five per cent., or more, of carbonate of lime—splendid

lime that is to be had for the digging. Still they buy lime and haul it three or four miles from the station. I never could understand that.

A Delegate—Do you advise broadcasting lime on a fair stand of alfalfa?

Dr. Lipman—Yes, in a fair season I should want to broadcast it in the fall; early in the fall. I do not see any objection to spreading lime on the snow, provided your land is not too steep, so that when the snow melts it will not be washed off. Where the land is reasonably level the lime may be put on at any time in the winter or early spring or late fall.

Secretary Dye—Having heard of the sickness of our Worthy Brother and Vice-President John T. Cox, Resolved, that this State Board of Agriculture now in session extends to him our sincere sympathy, expressing the hope that he will soon be restored to health and be able to resume his work in this Board and in other ways for the farmers of the State. I offer that resolution, and, if it is adopted, we will have a copy sent right away to Brother Cox.

The resolution was adopted.

The Chairman—That brings us to the next subject on the program, "New Jersey Soils in Their Relation to Fertility and Crop Production," by Dr. J. G. Lipman.

Dr. J. G. Lipman's Address.

Permanent agriculture is a term that is heard rather frequently nowadays in the grain-growing sections of the United States, and if this term indicates anything at all, it indicates that the farmers of the middle west and the farmers of the northwest are beginning to look into the future; are beginning to look a hundred years ahead; to look, perhaps, two or three hundred years ahead. They are beginning to take stock of their resources; they are making soil surveys, in order to find out what their soils contain. They are determining how much the different crops are taking out, so that they may tell how long their soils will last. And that is, gentlemen, a new departure, it seems to me, in American agriculture—this taking thought of to-morrow and of the one hundred years after our one hundred years. It is a very encouraging sign, because in the nature of things we shall have to pass through the experience through which the people of Europe have passed.

The history of soils in Europe, as we find it, is the history of soils in their prime; the history of soils in their decline, and finally, the history of many years of famine and of half rations. But, as we read further we find it to be, also, a history of rebuilding and regeneration. As I have said, on occasions, to students in my classes, the immortality of the soil (if our reverend friends will permit the comparison) is, in its way, as fit a subject for profound

study as is the subject of the immortality of the soul. Soils, if properly treated, are immortal; and because we of the east are older; because our soils have been under cultivation for a longer time, we are already forced to think of the immortality of the soil; that is, we must take stock and see what we may do in order not only to raise large crops, but to leave the soil still fertile for those who may come after us. In following out the soil work in New Jersey, we have been making soil surveys and looking at it from the standpoint of permanent agriculture. And, in taking samples of the so-called depleted, so-called exhausted soils of Sussex and Warren and Morris counties, and parts of Hunterdon, we have been surprised at the enormous amount of plant food stored up in them. We have been surprised to find that larger crops are not raised on those soils. Now, we understand why they are not raised; for all that it seems strange, at times, that within hailing distance from the greatest market in the east there has not been more progress made in maintaining the soils in the northern part and in the middle part of New Jersey at a higher level of productive power. And in taking stock according to our chemical analyses of the soils of North Jersey and Middle Jersey, we find that the great problem that confronts the farmers of the State is not so much that of plant food, but of soil treatment; of new methods of cropping and of the introduction of new crops.

You will appreciate this view of the case if you will remember that after all, the heavy soils of North Jersey and Middle Jersey are naturally adapted to the growing of general farm crops, of forage crops for the dairy, possibly, also, for beef cattle. Beyond that we have limited areas and limited industries, and in thinking of the future of those soils we have to remember the general crops and the forage crops for the dairy and for livestock. And, therefore, we are confronted by a problem that is not so easy to solve. For one thing, the farmers in that part of the State cannot afford to spend much money for fertilizer. Taking, for instance, the data contained in the 1,300 reports that we have gathered in Sussex county, we find the farmers of the county pretty well agreed that it costs from $17 to $18 per acre to produce a crop of corn. (We have figures as low as $15 and figures that run up as high as $25 per acre.) This is not an excessive figure when proper allowance is made for the seed, the cultivation, possibly a little fertilizer that is used and the harvesting and husking.

If we allow something for the interest on the investment (we ought to do that, if land is worth $60 an acre there is something to be added to this $17 or $18 an acre) and take the average income per acre of corn in New Jersey, at $20 or $21 or even $22, how much profit is there? And yet corn is a relatively profitable crop.

When we come to raising oats, in so far as we can see the farmers of New Jersey, Northern and Middle Jersey, are raising this crop at a loss. They are not only not making a profit, but are losing $2 or $3 per acre every year.

When it comes to raising wheat they come out about even, on an average; that is, taking the poor and the good as they run. Now, how much fertilizer can farmers in New Jersey afford to buy for their crops of corn and hay in those sections where general farming is pursued?

Such is the problem. But, fortunately, as I said, these soils are well stocked with plant food, so that it is only a question, if it is a question at all, of lime, and we have to use lime in order to maintain those soils, something that would start the fermentation in the soil, that would transform this great supply of insoluble plant food into available plant food. Now, of course, you will not misunderstand me. I am not advocating this system for the naturally poor soils; if it is not there we cannot take it out. But those soils that have three per cent. of potash in them, as we find them in some of the soils of northern New Jersey, are in no danger of exhaustion. Moreover, in soils that are gently rolling, the surface soil is slowly removed by surface washing, and more of it is formed from the underlying subsoil. In other words, fresh soil is gradually taking the place of partly depleted soil. So as I look at it, if we can get enough vegetable matter to make available this inexhaustible source of potash, it is legitimate enough to use it. I do not see any justification for buying much potash under such conditions.

In the soils of parts of Hunterdon and Morris, also Sussex counties, the quantity of phosphoric acid is very high, sometimes as much as a quarter of one per cent., and therefore, while I would not advocate the leaving out entirely of phosphatic fertilizers, I would suggest that they be used in amounts sufficient to maintain the fertility of the land.

Hence the fertilizer question for Middle and Northern New Jersey resolves itself into the use of lime and of phosphoric acid, whether the latter be added in the form of acid phosphate, basic-slag or bone meal.

In trying to solve the problem of soil fertility, we come back thus to the secret that lies at the bottom of quality in plant food. Vast amounts of plant food are present in those soils, yet the crops fail, somehow, to utilize it. But the student of soils knows that it is the fermenting vegetable matter in the soil that makes possible the transformation of unavailable into available plant food. The soils in Middle and Northern New Jersey have declined in their fertility because the proper amount of vegetable matter is not maintained in them. To be restored again to greater productivity they must be so treated as to allow them to become richer in fresh vegetable matter. Simple and inexpensive methods may be employed for this purpose; methods within the reach of every farmer. For instance, he can grow his corn as he pleases, as he has grown it before, only instead of leaving the soil bare he should provide for a cover crop, for something to be plowed under in the following spring. This is a matter that is familiar to all of you, and I do not care to discuss it further. I should be pleased to give you that information in full if you care for it. I should merely add here that the young men who are doing our survey work, when they ask, "Do you use any cover crops?", say the answer is almost invariably "No, we know we ought to, but we don't." "Do you put in winter vetch to be plowed under for the oats?" "No, we ought to, but we don't." "Do you raise cow peas in the summer?" "Do you use lime for your clover?" "Well, we know we ought to, but we don't." "Here is a soil that we have cultivated for twenty-five years and we know it is sour. The hay crop does not amount to much, and we know that we ought to use lime, but we don't."

So here is a problem for the individual farmer to solve, and meetings like this should help him to solve it; even when three or four farmers get together they do better than when left to themselves. The problem of North Jersey and Middle Jersey is confied largely to the production of crops of low commercial value, like grain and grass, rather than of crops of high commercial value, like potatoes, asparagus or celery. Therefore, if these soils are to be maintained fertile they will have to be maintained with the expenditure of hardly more than $3 or $4 per acre for fertilizer. Perhaps, that is as far as the farmer can go. And because that is his usual limit, the economic limit that he should not pass, he is bound either to find new methods of raising the old crops, or the introduction of new crops, if these soils are to maintain their value.

Now, just a few words as to crops. You know, no doubt, that in the western part of New York State the farmers raise as much as thirty or forty bushels of beans per acre. There was a time when more beans were raised in New Jersey. We understand, of course, that in any section a certain crop may come in and become important until insect enemies and plant disease render its production unprofitable. It is then abandoned. We know of places in New Jersey where strawberries were once raised in large quantities, but they are no longer raised there now. We know of areas where sweet potatoes were once raised, but are not raised now, and we know of sections where peaches, once so profitable, have ceased to be a crop of commercial importance. Such crops are no longer produced in these sections.

Again, we find that for a series of years certain crops are abandoned and then the difficulty disappears and they are taken up again. For this reason, I feel that a better knowledge of the needs of the soils of Sussex and Warren counties will enable us to go back to the production of beans on a commercial scale. Surely we could grow them to advantage in the limestone valleys, and I think they are a crop deserving of your consideration.

There is another crop that, within the last half dozen years or so, has attracted the attention of investigators and farmers. I am referring to soy beans, whose export from Japan to Europe has increased wonderfully. The people in Japan, China and Manchuria raise soy beans in great quantities, and utilize them in many ways. For one thing, we know that every one hundred pounds of beans contain twenty pounds of oil. If that oil be expressed and clarified it becomes a good edible oil. It is a semi-drying oil and therefore a partial substitute for the now costly linseed oil. It is of value in many industries, above all in the making of soap; furthermore, after the removal of the oil the residual oil cake is as rich in protein as the best cottonseed meal and, in my opinion, is a safer and more desirable cattle food than the latter.

Now, you will find that at prevailing prices you could get $1.60 or $1.75 a bushel for soy beans, selling them on a large scale. I do not see why a grange or an individual could not establish a filter press, just as canning factories are established, and make contracts with the farmers to deliver soy beans at so much per bushel—let us say at $1.50, $1.60, $1.75 or $2 per bushel. The farmers would be under contract to raise so many acres of the soy beans, and to deliver them at a specified price. This would be quite feasible, since there is a practically unlimited demand for both oil and cake. In Japan they make cheese and milk, brandy, and many other foods and beverages out of it. When compared with cow peas, soy beans have many advantages. Cow peas cannot be sowed advantageously, because of the cost of gathering the seed that ripens unevenly and involves expensive hand picking. Cow peas contain twenty or twenty-five per cent. of protein, while soy beans contain thirty to thirty-five per cent.; cow peas contain less than three per cent. of fat, while soy beans contain twenty per cent. of fat.

Looking into the future of these heavy soils, we realize the possibilities of new crops like soy beans, crops that would increase the profits from general farming under extensive methods. Still, another crop that promises much to New Jersey soils is alfalfa. This crop is no longer a stranger among us, and it has come to stay. Within the past year a thousand acres were added to the alfalfa area of the State, and unless I am greatly mistaken, this area will be extending from now on at rate of two or three thousand acres per annum. And when alfalfa and soy beans and clover are raised on every farm in New Jersey, the nitrogen and humus problem will be solved, and with it the soil fertility problem.

I was impressed last week when I spoke at Purdue University, before the corn growers of Indiana. Mr. Joseph Wing, who has been here (and who also spoke), told one of his stories. He related how he raised 5,000 bushels of shelled corn on fifty acres, that is, an average of one hundred bushels of shelled corn per acre for fifty acres. This field had been in alfalfa for four or five years, and had produced enormous quantities of hay. One day, while the men were hauling the hay off the field, his mother became visibly agitated. "Son," she said to him, "I am afraid you are ruining that land. Look at the enormous amount of stuff you are taking off the land. I am afraid you are doing the wrong thing." "Mother," Wing answered, I think I am right, but we shall see. I expect to plow under that alfalfa stubble and the corn crop ought to show." "Now," continued Wing, in telling his story, "I had dreamed of raising one hundred bushels of shelled corn to the acre, perhaps, on half an acre or an acre; but, when it came to raising one hundred bushels of shelled corn to the acre on a single field of fifty acres, I never thought we could do it. Yet, we had five thousand bushels of corn off that one piece." This story, gentlemen, is about as striking a lesson as we need to seek as to what alfalfa will do and what other leguminous crops will do. After all, the average heavy soil is fertile, and, therefore, the raising of abundant harvests on them is largely a question of nitrogen, and of humus.

But I do not want to say much more about that, because I feel that I should not be taking more time than is alloted to me. But just this word by way of emphasis—we must either introduce new crops or we must learn to raise the old crops in a new way, if we are to bring those soils back

to their former productive ability to raise large crops. It is safe to predict that many acres, celebrated many years ago for their productive power, will again come into their own.

Then we have another problem in soil fertility, a problem that I would designate as soil building. The light clay and sandy loams of South Jersey or Middle Jersey, the stretches of lean sand along the coast, have but little to offer to crops growing upon them. The fertility that they can acquire, the fertility that they often do acquire, is an artificial, rather than a natural, fertility. If those soils are to be productive, we must restore to a geat extent what we take out. To me, personally, it has been very instructive to watch the progress of agriculture in New Jersey, the process of soil building, as it has been going on in the southern part of the State, or along the coast of Middle Jersey. We hear so much of soil depletion, and some of the pessimists among us will tell us how we are ruining the heritage of the future generations, that it is rather refreshing to see how in our State, over there along the coast, they are taking practically barren, sandy soils and building them up. There, of course, the building process involves the introduction of plant food, the adding of something to the soil that the soil has not. Economically, this is justifiable, because the crops that they raise in southern Jersey are, to a great extent, crops of high commercial value. For instance, the growing of asparagus in sections of Monmouth, or of round potatoes, or early tomatoes, in parts of Gloucester county shows how farmers can afford to use a large amount of plant food, amounts larger than those removed by the crop. Just what these amounts may be you can readily compute from average analyses, as they are given in bulletins and books on the composition of plants and fertilizers. If you are unable to find these analyses, I should be pleased to supply you with details showing what different crops take out. In making such calculations you will find that the farmers of South Jersey have been making progress and building up their farms, and in putting into much more plant food than they are taking out. Surely, they are putting in more phosphoric acid than they are taking out, and as much potash as they are taking out. They are not putting in as much nitrogen as they are taking out, and they ought not to, because nitrogen should be gotten from the air by means of clover and other legumes, as is being done to a marked extent by intelligent farmers. Yet even these are not making use of legumes in New Jersey to the full extent. I know that many of even the most progressive farmers of the State are guilty of wasting enormous amounts of nitrogen. It startles one to think that farmers, who are paying twenty cents a pound for nitrogen, of which the soil is in need, will yet raise wheat or rye in their corn, when they might just as well raise winter vetch. So many of them will expose great masses of barnyard manure to the leaching action of rain, and deprive themselves of precious nitrogen compounds, and will then purchase nitrogen in commercial fertilizers at twenty cents a pound.

Hence, while the progressive farmers are adding plant food for building up, for increasing the productive power of their land, they are not making the fullest use of the knowledge that they have, or the knowledge that they could get, for building up their soils more economically.

Then, again, also in South Jersey the introduction of new crops is a vital question. The sweet potato growers in southern Jersey have not been doing, in the last two years, as well as formerly. Prices have been unsatisfactory and the fungus diseases and other pests have been troubling the farmers, and, because sweet potatoes are the money crop, many of them are in a bad way financially. I feel that the time has come for them to introduce new crops, if they are to maintain the prosperity that was theirs in the past.

Soy beans would do as well for South Jersey as for North Jersey. Alfalfa would do just as well for South Jersey as for North Jersey, even though a good many of those soils are light. We showed, some years ago, in our experiments at Hammonton, that we could work out a rotation of

forage crops that was not only profitable, but capable of rapidly building up the soil at a small cost. If you have copies of Bulletin No. 211, of our Station, you will see how the land improved under that system of raising soiling crops for milch cows. I should add here that the dairy industry in certain sections of South Jersey is bound to grow, even though the soils be light, for there are splendid local markets along the shore.

Then, again, a few words as to fertilizers—in providing for the maintenance of the fertility of soils, whether they be poor or rich, fertilizers are used. And the farmers of New Jersey, as nearly as I can estimate, will probably purchase, in the year 1911, approximately 150,000 tons of commercial fertilizer. Of these 150,000 tons of fertilizer, at least 100,000 tons will be mixed goods. Now, I am not opposed, of course, to mixed fertilizers, or so-called complete fertilizers. I have felt for a long time that the man who uses ready mixed fertilizer, and buys a certain brand of goods by the brand name, is not getting out of that fertilizer what he ought to get, is not deriving from his use of commercial fertilizer the instruction that he should gain.

What I mean to say, gentlemen, is this: You can buy a brand of fertilizer, let us say, from the American Agricultural Chemical Company. Granting that this and other companies are trying to keep within the requirements of the law; that they are trying to give you high-class material, high-class plant food, and that it is in their interest to do that, it still remains true that the man who depends on somebody else to tell him what his soil needs will never learn to know what his crops and soil require. I regard the educational feature in the use of fertilizer the greatest factor in the progress of our knowledge of soil fertility. Gentlemen, you cannot take care of the soils of New Jersey unless you learn to know something more about what the crops take out, and what the crops leave in the soil, or what your fertilizer adds and what it does not add. And I do not see how you can learn when you are buying a *3-8-5* or a *2-8-2* or a *4-8-10*, or whatever it may be; I do not see how you can learn to know the needs of your soil unless you make up your own combinations.

Now, the fertilizer agent, according to the light that has been given him, and the fertilizer company, will sell you a 4-8-10 when you ask him for a high-grade potato fertilizer. And it is a high-grade fertilizer, I take it. But does the fertilizer company or their agent know whether you applied a heavy dressing of manure; whether you applied it on crimson clover, or wheat; whether it is rich in nitrogen or poor in nitrogen? How can any man that does not know fix a balanced food for your soil? I leave that to you.

I do not wish to be understood as finding fault with any company that sells high-grade fertilizer, but I feel that we are here to discuss progress, and we cannot make progress in our knowledge of soil and soil fertility unless we know more about plant food and its use in different soils and with different crops and rotations.

Now, let me explain this. We know that over large areas in New Jersey phosphoric acid is deficient; that is, phosphoric acid is the limiting factor in production. In the course of years of experience the 2-8-2 fertilizer has come to be a popular fertilizer in grain-growing sections in the red shale area of New Jersey.

Now, how many pounds do the farmers use of this 2-8-2 fertilizer? I found some that used as little as 150 pounds per acre. But, for the sake of argument, let us assume that the average is 300 pounds per acre. Under such conditions what does the farmer in the vicinity of Millstone add to the soil with his 300 pounds of 2-8-2 fertilizers? He adds to the soil six pounds of nitrogen, twenty-four pounds of phosphoric acid and six pounds of potash. What does he take out? Let us assume he has a crop of twenty bushels of wheat and straw in proportion; what will that take out? It will take out possibly twenty-five or thirty pounds of nitrogen. He puts in, therefore, just one-fifth of the nitrogen he takes out. What does he take out of phosphoric acid? Sixteen or seventeen pounds. He puts in more

than he takes out. What does he take out in potash? Possibly thirty-five pounds. He puts in six. Now, so far as I can see, he might just as well leave out the potash entirely. If he has enough vegetable matter in his soil no additions of potash should be required. As far as nitrogen is concerned he is not adding very much. If it is a 2-8-2, gentlemen, the chances are that the nitrogen is of inferior quality. One does not get high-grade nitrogen in 2-8-2, and any fertilizer bulletin will prove this contention. By growing a little winter vetch and plowing it under, even as early as the first part of April, much more nitrogen may be secured and at a smaller cost. Indeed, as much as sixty or seventy pounds of nitrogen, and often much more, may thus be added to every acre of land by a single cover crop.

You will admit that we are not using fertilizers as we should, and I would make this appeal to you who are using fertilizers, get the ingredients for yourselves and see what each constituent will do. But take no man's word for it, because one man's soil is not the same as another man's soil. Many years of cropping have modified our soils so that one field across a fence is different from the soil on the other side; these differences having been introduced by many years of cropping and varying methods of rotation and manuring.

Take the phosphoric acid question. There are many arguments concerning it in the agricultural papers—you will find it discussed almost every day. I receive, constantly, a great many letters that ask, "Shall we use basic-slag? Shall we use ground phosphate rock? Shall we use bone meal? Shall we use acid phosphate?" Acid phosphate, we are told, helps to make the soil sour; that is not a very serious matter, because lime is available almost everywhere and does not cost very much. And if I can satisfy myself that acid phosphate, under the present conditions, is the best and cheapest form of phosphoric acid I will use it.

But still there are people who are importing basic-slag into this country. The farmers of Europe are using two and a half million tons of it, and for them it is the cheapest source of phosphoric acid. They have not the deposits of phosphate rock that we possess, and they are fortunate in being able to secure those large quantities of basic-slag. Yet, even in this country there may be conditions where basic-slag could be used to advantage. I know of sections in Massachusetts where lime costs about $10 a ton. In Maine there are places where lime cannot be had at a reasonable price. Now, the Coe-Mortimer Company, I am told, has offered to sell basic-slag, delivered at points in Maine, for $16 to $18 a ton. Under such conditions basic-slag may be a cheaper source of phosphoric acid than acid phosphate, especially for soils that are strongly acid.

Now, as to bone meal. Some farmers have a prejudice in favor of bone meal. It is a good fertilizer. It is really the predecessor of modern commercial fertilizers, and its use on a large scale goes back to the end of the eighteenth century. From the end of the eighteenth century the farmers of Europe used an enormus quantity of bone meal. In our own day we read, with much interest, of the exports of bone meal and bone ash from America to Europe. We read of men marching across the Allegheny mountains and westward, over the untamed prairie, gathering the skeletons of the fallen buffalo. In South America, men made a business of picking up the bones that had been bleaching, perhaps, for years and years, and of sending them to Europe. A point was reached at last, so we are told, when even the battlefields were not free from the bone seeker; and the Germans made the charge against England that it was draining Europe of its valuable fertilizer. Liebig, the great German student of soils, called England a vampire, sucking the fertility out of Europe and sending it down its sewers to the sea. But even in those days when bones were held in such high esteem it was realized that they did not seem to give the results that they might give, and Liebig finally suggested that bones be dissolved in acid in order to increase the availability of the phosphoric acid contained in them. That was the beginning of the so-called acid phosphate industry. John Lawes, of England, had the honor of being the first man to make acid phosphate, even though the idea of dissolving bone belonged to Liebig. Lawes went a step further and dissolved phosphate rock as well as bone meal, and he prospered as he

developed the acid phosphate industry. That was the beginning of the 40's of the last century. The new product found favor in the eyes of farmers because they realized that when rock or bone meal is dissolved in acids the phosphoric acid in them becomes available.

Under our present methods of analysis we say that about one-third of the phosphoric acid in bone meal is available. Hence, while bone meal is a good fertilizer, it is a very expensive source of phosphoric acid. Nevertheless, many farmers, because they have a prejudice in favor of bone, are willing to pay more than they ought to pay for the phosphoric acid that they buy. Now, what I have said about phosphoric acid was intended as an illustration to show that in taking care of the fertility of our soils we sometimes gain the fertility, where we gain it at all, at too great expense.

One more word in regard to lime, for I do not want to keep you too long. To judge by the letters that come to us at the Experiment Station, the lime question is often a puzzling question to the farmers of New Jersey. In truth, the situation is quite complicated, for there are many different kinds of lime on the market. It would require an expert, at times, to decide what lime would be best for any particular conditions. But, whatever the particular kind of lime that you may decide to buy, remember that there is no justification for paying as much as $8 or $10 per ton, no matter how good the lime may be. Agents will come along and will tell you that 300 pounds of their lime will go as far as one ton of any other lime. It is evident that this cannot be true, yet whether he makes this statement in good faith or otherwise, he will find many to believe him. Indeed, I have often been surprised that the fertilizer agent, or the lime agent, or any other agent, seems to be to the farmer, or at least to some of the farmers, more of an authority on agricultural matters than his neighbor, who is a progressive farmer, or the Experiment Station man or any other man who has made it a business to study the subject. • (Applause.)

Mr. Fithian—I would like to know if the barnyard manure where it is made from stables, and 50 pounds of phosphate rock, acidulated rock, to the ton, is about the right proportion to make a complete fertilizer for the farm.

Dr. Lipman—I should regard the application of 10 to 20 pounds to the ton of manure to be a good average amount for forage and grain crops. On the other hand, for market garden crops we might use as much as 50 pounds per ton of manure. Let us suppose, for example, that we are applying 10 tons of manure per acre. We should want to reinforce it then, with 200 pounds acid prosphate for general crops, and with 400 to 500 for market garden crops.

Mr. Fithian—We put on five loads of manure, using 50 pounds of acid phosphate to the ton of manure.

Dr. Lipman—That is all right. I take it that you put on the average amount. Five tons is rather light for a forage crop.

Mr. Fithian—Now, one other question as to the ground limestone. We are getting a carload at our place for $2.50 a ton,

delivered right near the farm, ground limestone. Is that reasonable?

Dr. Lipman—That is very reasonable, if you get it delivered for $2.50. Now, I should add here that in Manington township there was limestone quarried some years ago. I do not know whether it is used now. That limestone in Manington township could be ground, for agricultural purposes. The president of the Lehigh Wheel and Axle Works, at Bethlehem, has patented a machine which I think he offers to sell for $500 or $600. This is claimed to be a splendid machine for grinding limestone.

Mr. Fithian—$600. I saw it.

Dr. Lipman—I think it might be a feasible proposition for farmers in South Jersey, where limestone is not otherwise available. It might be feasible to grind that limestone in South Jersey and use it.

Mr. Fithian—That is good limestone, is it?

Dr. Lipman—Yes.

A Delegate—Which is the best, to buy ground limestone or buy the stone lime and let it slake itself and spread it?

Dr. Lipman—I have attempted to answer that question in the discussion that preceded my talk here. And as I look at it, it is (to a great extent) a question of cost and of convenience. You might take this as a guide. One ton of stone lime, quicklime, properly slaked, will go as far as two tons of ground limestone. That is a pretty safe guide to use. In so far as the effect on soil is concerned, one ton of stone lime, properly slaked, will go as far as two tons of ground limestone. Therefore, according to the purchase price, if you get a ton of stone lime delivered for $4, a ton of ground limestone, delivered, ought not to cost more than $2. These are the relative values, theoretically.

Now, practically, there is another side to it. We have to take that stone lime, dump it in a heap in the barnyard and slake it there; or put it out in small heaps in the field and slake it there by adding the necessary amount of water. Then, the spreading of slaked lime is far from being a pleasant task. Hence, many

people will say, "I would rather pay more for ground limestone and save myself the extra labor and inconvenience." You will see, therefore, that it might be perfectly good practice, and economically justifiable to pay $3 a ton for ground limestone, even though quicklime could be bought, delivered at $4. Local conditions will have to help you decide.

A Delegate—Where I come from, in Cape May county, it is sandy. How much lime, how many bushels to the acre, should be applied with manure, say 15 or 20 tons of manure, broadcast, how many bushels of slaked lime should be used to the acre when there has been no lime put in the ground for years? I have got a carload coming in, and I want to use it to the best advantage.

Dr. Lipman—If it is a magnesian lime, it is usually calculated to weigh about 80 pounds to the bushel, or 25 bushels to the ton. Now, a bushel of magnesian lime, when it is slaked, will make practically two bushels of slaked lime, each of which will weigh about sixty-five pounds. In other words, 80 pounds of magnesian stone lime will make about 130 pounds of slaked lime. When figured on the basis of stone lime, 25 bushels should be applied to make one ton. When figured on the basis of slaked lime, 50 bushels should be applied to make a ton—equivalent to the former.

Now, if the soil is sandy, I should say that one ton is too much. I am rather familiar with the soils of Cape May county (most of them), except the alluvial soils along the bay, and I should say that 1,500 pounds of slaked lime ought to be enough. I should not advise you to use more, because the vegetable matter in these soils burns out too fast, anyway. Except where lime has not been used for a long time, I should prefer to lower that amount to 1,200 or 1,500 pounds an acre.

Mr. Roberts—Is it a fact, or do we only imagine, that on the sandy lands in New Jersey, lime in the form of a carbonate gives the best results?

Dr. Lipman—Yes, it is a fact. We were discussing this question in the sense that the carbonate is not only more lasting in

its effect, but it is not quite so injurious from the standpoint of the vegetable matter. It is often a serious problem to maintain the necessary amount of humus in South Jersey soils. The heavier the soil the more slowly will the vegetable matter decay; hence, for a very heavy land, slaked lime is often to be preferred. But in the lighter soils, because the organic matter, vegetable matter, decays too fast anyway, the ground limestone really should be the proper lime to use. This will show that your point of view is justifiable, and that our recommendation is quite in keeping with this point of view. We recommend the use of ground limestone in South Jersey wherever this may be secured at a reasonable cost. Ground oyster shell is another good source of lime when it is available. I think Barclay Smith, of Camden, deals in oyster shell lime, does he not?

Mr. Rogers—Yes, but ground limestone comes cheaper.

A Delegate—Will you please give me that company that furnishes that basic slag?

Dr. Lipman—Coe-Mortimer Company, 24 Stone street, New York.

We are beginning in this country to use basic slag; we are beginning to take up some of the iron ores in Pennsylvania and New Jersey that contain phosphorus, and are, therefore, beginning to produce large quantities of basic slag that will ultimately be employed as a fertilizer, even though it is poorer in phosphoric acid than the European slag.

A Delegate—I would like to ask the professor about soy beans. Do you consider that the cake after the oil has been removed is as good for food, or better, than the whole bean?

Dr. Lipman—The cake is richer in protein than the whole bean, though not necessarily a better food. But there would be more profit in extracting the oil first, and in using the oil cake as a food.

The Delegate—Is there any difficulty in gathering soy beans?

Dr. Lipman—None. That is the beauty about it. You do not have any handpicking, and if you use an early variety, like

the Ito San or the Wilson, you can plant the seed about the 20th of May, and be ready to harvest about the 20th of September. We raise two crops in one year, preceding the soy beans by rye and winter vetch for soiling.

Bean harvesters are available for this work. Of course, with us the beans are raised on a small scale, and we haul them to the barn floor and use a flail. When grown on a large scale, both harvesting and threshing machinery may be used to advantage.

Mr. Fort—While we are on this subject I wish to say that I had a demonstration two years ago. We were asked what kind of a sized crop could be made on a light soil which had been heavily manured every year without the use of lime. I had a carload of lime come in, and I loaned my neighbor 15 bushels of lime. When he returned it I had my land all plowed, and after his man left it, I went to the pig lot, about three acres, and put it on, put the 15 bushels there, and it slaked and spread out. I forgot all about my lime, but I never could get any clover to grow on that pig lot, and lost all our seed. I plowed it up and seeded to rye the next year. We had some grass seed left over—timothy, red clover and alsike. I asked my son to take the seed and go in there and seed it as far as it went, because I wanted to see if I could get it to live over. We had always lost it. And I never saw such a crop as where that lime was. At harvest time it was three feet high and as thick as you could measure it. Farmers drove there, two or three miles, to see that clover. That was on account of the lime; there was no clover where there was no lime.

We have hundreds of acres of meadows going to ruin now on account of want of lime. The land is very sour. I plowed up a strip of this meadow and limed it, 50 bushels to the acre, and a shower came up and I threw out a few bushels and went down afterwards and spread them around. That was ten years ago; and to-day there is sweet grass growing all around that, and all around there sour grass. You don't use half enough lime. You don't like to spread it because there is a dust and it will eat your skin. You use lime and you will get clover. (Applause.)

Dr. Lipman—I will add just a word to Mr. Fort's testimony. In our soil survey in Sussex county we came across a farmer who, pointing to a certain spot, said, "We dumped a load of lime there by accident twenty years ago, and that is about the only spot on the farm that will grow clover." But in spite of this striking illustration he added, "I know I ought to use lime on the rest of the farm, but I have not come to it."

Mr. Brewer—He says you can't raise clover without lime. I fortunately live on a farm and I raise clover that went to Chicago. There was nothing there that could equal it, and there was no lime about it. It was 10¾ inches, red clover, and also rye 8 feet and 4 inches. And there is a gentleman that can testify to it —Mr. Denise. There was nothing there could equal it, north or south, east or west, with lime or anything else. And I asked Mr. Collins to come there and he said that I needed no lime, and I came to the conclusion that he was right, because I have tried it and would not pay for carting it, and I have tried your phosphate and it would not pay me for carting it. I don't know what there is in the soil about it, but I have raised the largest clover and the largest rye and the biggest corn and I didn't use lime. That is in regard to grass. There was a gentleman came from Allentown through my section taking the census. He said he had never seen a larger, nicer or more even field of grass in his life; and he says to the farmer, "When you go home go out to Brewer's and look it over and see if you ever saw a field with such nice grass; the farmer did so and said he never saw such a field of grass and never expects to again, and I used no lime at all.

Mr. Denise—I think the gentleman is leaving us a little bit in the dark. He is a brother-in-law of mine and I know his farm very well. His statement made here in regard to the crops is true. He did raise those things just exactly as he said he did, but he carts marl and his marl is almost pure lime. (Applause.)

Mr. Fort—I have been up there and seen some of the marl, and you can pick up oyster shells as big as your fist.

Mr. Brewer—They have not hit it. There is one here in this shape (indicating), sent here by son, that weighs six pounds, a whole oyster that I got out of the marl, that weighs six pounds by weight.

A Delegate—And then you say you haven't got lime?

Mr. Roberts—I would like to ask one question: For practical purposes is a high-grade calcium lime worth much more than magnesian lime?

Dr. Lipman—For practical purposes one lime is as good as another, if you get the same amount of lime and magnesia. That is, I should call a pound of magnesia equal to a pound of lime for improving the texture of heavy land, except on light soil. On light soil I have seen injurious effects from magnesia, hence I should prefer, on light land, to use lime that does not contain any magnesia, or at least contains a small proportion of it. That has been my experience. But for medium and heavy soils I feel that one lime is as good as another, if it furnishes the actual number of pounds of lime, or of lime and magnesia, as the case may be.

Mr. Haynes—Does it pay to use kainit in top dressing, and should we buy it in preference to muriate of potash? Now, we can buy muriate of potash at about $38 a ton. Does it pay to use kainit rather than potash?

Dr. Lipman—It might pay. If you have a guarantee of 12 per cent. in the kainit, and a guarantee of about 50 per cent. in the muriate of potash, 4 tons of kainit would go about as far as a ton of muriate of potash. Do you pay freight on 4 tons?

Mr. Haynes—Yes.

Mr. Lipman—What would the freight be?

Mr. Haynes—Well, it costs us about $9 delivered.

Dr. Lipman—And the muriate $38?

Mr. Haynes—Yes.

Dr. Lipman—Then the kainit is just a little cheaper, except the handling, since you would have to handle 4 tons of kainit instead of 1 ton of muriate. Now, if it is only a question of

handling it might pay, because there are other salts in the kainit which, while they do not furnish plant food directly, still exert a favorable action on the soil. If the land is light it might pay to use kainit in the field, a certain amount of it, securing thus those extra salts for nothing.

Mr. Reed—How would it do to put soy beans into the silo to help balance your ration?

Dr. Lipman—It would pay. We did that one year. We planted soy beans in our corn, for it happened that the season was late and the stand of corn was poor. We seeded a lot of soy beans and cow peas along with the corn and then we harvested the whole crop, and put in our silo. The corn rows, where the soy beans and cow peas were left out, were not so good. The combined crop made good ensilage.

Mr. Reed—Well, that cuts down your yield of protein?

Dr. Lipman—No, you will get a higher amount of protein except where the season is very dry. Then, you have a double crop growing on the land, and in dry seasons the presence of soy beans is likely to cut down the yield of corn.

Mr. Reed—Would it pay to raise them separate and then cut them?

Dr. Lipman—Yes, I think that would be better. Then, you can cultivate your soy beans as you cultivate your corn.

Mr. Harris—Are soy beans better than cow peas?

Dr. Lipman—I should prefer soy beans by all means, except where you are growing forage in the late summer. Under such conditions some varieties of cow peas, like Clay or Wonderful or Iron, will make a quicker start, and give you more forage than soy beans. But if you are in middle or North Jersey, and wish to raise seed, use soy beans by all means. You will get more protein, more oil and greater food value per acre.

Mr. Waddington—Which would be the best, to use acid rock to spread on the manure in the cow stables, or to apply when the manure is being spread?

Dr. Lipman—The Ohio Experiment Station has investigated this subject, and has published a circular on it. It is well known that manure is not a balanced fertilizer and that it is lacking in phosphoric acid. Hence Ohio and other states have given a good deal of attention to the question of reinforcing manure. Various phosphatic materials were employed, such as bone meal, basic slag, floats and acid phosphate. All those materials, basic slag, bone meal, acid phosphate, added to the manure, increased the efficiency of the latter; but the results from the acid phosphate were such that in the opinion of the Ohio Station it would not pay to use any other material, even though they cost nothing.

Mr. Purzner—Can vetch be sowed in the spring?

Dr. Lipman—There is a spring vetch, yes; but unless there is a very good reason for its use, we feel that for manuring purposes the seeding of winter vetch is preferable. A mixture of vetch and rye is even better than vetch alone.

Mr. Lloyd—What is the best to sow in corn as a green manure, to get the best profit, in plowing under for the next year's crop? I was in the Nominating Committee and have not been in here long and don't know what has been said.

Dr. Lipman—The best mixture that we have adopted for use on the College Farm consists of about 40 to 50 pounds of wheat or rye. We prefer to use wheat because it gives us a little more latitude in plowing in the spring—40 to 50 pounds of wheat, and say 18 or 20 pounds of winter vetch and 4 to 6 pounds of crimson clover, varying this a little bit to suit local conditions. Now, if you do not use any crimson clover (and I imagine in the northern part of the State crimson clover would not prove satisfactory), I would make it a mixture of vetch and winter wheat, 60 pounds of wheat and 30 pounds of vetch.

Mr. Lloyd—This is in Cape May county, on the sand.

Dr. Lipman—Then, I should prefer to make this mixture of vetch, crimson clover and wheat. It seems that crimson clover, in South Jersey, is not as certain as it used to be, and a good many people have been buying vetch instead. The chances are if you have been using cover crops, that crimson clover, under

those mild climatic conditions, would be fully as good or better than vetch.

Mr. Lloyd—I want to say that I have plowed crimson clover in that grew as high as my waist.

Dr. Lipman—Crimson clover in Southern New Jersey may be used successfully for a series of years, but, in the course of time, the catch ceases to be as certain as it is at the beginning. On the other hand, I know there is no objection to vetch in Cape May county.

Mr. Lloyd—How about rye and crimson clover? I have heard they don't work together.

Dr. Lipman—I should prefer wheat. Rye grows so rank that before you know it it is too coarse to plow under and injures the soil. Wheat does not grow so rank and decays more satisfactorily, and I should prefer wheat together with vetch or a mixture of the three.

Secretary Dye—It is very evident that we have got some good farmers in the State of New Jersey, and we have got a great variety of soils. Having heard this long and excellent address of Dr. Lipman I think we should extend him at least a hearty vote of thanks.

Mr. Denise—I certainly have been very much interested in Dr. Lipman's talk here to-day. It certainly has been very instructive and it has been very practical, and it is something every farmer ought to put in practice for himself. But as I have often stated before the New Jersey State Board of Agriculture, the farmers are too willing to let some one else furnish them brains. Now, if these gentlemen will go back this week and put in practice what Dr. Lipman has told them to do, they will have more dollars in one year than they have got to-day.

A rising vote of thanks was tendered Dr. Lipman.

Address on Swine Production.

BY MR. J. F. GORDON, OF JAMESTOWN, OHIO.

If you will allow me, before I begin my talk on swine production, I want to outline my conception of a farmer, and then I believe that I can apply that in my talk upon the subject of the hog. I would rather say hog than swine. Now, this is my idea of a farmer of the twentieth century, not only in Ohio, but in New Jersey and every other State in the Union. First of all he must be a student; and as the good brother suggested a while ago, the trouble with a good many of us is, we let the doctors do our thinking. I am glad that there are a great many young men here this morning, and I hope that they are all interested in agriculture, so far as farming is concerned; and, though they may be in the Agricultural College, they will go back to the farm and show the men how to do things. I like the man who goes out in the world and does things, for he is the man that thinks. And so I believe that farming should be carried on along business lines. I say business and I mean business. I mean that the farmer should occupy, in the business world, the highest place, because it is the most important place.

Now, my idea, first of all, then, is that the farmer should be a man who thinks and does.

Now, he should not only be a man who thinks, but he should be an experimenter on that farm, whether that farm be large or small; whether he be the owner of that farm or simply the renter or operator of that farm, he should be an experimenter. He should know the possibilities and capabilities, not only of himself, but of his farm. In other words, I am trying to say to you he should know what every field should produce according to his efforts on that farm. And that we do not find on many farms in Ohio. I am not here to tell you what you find in New Jersey; I am from Ohio, and I know what they are doing out there; and we do not find men who know first the capabilities of themselves and then the possibilities of their farms.

We have a splendid, good experiment station in Ohio, and I think as good a director as you can find in the United States. I refer to Dr. Thorn. And yet with all the help that we farmers can get from our experiment station, it is worth but very little to us unless we are willing to apply them in our operations and upon our farms. He cannot tell me what I particularly need on my Green county farm, some hundred miles south of the experiment station. I find that as I experiment in different fields. In one field one crop will not do quite as well as in another field; and so I must experiment with every acre in that hundred acres to get the best out of it. I must be a student; I must be an experimenter and I must be an overseer, and I must try different things and know the reason why. As my good friend said a moment ago, he could raise clover six feet high without the use of lime. If he had left it that way we should have supposed that lime is not an element in the growth of clover. But we find it was lime after all.

So we must know those things; and if I did not do anything else, if I did not say a word on swine production before these young men, and I created within them a little enthusiasm to go back on their farms and do things, the very fact that they had begun to plan their work would make the production of pork an easy problem for them.

Now, my idea of the farm is simply this: That it is a little factory. Why do I use the term factory? Because I wish to apply some of the principles used in factory work in this little talk this afternoon. I visited our little city of Springfield, thirty miles north of where I live, to go into a

factory to find out some of the business methods installed in that factory. When I talked to the superintendent he said, "If you farmers will just install the same business methods upon your farms as we do in these factories you will meet with the same results, and it is results we are after." That is what we are after still, and it is true of the acres on my farm as well as the animals on my farm.

The farm is first a factory, the purpose of which is to turn out two classes of product. Upon our farms we have plants and animals. The plants upon our farms are machines, the purpose of which is to turn out one class of products. The animals are another class of machines, the purpose of which is to turn out another class of products. I guess you can see that in a moment. The one is in the raw state and the other is in the finished product.

Now, I want to give you a little observation of my own. Two years ago this last summer, when I hauled my wheat into the market—our elevator man happens to be our miller—I said to him, "What is wheat worth to-day?" He said, "No. 1 wheat is worth eighty-two cents per bushel." I said, "I would like for you to test this wheat for me and see whether it is No. 1 or No. 2." In another moment he came out and said, "Yes, this tests sixty-two pounds to the bushel, No. 1 wheat; as good as I have bought in the last five years." I said, "What is flour worth to-day?" "Ninety cents per sack." That was ninety cents for twenty-four pounds. Twenty-four and one-half pounds they tell us, but I call it twenty-four pounds, because it meets the conditions a little better that I want to bring before you. Now, I said, "This is June wheat. How many pounds of flour will this bushel of wheat make?" "Thirty-six pounds." Now, eighty-two cents is what I got for it. A bushel would make thirty-six pounds, a sack and a half. A sack of flour is worth 90 cents, and a sack and a half would be $1.35. I asked him another question: "Will the by-products of the grinding pay for the grinding? He says, "Yes, sir; it will pay for it." Now, he is a business man. That is what I want you to see this morning. He is a business man. I haul my wheat down there to him and take eighty-two cents a bushel for it, and I turn around and pay him $1.35 for a bushel of it in flour. The difference between eighty-two cents and $1.35 is fifty-three cents. Now, I got eighty-two cents for all the work, bringing it down there and dumping it into the elevator, and he sat in his office and wrote me out a check for my money, and then I gave him the money back for flour, and he got fifty-three cents for every bushel of wheat that I hauled down there. Now, he is a business man. Yes, sir, he is a business man. (Laughter.) Now, I have not said anything about myself, and I am not going to, because I am in the class with you. (Laughter and applause.) I want you to see that farming is a business—ought to be at least—but, heretofore, it has not been so considered. I admire a man that is a business man and looks after his end of the string. So I want to say again, I am here to say that the sooner we install business methods upon our farms and our farming operations the sooner it will be that we take our place where we belong, in the business world. And it will not be until we think for ourselves, and not let the doctor think for us.

Now, I said we had on our farms, or in our factories, two classes of machines. All of the plants that we use, all kinds of grass and grains and fruits and vegetables, they are the class of machines to turn out upon our farms, what we would call the raw material; the animals that we keep upon our farms should be the machines to finish those raw materials into a product that the world will pay the highest prices for.

I am going to talk about the hog a little while, and the subject of pork production. I came from the corn belt of Ohio, and if there is anything in the world that we boys like to talk about it is the corn and the hog. I am going to tell you a little story that is told of us boys; it is told of me sometimes, when I am doing institute work in Ohio, especially when I happen to get with one of the other boys who came from the same section. I gave this hog talk in one of the lower counties of our State and as a result

a couple of men came up to see the hogs on the farm. They rang the doorbell and Mrs. Gordon responded to the call, and one gentlemen asked if Mr. Gordon was at home. "Yes, sir." "We would like to see him." "Well, you will find him out there by the barn or the hog lot, because there is where he spends most of his time." And that is all right. We are out there. And it is by being out there, it is by knowing the hog, it is by studying the hog, it is by knowing his habits, it is by knowing his wants, it is by knowing the hog, that we are enabled to handle him successfully. A minister asked me one day when I was giving my talk about the hog, if I were not just a little bit fearful of my future when I associate so much with the hog? Then I came back at him in this way. I said: "Sir, I would rather associate with a well bred hog than a bad bred man."

Now, I particularly enjoyed that most excellent address of the Doctor yesterday, from our sister province, Ontario, on "Co-operation." And I felt like getting up and saying, when he was talking about co-operation, that there was no animal known to mankind that would so willingly co-operate with man for his success in life as the hog. And that is a fact, no animal. And then last night, when we listened again to the Judge, in that splendid address of his about improving social conditions in the country, and he mentioned your prospective Governor's term of office, when he said that he hoped that that administration would be one of a social nature rather than one of a political nature, I felt like getting up and saying that there was no animal that was more sociable in his habits than a well-bred hog.

So I am going to consider this question along the line of improving our soils. And I will say with the Doctor to-day—and he will say amen to it—that there is no animal on our farm that is more willing to help us in the improvement of our soils than is the hog.

I want to talk to you from the standpoint of production of pork for profit; not for association, not for co-operation, but for profit. And I believe that every animal that we keep on our farms should be kept on that farm for the profit that we get out of it. I believe we ought to begin with the superintendent of that farm and keep a strict account of that fellow, to find out whether he is profitable or not, and if he is not profitable on that farm, I believe it would be all right to change the superintendent. What do you think about it? I mean to say, in other words, that in this farming operation as a business we should keep an account of everything on that farm, every plant we raise and every animal we keep, in order that we might know whether the keeping of that animal or the raising of that plant added to the profits of that farm.

Now, I farm for two reasons—first of all, because I love the business; and I love it because it pays me, and it pays me because I give it my very best thought and attention. Then I love it from the other standpoint, that it furnishes the necessaries of life, and enough above, so that I can take my wife and son and have some enjoyment and some pleasure in this life. And I do not believe that any class of men in business known to mankind can give a greater opportunity for the enjoyment of this life than the farmer. And so I keep hogs to enable me to do this.

They add, first, to the profit of my bank account, and second, they enable me, by the keeping the hog, to have enough above the common necessaries of life to have the pleasures and enjoyments of life. I know that we are living in the wonderland of the world. That is, America—the United States. It is the wonderland of the world in a great many respects. When we come to think about it, we go back twenty years and we take the number of inhabitants compared with the number of hogs that were produced, and we find that there was practically one hog produced for every person living, or one hog per capita. Ten years further along, or in 1900, we find that the population had gone on very rapidly in its increase; but swine or hogs had decreased until there was only about six-tenths of a hog per capita. And in 1910 we find that there is less than one-half a hog per capita.

We have heard several times the fact mentioned that there had been a commission appointed to investigate the cost of high living; or the high cost

of living—I don't care which way you put it. I put it the former way and perhaps you don't see the point that I tried to bring out. I wanted to know for myself the reason for those things, and I began an investigation, and I will give you as briefly as I can the results of that investigation.

I am talking swine production, so I will have to confine myself as near to swine as I can. Taking the case of meat and pork, I found out that not the packer alone was to blame for it; not the middleman alone was to blame for it; neither was the producer alone to blame for it. I found that every man, from the producer's pen to the consumer's mouth, had a finger in bringing the results just as we have them. That is what I find. I was particularly interested in this fact: I went to a retail meat shop that I might sit there and watch, and when I knew the conditions or the circumstances of the consumers of these meats I found that invariably every person who came in to buy, or eighty per cent. of those that came in there to buy meats, wanted the best. You know how it is. Whether their salary was on an average of $2.50 a day or fifty cents a day, they wanted the best. Well, now that is extravagance on the part of some, and I am not going to say how many. It is extravagance that brought about the results that we have. I am not a prophet, but if conditions continue to exist as they have existed in the past, I believe that in the next ten years there will not be a ham or shoulder per capita to the people in the United States, where we are producing the hog. Now, that means that hogs will go on higher and higher in price, because we are going to eat them.

I was rather curious to know how much meat families, on an average, were eating in the United States, and I started a little investigation on that line, and I will give it to you as briefly as I can. To furnish the average family in the United States with meat for a year it takes a steer that would weigh eight hundred pounds; it takes a half of a veal calf that would weigh two hundred pounds; a sheep, eighty pounds; a lamb, fifty pounds, and two hogs that would weigh two hundred and ninety pounds each. That, on an average, is the amount of meat that is consumed by a family of the United States. Now, you can see where meat eaters come in. Somebody eats to excess, because we don't all get our share.

The thing I would like to say to the farmers of New Jersey is simply this: That after I kept an account of all the animals that we have on our farm I found that I get a greater per cent. of profit out of feed consumed through the hog than any other animal I keep. And now you know why I keep the hog. It is money we are after. So our money crop is corn, of the grain crops, and our hogs or pork is the meat product or meat class.

A great many farmers in the United States have wakened up to the fact that there is a value in pure bred animals that in the past has not been recognized. A second thing we have recognized is that there is value in types of the different forms or different breeds of those animals. We have learned the value of a balanced ration to feed those animals. We have seen that principles of breeding must be applied in the production of the animal; that the sanitary condition of those animals must be looked after, and then, last but not least of all, there is the environment which has a great deal to do with the profitableness of the animals on the farm. And no man that does not recognize the things I have mentioned need try to produce pork on the farm in a paying way. He must recognize those things.

I have said that animals are machines, and the amount of work and the degree of perfection of that work depends a great deal on the machanism of that machine. And so that pure bred animal is better on the farm because it has been bred for that purpose. I never make that statement before an Ohio audience without thinking of the pedigree. We always ask if the pedigree is of any value in an animal. We always say yes and always say no, because we always want to be on the right side. Now, a pedigree is all right, provided the man behind the pedigree is all right. A pedigree that is written by an honest man is all right, but a pedigree that is written by a dishonest man is not all right. So it reverts back to the man who wrote the pedigree as to the value of it. There are some young men here, and I always

say this as a precaution, I have seen young men with limited means pay a long price for a pure bred animal to begin with. You should always stay within the limit of your means. That is always safe, the other may be dangerous to you. But if you will buy breeding stock now and you don't feel that you are financially able to buy pure-bred animals, buy the very best your circumstances will allow you to buy and then breed up and continue to breed up. There are just as good animals that have no written pedigree as those that have, but when you come to breed for breeding purposes, that is a different thing. So remember the best animal you can get on your farm that has been bred for a purpose is the animal for you to have.

That brings me to another thing I want to mention. No man should produce a thing on his farm, I don't care what it is, until he knows what he is going to do with that thing. I believe the old saying that the man is furthest from market who has nothing to sell is wrong. What does a man want a market for when he has nothing to sell? I will tell you. The man that is furthest from market has something ready for market and has no market for it. So the first thing we should do when we produce pork is to know what we are going to do with it when we have produced it.

We have the different type of hog, as the lard hog and the bacon hog. If your market demands a bacon hog, you want to produce the bacon hog, as you will get the longest price for that, and it is the price we are after. But if your market demands a lard hog, you want to produce that type. Produce the type that will bring the largest price. So you should study the market.

We have a little local market for our produce at Dayton, thirty miles from us. At certain seasons of the year that market demands baby pork. Remember it is the money we are after, and wherever you put on the market an article that has quality and finish they will pay you the longest price for it. So we produce at that season of the year baby pork. Then comes that other season of the year when they do not want the baby pork, but the lard hog. Then what do we do? Put baby pork on the market? No, sir; but we put lard hogs on the market, because they bring the price. Study your market.

I have a neighbor—a splendid, good man; I haven't a word to say against him—that produces pork, tries to. He comes over to my place frequently, and he says, "Now, look here, Gordon; do you think you can make any profit out of hogs?" "Why," I said, "I know I can or I wouldn't be in the business." "Well, now, I can't do it." Well, I will tell you why. An animal always tells you its mission or purpose in life if you will just give it an opportunity, just as the Doctor tells you about trying out these fertilizers on your farms. You try it there and you can tell by the crop, and it is the only thing that will tell you correctly whether your soil needs potash, phosphoric acid or nitrogen. It will tell you, and tell you correctly, too. And animals will tell you the purpose of their lives if you give them an opportunity. I can go over to my neighbor's hogpen and take a stick and pound on the pen and every hog will tell you the purpose of his life. He does produce hogs for the pork; he produces hogs for the music of their squeal. Now, if he was a business man I would tell you what he would do. He would get him a phonograph and a receiver, and then he would take the records and sell the records. (Laughter.)

Keep these animals for a purpose. If you are going to make pork out of them you must feed them, and the right kind of feed, too, so they can make pork. If you are going to keep them for the music of the squeal, get your phonograph and go after it. That is the business part of it.

We have two classes of farmers. One is grain producers and the other is bent more on live stock. So it is the grain farmer or the livestock farmer. This question should be considered by us. Which one of these two should we conduct on our farms to increase our bank account and also increase the fertility of our soil? I do not say maintain; we have got past the age of maintaining fertility, but it is increasing fertility; because the increasing of the fertility or productive power of your land means greater increase in your bank stock or in your account. Now, in our livestock farming it is

the man, the animal, the feed and the care. Those are the four factors that should be considered.

We have talked a little about the man. He must know his business, the market; he must know the kind of animal he must have on his farm. Some like red-haired, some white-haired, some black-haired. Some, again, like the short nose, some the long nose and some the snub nose. All good hogs have their purposes, and when they are used for their purposes they are the means of wealth on that farm of yours. I never say that without making this observation. I believe when you select that breed of hog that suits that fancy of yours you will do better by it and it will do better by you than if you select any of the rest of them.

We are told by a great many breeders that we should do this in co-operation; that if in one neighborhood all the farmers raise one breed of hogs that it would be better for the business; in one sense that is true. And yet I remember the fact that of all the young ladies I ever saw in my life there was only one without whom I could not live happy—unless I could marry her. I have seen others that I thought had a pretier face and form, as far as that was concerned, and yet after all there was something about that one lady that just peculiarly attracted me, and so it is with the hog. (Laughter.)

I would take that breed that suited my fancy a little better than any of the others.

Then, how are you going to know the possibilities and the wants of that hog? It is a machine and that machine is made from the material that you furnish him. It is built up, it is perfected to do the work, not only producing pork, but reproducing itself from the material you give it. And that brings up the second thing we want to talk about, and that is feed.

It does seem to me that in that particular the farmers in my own State are very careless. We are not careful enough about the feed that we give the hog. We do not study his wants. When are you to begin to lay a foundation for the crop of hogs that you expect to come on to your farm and be a part of your farm next spring? Wait till next spring to do it? Do it now. It should have been begun years ago in that breeding stock, and then from the mating time on. I want to mention this fact, because this is a very profitable thing to consider. From the mating time on remember that those dams are doing two things: they are meeting the comforts and wants and demands of their body and they are building up new machines to come into operation upon your farm in the future—two things. And they can only do it, and do it right, when you furnish the material out of which they can do those things. If you are not going to do that right, my advice to you would be to stay out of the hog business as well as all other kinds of livestock business.

That is done by feeding. I will tell you what I feed them. We want to feed more bran, because as the brother said last night, that unless you have plenty of bran you won't get that bone that you need, and bone is the framework of that little animal which you expect to make the hog as soon as possible. So we feed lots of bran to all the prospective mothers in our feed lot. Then we feed them alfalfa hay and we feed plenty of clover hay during all this time. We feed some middlings, and some bone meal. Then we feed some tankage and some corn. I do that because you and I like variety, and I believe we will be better and our dispositions will be kept a little sweeter if we have variety, than if fed on one thing all the time. And what is true of us is true of them, so far as the animal part is concerned.

We always keep them in good comfortable quarters. You know the hog is considered a dirty animal, but the hog is not naturally as dirty as the dairy cow. That is a pretty broad statement to make when there are so many dairymen here. But I am going to stand by it. Naturally the hog is not dirty. You can make him dirty. That is, you can make his condition such that he must be dirty. And I have seen dirty men, too, just as dirty as a hog. There is no difference between the two. The conditions are exactly the same, and the animal, so far as the animal part is concerned, is exactly the same.

We like to keep our hogs well bedded all the time, for comfort as well as for the other thing that I have just mentioned, cleanliness. We bed our hogs every week, the same as any other animal, and as a litter we use bright straw or shredded fodder. That makes a splendid good bed for the animal. If there comes a damp time, and that bed seems to get damp, we bed them a second time a week, always looking after their comfort. We believe that the comfort of that animal, the environment, has a good deal to do with the animal in the end, not only in the individual, but in the offspring of the individual, and so we look after it.

We want to give them plenty of water. We want to water our breeding stock three times a day. You should continue that not only with the breeding hog, but every other hog. And I want that water clean and fresh, as if I were going to drink it myself. I do not think it is too good. I do not give them ice-water any time, for the reason that I can pump water cheaper than I can furnish the feed to warm their bodies.

I give them plenty of water, because eighty per cent. of the fluid which aids in digestion is water, and if you do not furnish it you will not get the best results in the hog.

We have the water, we have the feed, we have some care, and now we want good sanitary conditions around them.

We have found that one of the great hindering causes of success with the hog are the diseases of the hog and with the pigs. You know there comes that internal parasite. You have got to look after it. In Ohio we are making some investigations along the line of hog cholera. We have the internal parasite, the swine plague and the cholera and tuberculosis. Those are the four things that interest us in the pork production section all over our State. We have found that, with the internal parasite in the young animal, nothing has been as effective as tobacco. The lady is not here that talked on cigarettes yesterday. I said amen to everything that she said, but made it a little stronger than she did. Yet tobacco has its use. It is all right when it is used in its place. It is simply the abuse of anything that makes it a curse. That is true of anything that comes to us. So tobacco, when it is used in its medicinal place, is all right; and with our sheep, hogs and horses, those three classes of animals particularly, we find that tobacco has its place, and if we use it in its place it is all right.

Now for the other disease, the thumps, we simply give them exercise. We find that thumps is simply the result of too much food and not enough exercise, and to get the best results there must be plenty of air, sunlight and exercise.

The brother told us last night that one of the greatest germ destroyers was sunlight; and so you can destroy the germs in that hog-pen just the same with sunlight as you can in the chicken-house. So you want to remember the fact that you want sunlight in that hog-house, and construct your hog-house so you can get it. We have hog-houses constructed on as many plans as you have your chicken-houses. But we have only one right plan, and that is the one that gives plenty of sunlight.

Now, it becomes necessary, sometimes, to exercise him. We have one breed of hogs that wants a great deal of it, too, and that is the Poland China. He is naturally a lazy animal, because he has been bred along the line of early maturity. He will mature earlier than any other animal you can get in the hog line; and for that reason he does not have to hustle much. He understands you are going to furnish the feed and all he has to do is to take it in and build himself up and make a hog right quick. For this reason we find it necessary sometimes, when these little fellows get too fat, to give them some exercise. You can give them the exercise cheaper than you can lose them.

I said something awhile ago about living with the hogs so much; and if you are going to get profit out of him, it is because you know those things. You must not only know them, but do them. If you have been observant along this line you can tell when he is laying on too much fat and not geting enough exercise.

We want to spray our hogs for the external parasites, the lice; and we have found nothing that is better than crude oil. During the warm weather we spray our hogs twice a week with crude oil; and during the winter time we spray once every two weeks. Then every time we spray the hogs, in summer or winter time, their troughs where they get their drinking water are all scrubbed out nice and clean and a little bit of this crude oil is left in the drinking trough, that they may drink some of it. We sprinkle all of their feeding floors. In the winter time we feed on cement floors, and these floors are sprinkled once a week with crude oil, and around the sides of the pen are sprinkled in case there might be some germ left there that would infect the hog.

The point I want to make clear is simply this: Look after the sanitary conditions of your hogs well. We have this little recipe which we use and I will give you the proportions. We get five pounds of sulphur, five pounds of copperas, five pounds of black antimony, five pounds of salsoda, making twenty pounds in all; have our druggist pulverize and mix them. Now, mix with it fifty pounds of air-slacked lime, making seventy pounds of the mixture, and that is fed to our hogs, one quart of the mixture to two quarts of salt, and that is kept in the clean trough before them all the time.

Above everything else I will tell you, that one of the elements of profitable pork production is plenty of salt before the hog. No animal will do his best, I don't care what it is, unless he has plenty of salt.

I want to say a few words about increasing the area of hog raising or swine production; naturally, we limit that area to the corn belt. Now, these are the feeds that we use. Corn is the basis of our feeds, because it is the cheapest; but in connection with that corn, to balance up that ration, we feed clover—alfalfa is better. We feed some bran, some middlings and some tankage, then I will add this, that where you grow cowpeas or Soy beans you can balance up your feed with cowpeas and Soy beans. Beans is one of the best feeds we can get, because it is high in protein. Cottonseed meal is also high in protein, and that is what you want. That is the feed that goes to build up the bone and muscle of the animal. In other words, it is the framing material that you must have first of all.

I want to say that wherever you produce milk, for milk is one of the best things to balance up your corn, you can install as a side line on that farm of yours the hog, and get more profit out of him from the amount of food consumed than any other animal that produces meat. There is nothing that is better to feed a hog, after the milk that comes from the mother, than the milk from a cow; separater milk or buttermilk, those two things.

It is a mistake to suppose that we can only raise hogs profitably in the corn belt. We are going to extend the area of raising hogs, because in our own State I was rather disappointed when I saw the census returns to find out, nothwithstanding the fact that in the last ten years we had increased in population six hundred thousand people, three hundred thousand of that was found to be in Cleveland, Columbus and Cincinnati; and in thirty-nine counties of the eighty-eight counties we had fewer people living in them than we had in 1900. That meant there were fewer men producing pork than ten years ago; and that increase of rate going from the country to the city will increase. And so it is time that some of us begin to wake up and produce more pork.

I was down through Virginia last summer, where they can raise cowpeas and Soy beans and German clover. If they would install the raising of hogs as a side line, and get the right kind of hogs, Virginia could be made to blossom as the rose, so far as production and profit are concerned.

In conclusion let me say to you, brother farmers, that we may declare that corn is king and that alfalfa is queen; but I want to say to you that both corn and alfalfa, the king and queen, must submit finally to the monarch, the hog.

Mr. Gillingham—I would like to ask what proportion of tankage do you feed to a young hog, or the growing pig?

Mr. Gordon—In feeding tankage you have to be careful, just as you do with every new feed. We feed first to our young hogs separater milk, and then when they weigh, say fifty pounds, we begin to feed our tankage, and for each ten pigs we give a quart of tankage mixed with the separater milk, and some middlings, giving half a gallon of middlings to a quart of tankage. Perhaps a pint would be better where a man has never used it. We will not always get it mixed, so the pigs will get the proper proportions, and a little bit too much of it shows bad results. When they get to seventy-five pounds, increase that until you give half a gallon to ten pigs.

Mr. Gillingham—Is there any particular brand of tankage that you use?

Mr. Gordon—Oh, yes, sir; I am glad you mentioned that.

Mr. Gillingham—The reason I asked that question, we get a tankage that makes our fertilizer from manufacturers of chemicals; and whether that is as pure, or whether we would get a better tankage.

Mr. Gordon—I would not get that tankage. I would get that which is used for feeding alone. You will find some will analyze forty per cent. protein, and others will analyze sixty per cent., and you want to be careful when you buy. You don't want to buy sixty per cent. protein and get forty.

Mr. Reed—What is the best substitute for milk at weaning time, if you can't get separater milk?

Mr. Gordon—The brother wants to know what is the best substitute for milk at weaning time if you have not the cows' milk. It must be a food that is succulent. When there is plenty of clover, with the wheat middlings and tankage, you can get along very well, but if it is winter time, when you have no succulent food, you are almost up against it.

Mr. Haines—Where do you get the tankage?

Mr. Gordon—We get ours from the Swift Company, of Chicago.

Mr. Darnell—How do you feed clover?

Mr. Gordon—We have racks to our breeding stalls.

Mr. Tallman—At what age do you kill the lard hog for market?

Mr. Gordon—I have been making some experiments with the breeds in our own State, and I find this in my comparison of breeds, so far as pigs are concerned. I mention this because I have to. I have been able to put upon the market my Poland China hogs at the age of six months at from 240 to 260 pounds. I only mention the one. I have tried out six breeds on my farm. For the first four and a half months of their age I got more pounds of pork per pound of food consumed from the Poland China than any other. From four and a half to six months the Berkshire took the lead. From that age to seven and one-half months the O. J. C. took the lead. From that age on the Du Rock Jersey. I am starting on my sixth year now with my experiments with these different breeds.

The question is asked, when does the pig cease to be a pig and begin to be a hog? That is not hard to answer; size determines. It is sometimes three months' old, and sometimes a year old. I wanted to see how heavy I could make some litters of pigs that were farrowed in May, the 21st and 22d, at ninety days of age. I wanted to know, in other words, if it was possible for me, as a farmer, to put upon the market pigs at ninety days of age, so I began a series of feedings. To begin with I began the preparation for this little experiment a year ahead. I brought the prospective mothers to that point that I could feed them all the separater milk fresh from the separater that they could drink and all the corn that they could eat without injury to them; and they had a lot that was sown in alfalfa, alsyke, red and crimson clover, that they might have a variety of foods. After farrowing they were gradually brought up again to the point where I could feed them during the nursing season with the separater milk and all the corn they could

eat, with some bran and wheat middlings. And when the pigs were two weeks old I got them to begin to sip a little bit of milk. Don't understand me to say that they were drinking like the mother hogs, but they sipped a little. I did that this way. I had individual nests, and a little run was fixed by the side of them. I watched those little fellows to see what time they would get up for their exercise, and I found it was about 8:30. I made this little run, and when they were two weeks of age I took a little trough that had been made just as clean and nice as it could be, and I went up to the milk yard, and milked the milk warm from the cow; just as soon as I could draw the milk I put it in these little troughs. I did this just a few minutes before their regular time of getting up. Then I went to the rear of the nest and made a little disturbance and they were all ready to get up. Well, they found something new, and curiosity in a hog is just as great as in a boy; if they find anything new they will make an investigation. They did not intend to sip any milk, that was not the idea. The way they handled the new thing was with their nose. The first thing we noticed was some little fellows got into the trough, and with their nose went down into the milk. They tasted it and they liked it; it was warm; and in that way we induced them in a very few days to drink a little milk; and that was increased until they were drinking all they would drink, or drinking like a hog, as far as that was concerned. We did not even separate the milk. Our pigs were shipped when they were just ninety-three days old, and they went up on the market at a weight of one hundred and twenty-five pounds, on an average.

A Member—Live weight?

Mr. Gordon—Live weight; yes, sir; one hundred and twenty-five pounds in ninety-three days.

Mr. Heritage—I came in about the time the speaker was through, when the gentleman over on the other side asked what we would substitute for milk. I do not raise hogs on a large scale, but I grow them very large, get my hogs quite young.

Now, I am quite sure I can take a pig from the mother and he will never know he has left the mother, by the use of this method

without a drop of milk; and I have done it for the last ten years. Take a teaspoonful of poultry meal—I have found Baugh's to be the best—and take a little milk and scald it; then, of course, thin it down a little and don't feed him too much, then feed him five times a day, and you will make the man that has got the milk ashamed if he doesn't take extra pains. I tried this along with a neighbor of mine who had lots of milk. They had pigs out of the same litter, and he said to his wife, "We have got to watch out or he will beat us." I beat him just one hundred pounds when the pig was ten months old.

Mr. Gordon—What was the name of that?

Mr. Heritage—Baugh's poultry meal, made especially for poultry. And if you add just a little of that and don't use too much so you will scour the pig, but when they get older increase it. Now, if any of you will try that, scald it until they get some age on them, you will be surprised how the pigs will grow.

Mr. Wainwright—I want to ask the gentleman how heavy they get their hogs, say a month short of two years old; what weight they would have. We don't go into hog raising on so large a scale as he does and we get them up to about twelve hundred or thirteen hundred pounds, along there somewhere, at less than two years old. I want to know whether they ever do that in Ohio.

Mr. Gordon—No, we don't do that over in Ohio. We are fortunate if they live to the second year, where hog cholera is so very prevalent. We do not keep them longer than twelve months. We feel we have got to get them into market to avoid the ravages of disease.

Mr. Moore—Have you ever used molasses?

Mr. Gordon—No, sir.

Mr. Moore—If you had intestinal parasitis what remedy would you use to get rid of it?

Mr. Gordon—I said use tobacco.

Mr. Moore—What way?

Mr. Gordon—I just pulverize the tobacco and mix it in with this recipe that I gave you awhile ago.

Mr. Moore—We grind feed for ourselves; put it right in?

Mr. Gordon—Oh, yes, right in with your feed. We put it in with our salt because it is handy for them to get it that way.

Mr. Davis—Do you put anything in their nose to keep them from plowing the ground?

Mr. Gordon—Yes, we have to. We put a ring in there as an ornament.

Mr. Croshaw—I would like to ask about the feed. In my section we use ground rye.

Mr. Gordon—Yes, that is a good feed, and ground barley, too, makes a splendid good feed. A man that will raise rye and grind it and make a slop out of it is on the way to hog success.

Mr. Gordon was tendered a rising vote of thanks.

Mr. Gordon—I would like to express my gratitude and appreciation here for the vote of thanks, and I hope that something has been said that will inspire the young man to go back to his farm and try some of these things out. Enthusiasm is one thing we need to-day more than anything else; enthusiasm is the leaven of inspiration, and inspiration is only indicative of an intensive interest in some things, and I hope that we will have enthusiasm in our work.

A Delegate—In finishing this hog do you use ground feed or whole corn?

Mr. Gordon—Whole corn.

The Delegate—There is no danger in grinding?

Mr. Gordon—No, sir; no danger whatever in ground feed.

The Chairman—Mr. Randolph desires to report in behalf of the Committee on Nominations.

Mr. Randolph—The report of the Committee on Nominations is as follows:

"For President, Hon. Joseph Sherman Frelinghuysen, Raritan, Somerset county; Vice-President, John T. Cox, White House

Station, Hunterdon county; Secretary, for five years, Franklin Dye, Trenton, Mercer county; Treasurer, A. J. Rider, Hammonton, Atlantic county.

"Members of Executive Committee—John M. Lippincott, Moorestown, Burlington county; George E. DeCamp, Roseland, Essex county; Theodore Brown, Swedesboro, Gloucester county."

The report of the Committee was unanimously adopted.

The Chairman—I declare the gentlemen named by the Committee duly elected. The Secretary is for five years. The Committee is discharged with the thanks of the Board.

I presume it would be in order for the Secretary-elect to come before the Board. (Applause.) I will say that he is a modest man and it gives me great pleasure to present to you the Secretary of the State Board of Agriculture, Mr. Dye.

Secretary Dye—Mr. Chairman and fellow farmers, I cannot express my appreciation. I have been here in this work with you twenty-five years. That is a long time. And I consider it a very high honor and an endorsement of my efforts in the past that you should have chosen me again for another term. All I can say is, as I have said before in previous years, I will do the best I can, as God gives me strength. I bespeak your hearty co-operation throughout the State in every movement we put forward to still further advance the great industry of agriculture and horticulture in this little State of ours. I thank you. (Applause.)

SECOND DAY—AFTERNOON SESSION.

The meeting was called to order at 2:00 P. M. by Chairman Gaunt.

Address on "Agricultural Education."

BY DR GEORGE C. CREELMAN.

Farming is not a money-making business. An industrious man may, on the farm—

(1) Make a good living;
(2) Be practically independent in word and in deed;
(3) Be healthy and happy and raise a large family;
(4) May have real and material enjoyment of his spare time:
(5) May, in this day of science, have full scope for his natural ability and all of the education he has found time to acquire.

Why, then, is farming not more attractive as a business, and why are the people in all civilized countries still flocking into our cities, when the ordinary individual has little chance of enjoying the blessings here enumerated?

In England, where society has been established for so many centuries, it is the ambition of professional men and tradesmen alike to accumulate sufficient wealth to return to a rural community to live out the balance of their days in peace and quietness, surrounded by lawns and trees and green fields and domestic animals. In America we have not such ambition, and the question is—Why?

Perhaps we have set up false standards in city and country places.

Perhaps the apparent ease with which the city man makes his money has made the farmer jealous.

Perhaps the unattractive appearance of the ordinary farmstead and lack of organized effort for social enjoyment have been repugnant to the city man used to elegance and refinement.

Perhaps the monotony of the isolated farm home and the enforced daily and hourly association with the ordinary hired help have made many farmers old before their time, have made churlish and suspicious men out of sterling young manhood.

Perhaps the fact that the men in city places have presumed to fix the price of everything the farmer sells, as well as everything the farmer buys, has had no small influence in bringing about the condition of things which exist to-day in most country places.

Let us now look more closely at these five suggestions and see if our deductions are right, and if so, how to remedy them.

1. FALSE STANDARDS—There is an old adage which says, "Seeing is believing," but it is offset by another which admonishes us to "Believe nothing that you hear and only half that you see." The facts are that the man in the country is inclined to believe that the average city man is in easy circumstances, free from worry and care, always well dressed, and with plenty of money in his pockets at all times. Why does he come to this conclusion? Simply because he sees his city friends or relatives in the vacation season only, when they are at play, not at work; when they are wearing the clothes in which they do business; when they are spending money, not earning it; when they have thrown off all care and responsibility for a few days, in order that they may be stronger to fight the battle of life in the long, weary days and weeks and months that are to follow. The farmer does not see the business man at work, so cannot appreciate

the amount of mental strain and distress that comes with keen competition in the World of Commerce. The situation is aggravated, too, by the fact that vacation time in cities is identical with the period of greatest physical exertion in the country, and the contrast becomes the more marked when the farmer rises with the sun and leaves the city relative in the best spare-room, to come down to breakfast in the middle of the day.

The city man, on the other hand, gets an equally false impression of the man on the farm. Without thinking, he despises the rough working clothes of the farmer in the field, he sees no necessity for the early hours or long days of labor. He deprecates the lack of culture, as he estimates it, and he goes home with renewed health and strength, but with a pity in his heart for the poor farmer who has to live under such conditions all the year 'round.

2. The Apparent Ease with which the City Man Makes Money—Many farmers believe that all men in cities make much money, and are, therefore, independent and free to go and come at will. Not only that, but, *apparently*, it is an easy thing to do.

You know and I know, how false this standard is. The monotony of the daily grind; the rigid business hours that must be absolutely adhered to; the eternal strife to keep up appearances; the compromise that must be made, even at the expense of principle, and the days and the nights of despair, when one would gladly give up ambition and social prestige and automobiles, and all the rest, and go back to the old farmstead, and so get away from it all. Appearances were ever deceiving, and the apparent ease with which the city man makes a living is not the least of these.

3. Unattractive Farm Homes and the Lack of Social Intercourse—The unattractive appearance of the farm and the farm home, and the lack of social intercourse in country places, have no doubt had a very injurious effect upon agricultural life and progress.

We have in this country been so busy making sure of a living, that we have failed to apperciate the value of wholesome surroundings, both upon ourselves and those coming after us. No matter how much love and affection there is in the home, it cannot, in the growing boy and girl, compensate for a lack of pleasing surroundings and social intercourse. Again, unattractive home surroundings not only drive the young people from the farm, but it keeps them away. Many a young man has confided to me, after trying his luck in the town or city, that he would gladly return to farming and make it his life work, if the old place were not so bare and bleak in appearance, and the social life so devoid of the ordinary enjoyments of life.

4. The Monotony of Living in the Country—The long days of hard, physical toil have made the farmer's life a very monotonous one, indeed. A rotation of crops, but no rotation of work and recreation; insufficient and inefficient farm help; the taking of the help into the innermost life of the home; the ambition for more land; and with advancing age the consequent narrowing of the vision, have no doubt led to dull monotony in very many farm homes.

5. The Selling Price—And lastly, the absolute loss of control of the farm produce after marketing, has left the farmer entirely at the mercy of some one else, both in setting the price of what he sells as well as what he buys.

As in all other questions of this sort, there are, of course, two sides to the question, and in these days of high prices for foodstuffs, the consumer asks himself: "Is not the farmer getting too much already for his products?"

Secretary Wilson, in his admirable report of the work of the Department of Agriculture for 1910, goes into this question in detail for the first time. The total aggregate of the value of farm products in the United States and Canada is certainly enormous, and it would appear that the farmer must be individually, as well as collectively, enormously rich. The Secretary, however, in his analysis shows that scarcely fifty per cent. of the

selling price goes into the pockets of the producer; that seven per cent. goes to the railroads, and forty-three per cent. to the retailers. In one instance, in the case of oranges, the grower receives only twenty per cent. of the retail price of the fruit as sold by the dozen in our eastern cities.

THE FACTS AS THEY ARE.

It is so much easier to point out grievances and offer advice by way of remedy for existing conditions, that I hesitate to come to you and offer a single suggestion, but you have been kind enough to invite me here to give my views on the subject of "A New Agriculture," and to those who invited me you must lay the blame.

When this country was first settled, the two great enemies of the farm were the Indians and the timber. One had to be conquered or pushed back and the other destroyed, before the soil could be cultivated and crops grown. The man who made most money was the one with the largest family of sons to clear land, and plant and harvest the grain. Farming was a simple equation. The more boys one had the more land was cleared to grow more grain to buy more bush for the boys to clear. Farming in New Jersey was the same as farming in any other part of the United States, and there were no problems of insect pests and fungus diseases, and no weeds to share the land with the crop.

To-day there are a thousand and one factors entering into the business of farming, necessitating a very thorough knowledge of a great many sciences, and the Tiller of the Soil requires a very peculiar education, indeed, if he is to make a complete success of his work.

PRESENT METHODS.

For nearly fifty years, however, we have seen the necessity for special instruction and careful experimentation along agricultural lines. The Federal and State governments have spent increasing millions on agricultural education, and the end is not yet.

The question now arises, in this year, 1911: Is the farmer and the consumer of farm products getting the full benefit of this effort? I do not believe that too much money has been spent. I think that many of the States of the Union and Provinces of the Dominion might have spent, and may yet spend, very much more money on agricultural education and agricultural experiments, but I do firmly believe that we have shockingly neglected the carrying of the good news to the ordinary farmer on the ordinary farm.

OTHER PROFESSIONS.

We are all agreed, as indicated by the common practice, that graduates in medicine, law and theology must, on leaving college, go immediately into practice and give to the people, for a consideration, the benefit of their opinions on the subjects in which they have for four or more years been perfecting themselves. We have not for a moment expected the lawyer, the preacher or the doctor to return to the old homestead and there, within four walls or inside the fences of the one hundred acres, make such a reputation for wisdom, for the saving of souls, or the healing of the sick, that persons needing such help will come there for it, and yet this is just what we are expecting of the graduates of our agricultural colleges. We are expecting them to take a run-down business and build it up, to make a success of it by personal effort, and at the same time, without sign or hope of financial assistance from any one to so impress the neighborhood that better farming will become the rule in that district. Have you stopped to think of this side of the question?

WHAT THE COLLEGES AND STATIONS HAVE DONE.

The agricultural colleges and experiment stations have done and are doing good work. The stations have proven which are the best crops for each State and the colleges have given the information to the students in attendance. No thinking man can refute the statement that in every State and Province the Director of the Experiment Station has already published and spread broadcast enough specific information to double and treble our annual farm output, if such information were put into practice.

The problem, then, is not more experiments, more bulletins, more reports, or more speeches, but how to get into actual performance those methods already in practice by our best farmers.

PRESENT METHODS.

We are not here to criticize the present methods of work. The old agricultural societies have done much good; the Farmers' Institute and the Grange and movable school and special trains, and the various societies for the promotion of dairying, fruit growing, poultry raising, and so forth and so forth, have all done an immense amount of good and should be encouraged, but the fact still remains and stares us always in the face that such efforts are all spasmodic at best, and serve the purpose of the revival meeting in church life, and can in no way be expected to look even after the backslider, much less the man who does not attend such meetings at all.

THE REMEDY.

The remedy then is obvious. We must place a Doctor of Agriculture in every community, must arrange for him to spend all of his time at the work, and must pay him according to his ability and the work he performs.

In the province of Ontario we have inaugurated this method, and we are entirely pleased with the results. And yet each man so appointed has taken charge of the work in a whole county, said county sharing the expense with the Province. So far we have fifteen men permanently located in as many counties, and each man has now an undergraduate assistant during at least the busiest months of the year.

To secure the services of such a man sincere evidence of co-operation must be made to the State Department of Agriculture. The town or county boards of trade, the county council, the various agricultural organizations, and the local high school must unite in the petition and pledge their support to the scheme.

When appointed, a central town or village is selected where a progressive high school is situated, a good office on the main street with plate glass windows is rented, with plenty of room besides for a combination reading and assembly room.

By law, four half days in the week may be devoted to a two-year course in agriculture for farmers' sons in the high school. The rest of the week, and the time before and after school hours, are devoted to helping the farmers of the county, in every way looking to better methods of farming.

This is not the time or the place to go into the details of the work performed, nor the results accomplished, but you will see the results when I tell you that since we have started the work thousands of acres of land have been drained, thousands of acres of alfalfa have been planted, hundreds of short courses in stock and seed-judging have been held, egg circles have been formed, and better prices received for the eggs, that co-operative fruit growers' associations have been organized, with thousands of members, that our college and station men have been in such demand for special meetings that we cannot supply half of them. Farmers' clubs have been organized and hold regular meetings, orchard demonstrations are held, co-operative societies formed, and in a word, farming has taken on new

life and energy, and many other counties are now clamoring for help. We are adding two or three each year and hope in a short time to cover the entire Province.

Such is the New Agriculture for the matured farmer on his own farm.

THE RURAL SCHOOL PROBLEM.

We have now a few minutes to discuss the problem that confronts us: How to help the immature farmer, or the boy and girl in the rural school. We have tried authorizing text-books on agriculture; we have tried sending out pictures of the Agricultural College to hang in the school-room; we have tried school libraries and school charts; we have sent collections of weed seeds and pamphlets on nature study; and we have made little progress.

The trouble is, the school teacher, as a rule, doesn't know anything about farming; so how can she be expected to make any progress in the dissemination of agricultural knowledge? I believe that we have started at the wrong end. In Ontario we have turned face about and are now meeting with some success. We have arranged with the State Department of Education to send to us at the College, for ten or twelve weeks each year, a large number of rural school teachers in attendance at the Normal Schools. It is remarkable what enthusiasm they show in the work. Insects, plants, animal life, the orchard, the garden, the lawn, the dairy, the experimental plots, the farm itself, all come in for inspection and study, and as each teacher takes a given piece of land and performs all the nominal labor of planting and caring for the growing crop, they soon come to an appreciation of farm life and farm problems, such as was never seen in our country schools before.

"Show me," says the man from Missouri; so the cry comes to us from the indifferent farmer, from the man on the back fifty, and the child in the school, and you and I—farmers and teachers and professors and legislators—must look to it that the cry is answered, and answered abundantly, if we are to keep American agriculture the principal business on this continent.

A rising vote of thanks was tendered Dr. Creelman.

Address, "Practical Dairying for Profit by Farmers."

BY AUSTEN HERRICK, OF TWINSBURG, OHIO.

I do not intend to give any talk along the lines of fancy dairying, such as the making of certified milk. It would be in bad taste for me, from Ohio, to come to New Jersey to undertake to instruct you in the making of certified milk, this being the first place where it was made, and all other dairies of that name now pay tribute. Then, again, the idea was to get down to the common farmer. Those other men need no advice. They have their pencils sharpened and they know what they are doing. If we can figure out any way that the common farmer can make a profit in dairying, that is what we desire to do.

Coming to the farm in Ohio something like twenty years ago this spring from the town, possibly being the writer of some such card as your Secretary read yesterday, I invested my all in a ninety-two-acre farm in a section of country there which was then called the deserted section, the abandoned section. Although being a good country, in a good locality, the farms there had been run and worn to the extent that they were hardly worth working, valued perhaps at fifteen or twenty dollars an acre. That had been an entire dairy section for seventy-five years, on the Western Reserve, settled by those eastern Yankees who had brought that business with them and had always followed it, and that was the only occupation of the farmers through that sec-

tion. I took one of those farms of ninety acres, invested my all in that and in some tools to work it. Except a little expense money—I had a little left at first—but the first two years, knowing nothing of the business, I had but little left after the first two years, the money was gone and what I had was experience. I am not like my brother from Ohio who took no stock in the doctor. I began to see that I must get help outside of my surroundings or else quit the business, and I began to reach out, read the agricultural papers, the bulletins, go to the institutes, and I got more help, I may say right here, from the bulletins of the State of New Jersey than any other State, without it might be Wisconsin, than all the others combined. (Applause.) You have a man at the head of your station, Dr. Voorhees, who was our patron saint in this line of dairying, and I am sorry not to have met him here to-day. One of the reasons I wanted to come here was to see him.

Three things are necessary in the management of a dairy farm. First, it is the man. And unless you have the man you had better stay off the job. The second is the productive farm, and if not productive how can you make it productive, and will you make it productive? Last and not least is the cow. Those three things must go hand in hand to succeed in common dairying.

I am not talking about the city agriculturist that starts in with plenty of money, but I am talking to you, the man who starts at the bottom, that fights his way and does it honestly to make a living for his family.

I began to realize that this farm was as the man said who had the farm before me. He said, "Herrick, you can't raise a disturbance on that farm." One of the first things that came to my mind was reading an extract something like this: (Reads.)

"Professor E. B. Voorhees says a farmer must be able to realize that a well-fed dairy cow will on the average produce 12½ tons of manure per year, and that this product will contain on an average 117 pounds of nitrogen, 77 pounds of phosphoric acid, 83 pounds of potash, enough if all the constituents in it are used to grow nearly 70 bushels of wheat, and further, that if he had to buy that it would cost him $30.

Now, there is a volume in that little quotation. Thirty dollars saved from that cow in a year! How many of you young farmers are wasting three-fourths of that $30 to-day? It is the little leaks that sink the ship. That is from your own director, and he has gone as far as any director that I know of along that line. How many of you right here now, who are sitting under the droppings of the sanctuary, that are following his teaching? Now, we might as well talk plain. I think, perhaps, one out of a hundred. As I ride along I see the manure heaps under the eaves of the barns, on the banks of creeks, where the stuff will get away.

When I began to realize what this land was I had something to do. I had to have crops, had to put something in the land, had to have crops to make it pay. I could not lift myself with my own boot-straps. And the first thing I did when I began to realize the situation was to tear out an old stable floor and put in a cement floor. I built that with an incline towards the outlet and a catch basin in end of stable; thirty feet from the barn I built a manure shed; built that up about eighteen inches with stone and made the bottom kettle-shaped and cemented water tight. I laid tile in cement so that the urine passed through from catch basin into the manure shed. That was the first start of saving the manure. The urine was saved, every drop was saved. The horse manure and the cow manure was wheeled into this shed, dumped into this shed about 20 x 30, the manure would absorb every particle of urine, and all was saved and was under cover, nothing wasted. Pretty soon we began to get results, and it was not a great while, a few years, till I built another barn, with a manure shed there. And so that kept on until now I have three of those barns and each one has built a manure shed for the other.

You can do that. It costs but little and you can do the work yourselves. I am talking now to the common farmers. You can do this work. There is time for you to do it. You can do it yourselves without expense, and in that way save every particle of that urine.

You buy cottonseed meal at probably $35 a ton. It is worth about $26 a ton as a fertilizer. You throw it out in a pile and you save possibly a quarter of it. What other business would stand that waste? No other business that I know would stand such waste except this, and still you say there is no profit in dairying. There is profit right in that waste if you will take care of it, but too many of you overlook that fact.

Now, then, the stables. I have done all the cementing and the laying of floors myself. We keep our cattle there in stanchions, because we can keep them more cleanly. There are all ways of tying, but we like the stanchion the best. In laying the cement floor we lay eighteen inches from the stanchion with an incline of about an inch towards the stanchion and finish it with a wooden float that holds the bedding under the front feet. It does not slip back, and cattle will not slip, reaching ahead. The balance of table slopes towards hind feet 1½ inches. All is finished with a wooden float so the cows will not slip on the slippery bottom, as they would if it was finished with the other kind of trowel. Immediately back of the drop we have no gutter, but an incline from the back side of the stable to the drop, thus all urine tends to get off and we clean the stables better. There is no trouble from those things which they have where they have a deep trench immediately behind the cows.

Then, again, you must have the sunlight and air in your stable. They breed no tuberculosis. It cannot live in the sunlight and air.

I always turn my cows out twice a day to water and exercise a little bit and to clean out and air the stables; it makes it better for the cows.

It is just as necessary, even more necessary in dairying, that you should know what you are doing. If there is any kind of business that needs keeping track of it is the dairy business, because you can lose a whole lot of money in that proposition and still not be aware of it until it is pretty late. We have a plan at our farm of weighing our milk twice a month. We have the scales in the barn and weigh our milk one day every two weeks. Every cow is named or numbered, and we have a book something like one of the cheap day-books that anyone can secure. It is not difficult and a good thing for the young fellow to take up. In the first column we put when fresh, the cow's name next, then next when bred. Then, rule it in half-inch columns over to the farther side of the book, and each time put the date overhead and the number of pounds of milk for that day in that column. Now, if you will follow that three months, you will begin to want to trade cows. You will find you have got some cows you thought were the best, but that were the poorest. You have been feeding them the best because you liked them. But they have been robbing you all the time and you didn't know it.

We keep those cows until they are fresh again, or, if the cow is not very young, if we have a young calf, we put it on that cow, and we have dealers around there that buy those cows. They are good lookers and they tell me that they ship them to New Jersey. (Laughter.) I don't know about that. But we get rid of those cows just as soon as we find out that that cow is not paying us; that minute she goes to New Jersey or New York or some other place. We do not spend our time with her any longer.

We give the cow grain according to the milk that she gives us. My experience in the winter season, the feeding season, for grain, is that about one pound of grain to three pounds of milk is a very good ration for a cow. With that ration a cow will not get off her feed, and that can be varied according to circumstances. If milk is cheap, or if milk is flush, you can make that ration a little less, but for a number of years I have kept that practice up on this sliding scale, according to the amount of milk received, but I never have exceeded that, except it may be to try out some cow to find out just what she is and what she will do. And then you want to do that yourselves; don't leave it to the hired man. One pound of grain to three pounds of milk. We mix our grain a ton at a time in the mixing room and we try to make a balanced ration. We do not pay so much attention to the roughage, but we balance the grain ration, taking into consideration, of course, all the roughage that we feed, and we aim to feed all the roughage that the cow will hold. I do not give them just so many pounds, but aim to feed all the roughage that the cow will hold.

We do not when we have one of those robber cows try to make beef out of her. As I say, we have a little better way of disposing of them. But I have not yet become acquainted with the man who successfully made bologna beef on this high-priced grain and made it pay. I do not think there is any money in it.

As I have stated, we feed grain when it pays to feed it. When it does not pay, we do not feed the grain. The cow will use what she requires for her living, for her maintenance, and she should get that. It is foolish to put in $2 for grain which you must pay the money for, or get trusted for, and get $1 back. Right there is the stumbling block that so many of the common farmers fall down on. They put good money into those products and do not draw out near what they put in.

A year ago last summer, I was shipping my man milk. He came out to see me and wanted to know if I could not make him an extra can a day. I was getting the regular summer price then, of 12 cents a gallon, but milk was selling at $2.50 and $3 a can in the city. He wanted an extra can of milk. "Well," I says, "Jake, I will see what I can do. I will let you know." At that time, I was not feeding any grain. It was in August, the season was running very evenly, and the pasture was continuing good. I weighed out a ration; so we commenced feeding them a dollar's worth of grain a day to the cows that I was milking, and after about the third day, the milk product increased about three gallons. I continued along for two weeks; then we stopped the grain ration again, but outside conditions were practically the same, and the yield went back about three gallons, only varied a pound or two.

Now, that was conclusive evidence to me that that milk would cost me about 33 cents a gallon, and I told my man that I could not make an extra can, and did not. Lots of my neighbors got a note from their milkmen that they wanted extra milk also, and they were hauling loads of grain from the dealer, and they were going to the cow dealer and buying cows at any price asked them, to make that extra milk.

That is a condition, I think, that exists in all market sections with you common farmers. But, when you begin to experiment, when you begin to weigh, and when you get your pencil out and begin to know what you are doing, you are beginning to make good. Sell what you make, and make what it pays you to make, and let the other fellow hunt for the milk some other place. Pretty soon, he will be hunting for your milk and willing to pay what it is worth. If all dairymen would do this, prices would be right.

In this connection, about the feeding of the grain, two years ago at our State Fair—we think we have a very good experiment station in Ohio, and Mr. C. G. Williams is one of the most careful dairy experimenters, I think. He had an experiment there which had been conducted for two years, but the results were there. On a table that he had there, in one place were two cow rations, one containing 14 pounds of grain, and the balance making up a dollar's worth of ensilage and clover and timothy hay. Now, I think that is right. A ration valued at a dollar, according to the market value, 14 pounds of which was grain, the market value of which was charged. The balance up to the dollar's worth was ensilage, clover and timothy; common hay and a form of ensilage made of corn and cow peas. Right opposite that was another case, containing a ration valued at a dollar, with 2 pounds of grain, oil, meal and bran. The balance of that ration up to the dollar's worth was made of the same material as the other. On top of this first case was a glass jar. This milk had been churned and accurately weighed. On the top of this daily ration of 14 pounds of grain, was a glass jar with 5.3 and a fraction pounds of butter, the product of this grain ration. On this next case was a jar containing 8 3/16 pounds of butter, the product of this dollar's worth of rations. Now those cows were changed over and over so that there could be no difference in the cows, extending over a period of time sufficient to make it absolutely even.

Now, here was the lesson; from that ration, which the farmer himself mostly grew, was secured a product valued at 75 cents—butter at 25 cents a

pound—more than over this ration which was largely bought; about 75 cents in favor of the home grain ration over the purchased ration.

Now, I speak of this to show you that when you go into this business of making milk of entirely concentrated grains, you want to know what you are doing. Do not take anybody's word for it. Do not guess at it. You know grain at that price runs into money pretty fast.

Mr. Waddington—May I ask you whether the percentage of butter fat was not larger where the eight pounds was made than in the other? That is, if a man was selling milk by the quart, whether the relation of the quantity of milk would be the same as the quantity of butter or not?

Mr. Herrick—Of course, this milk was all separated and made into butter. Now, they received what amount? Over three pounds more butter from the home ration than they did from the other. Of course, the butter fat content would be the same in each. You cannot feed butter fat into milk.

A Delegate—You can change it, though, somewhat.

Mr. Herrick—You cannot change the cow's product of butter fat by feeding grain or not feeding grain. I think it is settled you cannot feed butter fat into milk. But this product was all put into butter. This milk under this ration was churned and accurately kept account of. This was churned, and they were transposed, and this was the result; something like three pounds difference for the home ration. Does that answer the question?

Mr. Waddington—No, that does not answer the question, because I wish to know whether the quarts of milk were the same. I wish to know the percentage of butter fat or quantity in the milk, because I wanted to know, if we were selling that milk by the quart, whether we would not get relatively more money out of it, having the ration that is just shown. That is what I want to know, whether the quantity of milk increased to the extent that the butter fat, that the pounds of butter increased, or whether the milk was poorer, and so we had a larger quantity of milk and would have got relatively the same money out of it.

Mr. Herrick—I do not think the butter fat would increase or decrease either one. The same cow would give the same percentage of butter fat with the grain ration that she would with

the other ration. But those cows were transposed every month, were changed, so that there could be no question on that account. It was simply the product from the feed. It was simply an experiment to indicate whether the unit of fat was greater in one than in the other, if that was the point. There was nothing to indicate that, but simply it was the result of the value of the feed.

A Delegate—In one case there must have been more milk than the other.

Mr. Herrick—There was more milk in the home ration for the same money.

The Delegate—There must have been or you never could have got three pounds more butter.

Mr. Herrick—There was more milk. Now, we know that a dollar's worth of ensilage and hay is worth more than a dollar's worth of grain. You can get more money out of it than so much high-priced grain.

A Delegate—You can increase the quantity of milk, but not the butter fat content?

Mr. Herrick—Not the butter fat content. Now, it comes to the dry stock. For the last few years I have somewhat changed my plan. In an indirect way I got into this way of handling those cattle; I found I had been doing the way the other fellow had; I had been helping the other fellow out at my expense. For two or three years I had a bargain with a dealer when he had a cow that would give, say, eighteen pounds of milk or more at a milking, to bring her out to my place and get his money. The price was not set, but it was always satisfactory between us. But even then I found that it was a losing game at the prices we were getting for the product. So I got a thorough-bred bull and commenced raising my cows. Now I have something like twenty-five on the way, Holsteins and some thoroughbreds. And in wintering my dry cows, and in wintering my young stock I aim to feed straw, supplemented with ensilage. Now, a great many of you dairy farmers think that straw is only good for bedding. Quite a mistake. In the morning I fill the manger with good, bright straw, and put a bushel basket well filled with good en-

silage between the two and they eat the straw and eat the ensilage, and they do well, and the cost is small; and when I feed in that way I save the hay, and that sells for a good price. Do not think, if you are on a farm and keeping a dairy, that the dairy is going to eat everything there is there. That is a mistake. There is nothing that you can feed a cow on as cheap as ensilage. You must have a little other dry feed, but that should be the main feed for the dairy cow. You cannot make milk as cheap any other way as you can with ensilage; and when we hear these splendid talks about the alfalfa, about growing alfalfa, that is all right in places where they can grow it. I do not believe it is practicable to grow it on heavier soils where the frost heaves it. I was out through Colorado this fall, and I was in a great many places there where it was not practicable to grow it this year. Crops are getting smaller there.

But I will tell you, boys, what I have done. I have tiled out forty acres of an old pasture, tiled forty feet apart over the whole of it, and I can grow ensilage there, twenty or twenty-five to thirty tons to the acre, and I can cut that with my machine, put it into the silo; and when I have done that I am not bothering very much about alfalfa. I can do that at one operation, but with the alfalfa I am having the season through.

Then, again, I cut this year from five and a half acres over five tons to the acre of alsyke and timothy hay; that at one cutting, and I did not get quite all of it. I have some land I bought six years ago at twenty dollars an acre. Last year that was valued at a hundred. It cost me about thirty dollars to put that in shape, and it made me a profit of fifty dollars an acre; but I call it worth two hundred dollars, and it is paying me ten per cent. on that.

In this connection dairying is all right, but we must have this profit in dairying or we should not follow that business. I do not think there is any dairying as profitable as that which is conducted with the other lines of farming—the mixed farming. You can sell your hay. Have a piece in hay or crops that will bring you the money, and you can work it along with your dairy and in that way economize in help and in time and in machinery, and double your profits, almost. These work well

together, and the profit is not for the common farmer just in the dairy-line; he should take up those other lines with it.

As I said about the silo, there is no use to talk about making milk profitable without a silo, and when you have a silo you want power to go with it. I have a ten-horse power gasoline engine for power. We use a blower to fill our silo with. We cut five or six or eight acres, whatever it may be, and when we want to put in wheat on the stubble we shut down and put in our wheat, and the ensilage settles, and we go on again and fill. We fill our silo the same as any other part of the farm work; don't make it a burdensome thing on the farm and take a great lot of extra help. And as we plant our corn—something like forty acres we grow on our place—we fit a piece and plant, another piece and plant that, and so on, and it matures about in that same ratio.

There is no use in trying to put corn into the silo that is green. It makes sour, wet and slippery ensilage. Those of you who follow this plan, plant your corn so that it will mature in succession and put it into the silo that way. When you get your silo filled have it full of good ensilage.

A Delegate—I would like to ask the speaker how he manages the frost.

Mr. Herrick—Plant corn that will mature in the latitude where you plant.

The Delegate—And also how he makes five tons of grass stand up so he can cut it.

Mr. Herrick—Well, that didn't stand up. We had to lower the cutter-bar.

The Delegate—Well, the point of the cutter-bar, too?

Mr. Herrick—Yes, we had to put the cutter-bar points right down, too. You know how Mr. Clark, of Connecticut, raises so much hay to the acre. That ground was thoroughly smoothed before it was sowed. It was as smooth as this floor, and I will have just such a crop this year.

A Delegate—What do you estimate your ensilage costs you by the time you get it into the silo?

Mr. Herrick—Probably a dollar a ton.

The Delegate—You mean for labor?

Mr. Herrick—Yes, if all hired for the purpose. We use our regular help mostly, it is cheaper.

The Delegate—Suppose you take that corn and allow it to ripen and harvest it and consider the value of that corn; what is the ensilage worth, then, in the silo, per ton?

Mr. Herrick—I will come to that a little later. Now, we plant corn for the silo. We aim to plant it about three inches apart, in drills. Experiments show that corn planted in drills, three inches apart, will yield a return on an average of something like 600 pounds of nutrients to the acre more than corn planted at twelve inches apart. That may seem a strange thing to you; the value of the corn plant is not all in the ear. Something like sixty per cent., possibly, and forty per cent. in the stalk.

Experiments conducted by careful experimenters show that planting about three inches apart will bring to you about six hundred pounds more nutrients per acre than corn twelve inches apart. We aim to plant that way. That gives very little grain, but we get right in that what we want. We get something to fill up that cow's belly. Did you ever see a cow killed? Did you ever look at the paunch? Did you ever turn your cows out in the wintertime and see them run for the swamp, and after they were out all the afternoon come in so big at night they could hardly breathe? They wanted something, didn't they, when they ran for the swamp? Now, you will get some of that in that kind of ensilage. We aim to plant nearly half field corn separate from ensilage. That matures harder and better than the other or ensilage corn. I do not think that I have husked an ear, except for seed, in five years of field corn.

Gentlemen say to me, "I like to see a good crib of corn." So do I and I have got one. But I bought that corn for sixty cents a hundred on the track. Somebody raised it that wanted to raise it and husk it, but it didn't pay me to husk my corn. My corn is cut with a harvester; it is bound up in bundles and set up in large shocks, and I take a little pulley block with a rope

about eight or ten feet long and swing around those shocks and draw the tops down together and tie those with a piece of binding twine or this black twine, and those shocks will stand a whole winter, all right, and when you open them the outside may be a little black, but the inside is bright and clean, and I take that to my cutter. We commence cutting the first of our feeding. We cut with the machine and mix with the ensilage, about half and half. A cow gets that entire and she eats every particle of it. She gets the corn and none of it goes through her whole. They get the most out of that whole corn, more than they could if it was ground; it costs fifteen cents a commercial bushel to husk, haul and grind that corn. It is very dry out in the field. It is husked in the fall, say, when the stalks are dry, and you see the leaves scampering over the field on a windy day. The stalks are tied up in bundles and set back in the shock. That which was on the inside is on the outside and the outside is on the inside, and you make out to lose a good bit of the feeding value of the fodder besides. You hire a man to pick that up in the field and throw it into the wagon and a lot is shelled off.

A Delegate—What percentage is lost in moulding by means of the method you use?

Mr. Herrick—Very little, if you set those shocks upright. Very little is lost, and then when you pull them in, if there is a shock beginning to lean, let them take those shocks, keep your fields cleaned up as you go and there is very little loss.

Now, as I say, about this corn, you must haul it and crib it. A little more is shelled; a little more scattered along the road, and it is thrown into the crib and there comes a time when you want a little ground for your cows and you load up that corn and take it to the mill, and there is a leakage at the crib, and there is the cartage, and there is the toll; you take it right back and put on that corn fodder loss by exercising the corn, fifteen cents a bushel, that will buy a lot of corn at the price corn is this year.

Now, I do not put this all in the silo for another reason. I keep men the year round. If I get a good man he stays with me until he gets rich enough to buy a farm. There is one starting out this spring. (Laughter.) Farms are cheap down our way.

But to keep these men it costs money to put the corn in the silo. When you pay a man two dollars a day, two men four dollars a day and an engine fifteen dollars a day to put it in, it costs money to do that. But these men can just as well bring in this corn at this time and cut it with the other ordinary work and you are giving your men employment the year round, and they are right on the job and you are getting good out of it and at the least expense.

Weigh your grain and use your pencil. If you do that your business will certainly be safe. Know just what you are doing; because no man is so dull that he is going to throw away money if he knows it a great while. Get right into that habit. You cannot guess at it; no man can guess at it. I have tried it a few years and I came pretty near throwing up the job. I had to or get into other lines. And I said, "What is wrong here? There must be something wrong." I began to get to figuring and get those bulletins and figures. Every man should have two or three of those agricultural papers. Each paper will pay every week five times the cost on an average.

It is foolish and shortsighted to think that you can run a farm business to-day without the papers and bulletins. It is impossible. You will soon be at the tail end of the whip and then you snap off.

Last year the average of my dairy cash receipts per cow was $84.75. Included in that was some two-year-old heifers and one or two cows that went bad, lost their calves. It was $84.75. I bought all the grain for the cows except what I cut in the way of field corn; I aim to buy protein food and balance this up. Protein feed is cottonseed meal, bran, linseed oil meal. You know what I said about the manure. Those things are worth money. Cottonseed meal is worth twenty-six dollars a ton, and twenty-five per cent. taken out by the cows on the passage through, and the rest is all cash if you can save it. Don't forget this fundamental principle, to save this by-product.

Milk tickets were $7.36; interest, taxes and insurance on cows, $3.50; interest, taxes and insurance on building, $3.50; decline in value, $12. And that is too low now on the price of things. There is no dairy can keep up on that price. Cost of

care and bull, $16; rough feed, $20; that is for the wintering; pasture, $6; making a total indebtedness of cow, $83.34. Then I credit her with manure, $8. Your professor says here $30. Home milk, two gallons per day, $3.19. This is per cow average. Seven calves, $15; each, $3.25. That represents a profit of $16.35 per cow.

That is running a pretty close business, but is better than the average dairy. Many of the dairies through our section do not average that well. And you will find over the State they are much below that. As I heard it yesterday from the platform, from the Secretary, I think, the average for this State was something like four dollars a year or a little better. That didn't pay.

As I said before, the profit in dairying was working in connection with some other business. The ordinary or the average farmer is not trying to be a specialist, but a farmer has no business to confine himself to that one thing. If he does his wife will leave him and his children, too, sooner or later, if they can get away. But he should mix up those other things.

When I started, it became apparent to me that I had got to start some side line, like traveling men. They often make more money on the side lines than they do on the real proposition. So I commenced setting an orchard, and I kept that up until now I have fifty acres of fruit trees in connection with my dairy, and I have some other things.

I have given you the figures of the dairy. Now, we have the fruit, $1,129, for the same year; winter vegetables, $358; hogs, $141.58; sheep, wool and lambs, $307.36. They run in the orchard; get a crop every year; miscellaneous, $269; making a pretty good side line. Between the two, with close figuring, a man can make a comfortable living, but you have got to use your pencil just the same.

There is a little profit, even in these dairy items, that maybe would not appear on the surface.

There is this manure shed. You have a lot of fertility there. You can make money on that if you save the manure. If you throw it out under the eaves or on the bank of the creek you are going to lose money on the proposition; but if you save that

there is a little profit there that this does not show. If you have got a rundown farm you had better save it all.

Cost of care. This is upon the theory that this is all hired; the man that works his dairy or works his farm, or the woman, is just as much entitled to compensation as the hired man, and it is not a safe business that figures without taking that into consideration.

Then the rough feed, $20. That is the value of that feed. That is, figuring the ensilage at about five and a half tons and about three-fourths of a ton of clover hay. That makes you a home market for that product. And if you get a good cow it will get you that price for that product and you still have it on the place. It will pay you that and it will pay you a profit on that. I cannot emphasize this too strong.

Right there is where the dairy is profitable to the common farmer—in keeping that good cow that will pay him a profit for his rough product. Do not get that idea mixed up with a lot of others. Keep a good cow that will pay you a profit on your home rough product.

When you go into this other business of buying high-priced grain you cease to be a farmer; you become a manufacturer of milk. If you are going into the manufacturing business you want to adopt the same principles as every other manufacturer does—know that you have got a machine that will turn you out a product at a profit—and if you have not got that the manufacturer would get rid of that machine and get one that would or else he would quit the business. And when you will have come down to that the question of your price for your milk will be settled. The market, then, will not be glutted with the product of your farm, made at a loss by the work of your whole family, but it will be then on a paying basis.

Are there any questions?

The Chairman—Has anyone any questions to ask Mr. Herrick?

A Delegate—I believe you said you sold your milk for twelve cents a gallon?

Mr. Herrick—Twelve cents a gallon, in the summertime.

The Delegate—What is the average yearly selling price?

Mr. Herrick—Last year I got fourteen cents for April, twelve cents until August, then fourteen cents until October, and eighteen cents from that time until the first of April.

The Delegate—What I would like to find out, if I might, was the average selling price and the average cost of production, so as to get the profit, say, on one gallon of milk.

Mr. Herrick—Let me tell you there are no two men would figure that alike. It is impossible to figure it. I might tell you exactly what it costs me to make a gallon of milk, but that would not answer what it costs you or the other man. You will have to determine that for yourself, by your own experiments, and your own scales, and your own pencil.

Another Delegate—I would like to know what it cost you to make a gallon.

Mr. Herrick—Well, I have not figured that out exactly.

Another Delegate—What is the average selling price?

Mr. Herrick—Now, if we always get our pay it is something like fifteen cents.

The Delegate—A gallon?

Mr. Herrick—A gallon; if we always get our pay.

A Delegate—Three and three-fourths cents a quart?

Mr. Herick—Yes.

Mr. Reed—Running your silo a long period of time, suppose there comes a storm, two or three days; won't your ensilage on the top layer heat?

Mr. Herrick—Not in two or three days it won't. There are times when the corn lies two or three weeks and makes good ensilage.

The Delegate—It spoils on the surface of our silo in less than two or three weeks.

Mr. Herrick—If fodder dries out too much moisture, we run water into it when filling. For instance, put a pipe in the blower and let it go in that way.

The Delegate—You don't understand my question. Now the ensilage in the silo, already cut, if you don't get it in in two or three or four days, won't the ensilage in the silo heat and spoil?

Mr. Herrick—Not in two or three days; it might possibly in a week sear over a little. If it is too long a time, we feed a little off the top.

Mr. Mitchell—I would like to understand a little bit plainer how he draws the shocks together.

Mr. Herrick—You get one of those twenty-cent pulley blocks, which has a pulley and a ring in the end; you fasten those to a piece of rope ten feet long, and put your rope around the shock and through that pulley block, with a good strong man on the end of it and another man to press against the shock, you can squeeze the stuffing out of it. When you get it there, let the other fellow tie a string around it.

Answering this question about the silo, it might be better if that corn was put in not longer than three days after the last filling. But you know on the farm you have got to manage those things to the best advantage; and while we do not calculate to leave it too long, at the same time we have got to work all these things along together, and there are some times it may run over a little.

Mr. Mitchell—I had a breakage in my machinery that tied me up for a week or a little over, and my silo did spoil some on the top, and we had some very nice wheat straw. The speaker was speaking about the value of feeding straw. I was wondering what he assumed by the name of straw. But we had a load of it and I thought we would just get that on top of the silo, it would only make about an inch anyway, but it did make two or three, and when we came to feed we knew when we crossed the line.

Mr. Herrick—Yes, I guess that is so. One winter I was a little short on clover hay and needed that for the dairy, and as I had some fine straw I cut that up and fed that in the manger and sprinkled a little fine middlings on that for the dairy cows, and it worked just the same as when you mash a potato and put a little gravy on it. It filled them up, and they did well on it.

Mr. Mount—What did I understand you to say you fed your winter feed for the sheep?

Mr. Herrick—Clover.

Mr. Mount—You don't feed ensilage?

Mr. Herrick—Some do. I never have tried it on the sheep.

Mr. Waddington—Did I understand you to say that this $84.75 was the average amount that you got out of your cows in a year?

Mr. Herrick—That was the average receipts for the milk. Then in addition to that we had the milk for the house, the milk for the calves, and I expect they made a little butter besides. Because there are those that buy the uncolored oleomargarine and sell every quart of milk, but our folks don't like that. They will steal a little milk and separate it and make a little butter.

Mr. Waddington—I would like to say, for the benefit of the gentleman who was asking about ensilage spoiling, I frequently wet all my silo, and I get over that by feeding some every day off the top of that to my cows. The cows are ready to eat it at that time of year. When you get ready to fill again there is nothing spoiled and you are ready to go right on.

The Chairman—Is there anything further on this question?

Mr. Waddington—We are troubled a little about the price of of milk here. But as Mr. Voorhees says, it costs us four and a half cents in New Jersey to produce milk. I believe that Ohio must be able to produce it for less.

Mr. Herrick—Get down to the Ohio conditions.

Mr. Monteith—You say you have been planting fruit trees for some time, so I would ask whether you consider it profitable for the ordinary farmer to work a dairy and run or have fruit as a side issue. In other words, could he make dairying go with anything else?

Mr. Herrick—I should think you would have to be on the job all the time. I am running the two together, but if I was running a dairy alone I expect I would be home milking at this time. (Applause.)

A rising vote of thanks was tendered Mr. Herrick.

Mr. Roberts—The potash dealers of this country have made arrangements with the potash miners in Germany whereby potash could have been sold free on board at the port of entry in this country, at not over $25 a ton, and this, of course, was in opposition to the German syndicate. This was bought from the independent potash miners in Germany. The German government stepped in and put the export tax so high, in some cases as high as $12 a ton, so it practically puts the trust in control. I offer the following resolution:

WHEREAS, Potash is indispensable in the preparation of fertilizer, chemicals and high explosives, and the supply of potash comes wholly from mines located in Germany; and

WHEREAS, Because of German governmental regulations and officially organized syndicates or trusts in that country, great discrimination is made against the products of non-syndicated or trusted mines of Germany as well as against American purchasers from such mines; and

WHEREAS, The product of the syndicated mines is also sold in America at an exorbitant profit, and that if it were not for said governmental interference and said syndicates, concentrated potash could be sold at a rate of from twenty-five to thirty-five per cent. below the prevailing prices; and

WHEREAS, This matter has been repeatedly brought to the attention of the German government by the Secretary of State and our American Ambassador to Germany, which has resulted in promises that the evils may be corrected, but that notwithstanding such promises the evils have not been corrected; and

WHEREAS, The President of the United States and the State Department at Washington are actively engaged in their earnest endeavors to protect the interests of American citizens, and have taken extraordinary measures to accomplish that end; and

WHEREAS, Further remedies are in the hands of the executive branch of the government when properly supported by Congress through the active exercise of the authority to apply maximum and minimum tariffs as set forth in the Payne-Aldrich Tariff act of 1909; therefore, be it

Resolved, That it is the sense of the New Jersey State Board of Agriculture that the efforts of President Taft and of the State Department to secure justice to American users of potash should be supported in every possible way, and that the matter should be presented to Congress in such a way that the active support of that body shall be given the executive branch of the government in this matter; and be it further

Resolved, That copies of this resolution shall be presented to each of the members of Congress representing New Jersey with a special request that they address their most earnest efforts to secure the necessary action of Congress in support of the above purposes.

Mr. Chairman, I move that we debate the matter right here, and pass this resolution without referring it to the committee.

This motion was carried.

The Chairman—I hope you will take it up and discuss it, as it is a very important matter to the users of potash in this country.

You see by the statement made by Mr. Roberts that it practically doubles the price of a commodity that we very much need in New Jersey and in this country.

A Delegate—May I ask Mr. Roberts if he refers to high-grade or average grade at $25 a ton?

Mr. Roberts—I was referring to the high-grade, muriate.

The Delegate—The same grades that are being sold at about $38 a ton?

Mr. Roberts—Yes, $38 and $40.

Mr. Diament—If the farmers of this State and this country can secure muriate of potash at $25 a ton, it seems to me we should do all we can to secure that.

Mr. Hulsart—Mr. President, you will remember that about three years ago there was a movement through this part of our country, and a man was here offering to contract for potash salts at about the figures stated in that resolution. None of those contracts have ever been filled, as probably most of you know. The German government came in and spoiled the broth by adding on a tariff that prohibited its coming here.

We are all farmers and we are using potash every day in our fertilizers, hence we are vitally interested. It has been said here this afternoon that we use 150,000 tons of fertilizer. Put that at $20 a ton, the minimum price, and you have got $3,000,000 invested. Much of that fertilizer runs as high as ten per cent. of potash. Every year we are becoming more and more a potash-consuming public in our fertilizers. This resolution is offered in the interest of ourselves, and I think it ought to be supported. Not only support the resolution, but I believe every man here should write every member of Congress and the Senate to push this thing to a finish. I hope every one of you will vote for this resolution, because it is money in our pockets, and as years go by it will be more so. You heard the statement at the time those men were here something like two years ago that if the independent mines were allowed to ship potash into New York harbor it could be bought for practically one-half of what is paid for it to-day.

Mr. Clement—I would just state that in Gloucester county there are lots of farmers who have already sent such messages to our congressmen and I hope that motion will prevail.

The resolution was adopted.

Will Prof. Goeller come forward at this time?

Address by Professor Goeller, of the Woodbine Agricultural School.

Mr. Chairman and Worthy Members of the Board of Agriculture: I have listened to the able addresses delivered here in the interests of Agriculture in our State, and as I am very much interested in the welfare of agriculture in the State of New Jersey, I avail myself of this opportunity to add a few remarks in the interests of the farmers of the State. I am a newcomer in this State—I settled in New Jersey about six years ago, and ever since I have taken part in whatever was of interest in farming and agriculture in general, in our county. I have been engaged in farming since I was about eight years old, and received my agricultural education in some of the best agricultural schools and colleges of my native country—Roumania. Upon coming to this country, about twelve years ago, I continued to maintain my interest in agriculture. After coming here I had to start things from the very bottom. I put myself in touch with the various presidents of various agricultural societies throughout the States. The president of an agricultural society in Wisconsin wrote me, suggesting that I might take a short course in agriculture, and after I became familiar with the way of doing things in this country, I would easily be able to secure some employment on a farm. I followed this man's advice by taking a short course, and afterward some of the college professors encouraged me to continue my education a little further. They thought with the knowledge I had from abroad and the knowledge I would gain in American institutions, my services might become valuable and desirable to some agricultural institution of this country.

After completing a course in Wisconsin and receiving an education under the best men who were to be found in the country at that time—men like Professors Henry, Babcock, King, Moore and others, I entered Michigan State College, and there again I received instruction from men of national reputation like Prof. Jeffery, and later on I went to Illinois where I took a still more advanced course under men of no less prominence than Professor Hopkins. With this preparation and years of experience, I have come to New Jersey and settled in Cape May county, assuming charge of the Agricultural School at Woodbine, N. J.

Pardon so much of a personal nature in the very beginning, but we still are strangers, and the question might arise in your mind as to what measure I am qualified to pass upon matters about which we are jointly interested.

One strong impression has been brought out to-day, and that is: We are not getting enough returns from the College and Experiment Station of our State. The question arising to my mind is why are we not getting the returns that should be expected? The reason is, we are trying to produce leaders and not practical men. My opinion is if we will devote all of our efforts to developing the short course, a good deal more will be accomplished for the welfare of the State than we have been accomplishing with the long course heretofore; but let me explain why, and upon what I base my statement. The short courses are so arranged as to meet the needs of the particular State. The short course is a practical scientific course—that is science applied to practice—it is not theory, but actual practical work,

and the boy returns home, bringing with him this valuable training received at the short course.

The four-year agricultural long course is very valuable indeed—they also take in the sons of farmers, and give them a thorough and elaborate education on scientific agriculture; and the way the courses are arranged nowadays, they are not sufficiently practical to make the boys return to the farm. They produce scientists, agricultural chemists, good agricultural botanists and the like, but in the long run they do not produce farmers. The graduates of the long course usually get a considerable taste of the city life, and are not anxious to return to the farm, but fit themselves for positions in some scientific branch of agriculture, and after graduation, instead of finding them on the farms, you will find them working for Armour Fertilizer Works or Swift & Company, or some similar concern, as agricultural chemists. If you teach a four-year scientific course, you are but turning out philosopher farmers. These philosophers don't do us any good. (Applause.)

It is a fact that in the State of Wisconsin it is the short course that has bettered the agricultural welfare of the State. The same is true of other States—it is the short course man who returns back to the farm 90 per cent. out of 100 per cent. Colleges with long courses are valuable institutions and I have respect for them. I had my long course of education, and also my short course, but I wish to tell you that the best work I received was from the short course and not from the long course. The long course took up considerable of my time and gave me considerable polish, but it took the short course—the practical course—to give me the real practical education that a farmer needs.

Therefore, I believe we must give some thought to the short course at our State College, and, of course, we must increase its facilities and equipment to such an extent that it will prove itself efficient to our needs and interests. The short course usually is far more expensive than the long course, for the reason that you need practical equipment and laboratories, you need good cattle, machinery, buildings and good stock, but above all you need good men —teachers who possess both the practical and theoretical side of agriculture—men who are practical scientific agriculturists. You take the farmer and give him a short course of six months or six weeks, or a farmer's course of two weeks on one particular branch of agriculture, such as dairying, poultry, fruit growing, etc., and send him back to the farm to apply in practice what he has learned, and, if he wants some more knowledge, let him come back to the college for an additional short course in another branch than the one he has taken in the previous year. If interested, he usually takes a short course in dairying during the first winter, returns home and puts into practice whatever he has learned in that course. He then finds his work at home requires some information along the lines of poultry, and he returns the next winter for another short course in poultry, and so on he keeps coming for practical information from year to year on the different branches of farming, and thus in time he receives the best knowledge to be had on the various branches of farming, and the man in New Jersey with such preparation is certainly going to be a successful farmer. But all this requires that the Agricultural College short course should be well equipped. You must have a dairy department so equipped that when a farmer boy takes up a short course in dairying he can become an efficient dairyman. The course should be so equipped as to be practical and not fanciful and philosophical.

We need a well-equipped poultry plant at our State College. We need a thorough course in poultry husbandry in our State, especially as you are aware that our State is best adapted for poultry husbandry—it is a crying necessity, an absolute need for the interests of the State. You realize better than I do the need for a poultry department at our State College and Experiment Station. At the present time the boys of New Jersey, who are interested in poultry, have to go to other State Colleges to receive their desired course. Our State College at present is not in position to offer this course, and other States cannot accommodate our New Jersey boys.

The farmers of this State can congratulate themselves upon having at the State College a man in charge of the poultry, who is the most excellent and efficient man for this kind of work that I have ever known, but what good is he if he finds he has no equipment with which to work?

I am living in Woodbine, N. J., and have under my charge the Baron de Hirsch Agricultural School. This school does not turn out philosophers. It was considered at one time there that the only course possible was a three or four-year course, but since I have come there we have found out that the best we can do for our boys is to shorten the course to two years, and give them a thorough practical course along the lines of practical agriculture.

We have installed at our institution at Woodbine special departments. Our poultry plant has been a recent addition—it has been in existence for the last three years. We were fortunate enough, after hunting the country from one end to the other, to find in Rhode Island a man whose equal is hard to find for this particular work. That man is Mr. H. R. Lewis—your Professor Lewis. (Applause.) He has done good work in our school, and the results of his efforts are shown in the fact that the graduates of the poultry course are in demand everywhere. To have schools and buildings is not very much—the value of the school is judged by the men you are turning out, and to turn out good material you must have a good teacher, who is a practical farmer, and, besides that, an educator. We have found in Mr. Lewis such a man, the son of a farmer, who was raised and lived all his life on a farm, raised chickens and went to college and did nothing but study thoroughly the mysteries connected with poultry culture. He is a thoroughly competent poultryman is every respect. Our poultry plant at Woodbine is a fair testimonial of Mr. Lewis' ability, and the New Jersey citizens need not be ashamed to visit our school and see our poultry plant. The erection of the buildings was all carried on under the direction and care of Professor Lewis. We have a good flock of the best economic breeds and the success of the poultry department of the Baron de Hirsch Agricultural School is entirely due to the efforts of Professor Lewis. That is what I can say about your Professor Lewis.

Now, the Experiment Station and the State College has secured a very good man, but you must also give him the opportunity to put his efforts into practice. You have one of the finest men that the country ever produced along the lines of poultry, and if you will give him a chance and your support, I am sure that the State of New Jersey will have one of the best poultry plants in the United States; and I am also sure that those who will take up a short course in poultry will find the course a beneficial one. and those boys who are by nature adventurous and are looking forward to building their career by taking a position as poultryman, will be in great demand, more so in fact, than the College will be able to supply. I am speaking now from actual experience—from the fact that our students at Woodbine have been in demand in every part of the United States, as poultrymen.

You are gathered here as a body representing the agricultural interests of the State of New Jersey, and now is the time when your assistance is needed. by approaching in the proper manner, your member of the Legislature, and interesting him in the needs of the farmers for a poultry department at the State College. Establish a thorough poultry short course and give the sons of New Jersey a chance to benefit by it. By so doing you will benefit and better the farming interests of New Jersey.

It is true that a considerable portion of our legislators are farmers; some, at least, have been born and raised on a farm, even if they have now moved to the cities. They may have interests in automobiles and city life for the present; but, just the same, I feel sure that, if you will approach them in the proper way, they will understand the needs of the farmers; but if he does not, then it is your duty to make him understand it. He is depending upon you for a future chance of sitting in one of those comfortable chairs in the Legislative House of the State. (Applause and laughter).

Now, I want to say a few words to my friends of the short course, and that is—I am very much pleased to see you here. When I was a short

course student in Wisconsin, I was among the leaders when our short course student body approached the Legislature of that State to interest them in the needs of the College. We were then in need of a new building, better equipment, and additional facilities of all kinds. Our short course students numbered at that time about 200. There was not much time lost—orations and addresses were offered by the short course students before the Legislature, and it did not take them long to realize the needs of the short course. If you, as a body of students—the brilliant youths of the State of New Jersey—will approach your legislators, I am sure that they will listen to your needs. Unite all your efforts and interest the legislators in your State College. (Applause.)

A vote of thanks was tendered to Prof. Goeller.

Secretary Dye—Gentlemen, I can see in Professor Goeller's remarks more than I have comprehended hitherto. We have emphasized the importance of the four years' course. We do not want to detract from that any to-day. But his suggestion that we let the boys go home to the farm and come another year and take another short course and go back to the farm, and come again the next year and take another short course, and so step by step working out the technical and the scientific on the farm year after year, keep that up until they are fifty years old, I am sure we will have the best set of farmers in New Jersey of any State in the Union. I agree with professor altogether. (Applause.)

The Chairman—I am informed that there is a gentleman present, Mr. Parker, who will occupy the time until Mr. Daniels arrives in giving us an account of a trip that he made to California to visit Mr. Luther Burbank. Mr. Parker, occupy the time until Mr. Daniels arrives.

Mr. Parker—Mr. President and gentlemen: I had occasion last winter to take a little trip through the country, and when I got to California I was informed that it would be very much to my interest to see Mr. Burbank if I could. I was also informed that the chances were that I could not possibly see him; that is, he was so busy in his investigations and experimental work that he would not be likely to see me. But I hunted around and got an introduction to him through the State Horticulurist, who happened to be with some friends of mine down in Southern California. Armed with that and also with a letter from a bug-ologist who was working with Burbank on scale and other pests,

I went up there. I was promptly met at the gate of the establishment by his secretary and told that he did not see anybody at all except by appointment. Well, I said I was informed about that down in Southern California, but that did not stop my coming to him, and I said, "You take these letters out to Mr. Burbank where he is working"—I could see him through the fence—"and read them to him, and probably when he reads the letters he will give me a few minutes of his time." So she went across the road and carried these letters over to Mr. Burbank, and I could see when she came back that there had been something accomplished, because presently he came back and looked at me and he said, "What was the name?" and I said "Parker." And that didn't have any impression, of course, upon him, and I said, "I came on clear from New York to see what you are doing out here. I am just loafing and having some fun, and I just want to see what kind of trouble you have had." He said, "Suppose we go and look them over." That suited me. He took me through the most amazing views that I ever walked through. In the first place he took me through a bed of amaryllis half the size of this room. Ordinary amaryllis grows about that high (indicating) and is an ordinary insignificant white flower with little fragrance. It has a bulb on it as large as a small onion and about as hard as a croquet ball. He showed me a bed of amaryllis which he had developed. He had these growing as high as that (indicating) with blooms eleven or twelve inches long and a perfume you could smell a block, with a bulb bigger than the biggest sweet potato; and he raised countless tons to the acre.

From that we went to the poppy bed. The ordinary poppy is a little weed with a flower, grows about seven or eight inches in diameter, not very beautiful, and covers some territory, the same as our daisy does in this State—simply a weed. Mr. Burbank got after that poppy and fertilized it and cross-fertilized it, and fooled on with it, and experimented with it until he produced a flower nearly as large as that vase, of a magnificent deep red, and it grew on a stalk about as high as that (indicating), and it grew just as thick as clover; for decoration it is perfectly beautiful; nothing else can describe it but beautiful.

From the poppy bed we went to the strawberry bed, and he showed me the worst looking strawberry patch I think I ever saw. I never saw such a lot of scrub in a strawberry bed, and I said, "What in the world are you doing with those things?" He says, "If you were to raise race-horses and had a dam that had produced a good colt, and that had trained up all right, and you were to keep on breeding from that colt to three or four generations, the chances are you would have a race-horse in that final product." I said, "Very likely." He says, "Those are what I work with. I have scoured the world for those specimens. I have got them from China, from Japan, from Cuba, from Hayti, from Patagonia, from Alaska, from everywhere in the world that the strawberry will grow, in order to get what I want in the way of a strawberry—a good, strong plant. I don't care whether it has much fruit on it or not or whether it proves a savory fruit. I want a strong, fertile plant. I take this plant that grew in Kamtschatka and I will take another one from South America, and I will go among those plants, when they are in blossom, with a tooth-brush and a watch crystal and take the pollen from this one and dust on the South American plant and put this mosquito netting over that so nothing can get at it, and those specimens will turn into fruit, and I ripen this fruit, get the seed from it and the next year I will have a million seeds from these different plants. I plant those seeds and raise those plants from them and out of that million plants I will get maybe a dozen or two dozen or three dozen which look likely, and I will develop those until they give a proper fruit, and I will try it, and after I get a vigorous fruit from a good, healthy plant I will take those and cross them with the pollen from some other particular fruit that has those merits that are lacking in that, and in that way I will get my race-horse." Now, he says, "Come over and look at the race-horses." And he took me over to a bed where the actual strawberries were growing he had produced that way. He showed me strawberries there as large as that (indicating), of the most wonderful flavor and color that a man ever saw, that had been produced that way. And when he gets them true to the type, so that they will reproduce in that particular way, then he is ready to send them out.

He showed me his wonderful spineless cactus. Now, when you pass a line drawn through the center of Kansas and down in Texas, it is what you might call an arid country. The rainfall is very light and the forage is almost nothing; and it is a cactus-bearing country, but it is the spine cactus that nobody can go near; that no animal can go near, and while it has some sustenance in it if you can get the spines off of it, still it is almost useless. Burbank has taken countless millions of cactus seed and planted them in cold frames and watched them until they got maybe half an inch or three-quarters of an inch high, and amongst those countless millions he takes here and there one which did not seem to have as many spines as the others. Next he took those less spiny ones and raised them until they produced seeds, and out of those he has taken the less spiny ones in the same way, until he has gradually worked off the spines, until he has got a cactus which is just as smooth as a watermelon. I saw leaves there eighteen inches or two feet long and a foot wide and three or four inches thick, just as pulpy as a watermelon, which cattle would eat with the greatest avidity, which would raise forty tons to the acre.

The same way he takes this fruit. He told me that he had that year, ready to try for the first time, six hundred and seventy-five thousand different new pear trees, that he had produced in that way, and out of that six hundred and seventy-five thousand he expected maybe they would get two thousand trees which would amount to something. When that number of fruit trees were coming into bearing that year he would see what kind of fruit they were going to produce, and the ones which were at all likely would be saved and all the balance would be uprooted, put in great heaps and destroyed, so that they could not by any possibility get out into the world.

Now, that is the patience with which that man carries on his work, just to show you what can be done.

They tell a story about some man who went to him wanting two hundred thousand prune trees for a prune orchard out in Oregon. Two hundred thousand prune trees did not exist in the world ready for transplantation, and they could not be produced, under ordinary operations, within five years. And this orchardist

came to Burbank and says, "What can you do for me?" He says, "I can give you them this fall." "How do you do it?" "That does not interest you at all. What will you pay for them?" They agreed on a price and Burbank immediately scoured that country and got ordinary almonds, and he planted hundreds of thousands of those almond plants, and set them out and got them started, and then as fast as the almond plants got six or eight inches high he took prune buds and budded the almond trees, and as soon as the prune buds got started and were growing on the almond stalks he simply cut the almond off and had the prune trees growing, and in the fall he delivered the man 200,000 prune trees as he contracted to. (Applause.)

Address, "The Dairy Cow as an Educator."

BY MR. DANIELS, OF CONNECTICUT.

When I was asked by your Secretary to come to your meeting and say a few words to you to-day, even though of necessity I was obliged to come rather late in the day, owing to previous engagements, I thought what can I say to you in the limited time I should have that would interest you, and even as I was thinking a reply to your Secretary's request, the thought came into my mind, why not say a few words about the great place the dairy cow occupies in the life of the nation today, and so I have chosen for my topic this afternoon, the title as you see on your program, "The Dairy Cow as an Educator."

In order that we may get at the foundation of this matter, let us begin with the dairy calf and see if there is not some lesson we can learn from her. How many of us realize the future possibilities of the dairy cow, and our pleasures and hopes and profits are dependent upon the start in life this dairy cow has, long before she is born. Take the good, old mother cow and breed her to a coarse, scrubby, mixed-blooded sire, and what chance does this calf have, if it is a heifer, of becoming a profitable dairy cow, worthy of our best thought and endeavor, and an incentive for us to do all that we can to develop to a high standard? Why, the conditions all are against it, and if we start to raise such a cow from this kind of a start in life, I will warrant our ideas will be of such a low standard, and our methods of caring for this calf, and the herd it becomes a part, so careless, that if we were to live for a hundred years, even in these enlightened times, we would not learn the lesson of improvement, and we would not make any progress.

Let us see what would happen if we bred this really good, old dairy cow, even though she hasn't had the opportunity of perfect development she ought to have had, to a strong, clean-cut, masculine sire, magnificent in his make-up, teeming with life and vigor, and we at once catch the inspiration that here is something that appeals to us, to take better care of the mother, providing her with good food, a good, clean stable for the home, and as she comes to the time when we can look for the daughter of this splendid sire as we remember him, we will not be stingy, taking away all the grain ration and making the mother live on bog hay and cornstalks, but we will feed her good, clean, mixed hay and nice, sweet ensilage as she has been accustomed, if we are good dairymen, with a suitable grain allowance even up to the day she freshens, and when this daughter appears we can reasonably hope to see

a silky-coated, bright-eyed, clean-cut, deep-bodied, little creature, a perfect specimen that shows, even in these earliest hours, what the future holds in store for her and you, if we do our part from this day on towards her perfect development.

We will not begin by feeding this calf all the milk she can get from her mother, and get her system all out of balance the first thing, but we will see that this calf has only as much milk as we know will be safe for her, and then we will carefully feed her every day for the first three or four weeks, milk, warm from her mother or from the herd, gradually changing to sweet skim milk, until she doesn't really know such a change has been effected, and we will keep on with this skim milk as part of her food until she becomes a big, lusty calf, eating her grain, ensilage and hay, and is well started on the road to make a splendid type of dairy cow.

Will we keep this calf in a filthy, dark, unsanitary stable? Ah! no, the great possibility in this heifer will keep us spurred up to do our best to provide clean, sunny quarters, warm and dry; well ventilated if it is winter, and this calf and others that we may have, and ought to have, if we are going to be successful dairymen, will tell us to feed them good growing food, a little necessary amount of grain to properly develop the bone and muscle, until, as time progresses and the winter wears into spring, we will have been taught by these heifers, if we wish them to become the best kind of a dairy cow we can hope for, that we must provide a summer pasture that has something growing in it besides sumach, sweet fern and briers, and we will look for a place for them to feed, so that when they come into the barn, not waiting for snow to hasten their coming, they will not only be as large as they were when they were turned to pasture in the spring, but will have made such substantial growth that it means a continuance of good feeding and care to bring them out the next season, strong, active and vigorous, ready for service to the best young sire we can furnish, and with this next season's feeding, which is even more liberal than the last, we can see our future dairy cow coming to maternity, inspiring hope, and a promise of a profitable business occupation. Then when this young cow becomes a mother, we will not consign her to a cold, dark stable, but we will have a good home for her, and we will take care she does not take cold; we will give her warm water to drink for the first 24 hours, and we will feed her carefully, increasing her ration of grain until we know by her milk record, she is consuming all the food it is safe for her.

Then when she works for us, day after day, we will begin to realize that we have here a machine of such splendid construction, capable of taking the raw products of the farm, such as corn, clover and mixed hay, and by this process, known only to the Creator, transforming these products into one that gives life, health and strength as no other food can do, for the human race. It has been said the horse is the noblest of all our domestic animals, yet, much as we regard the value of the horse, can he compare for one moment to that quiet, kindly-dispositioned animal, known as the dairy cow? The gasoline engine will do work that the horse can do, both on the farm and on the road, but did you ever know of a gasoline engine ever taking the place of the dairy cow in giving milk? What was first thought of to send down to that miner, Edward F. Hicks, who lay for one week buried under seventy-five feet of earth and stone? Was it not the milk of the good, old cow, turned down that pipe that was driven through all that debris, that kept him alive until help could reach him, creating a miracle that happens to a man only once in a thousand years?

Milk is the first requisite of the infant, the last refuge of the invalid, and we, to-day, who appreciate the services of the dairy cow, can feel that her mission and great service to humanity is hindered or helped, according to how we learn her needs, and are taught by her to do our best for her. Does the dairy cow's mission for giving milk just end here? Does not her influence for good extend beyond the confines of her stable? Does she not teach us better agriculture when we apply the plant food she gives us so

freely in such quantity (after she has taken out the small portion for her needs and for giving milk), to grow other crops to make more food for herself and her friends of the human race? When you walk over the farm where dairy cows are kept, do you not feel that here is something that builds up and makes greater and greater improvements as time goes on? The dairy cow makes it possible to drain our land, to clear our fields of rocks and stumps, hedgerows and stone walls, until machinery can be used, for a more perfect tilling of our soils.

Go into any of the most progressive farming sections of our country, where the fine homes and barns and productive fields are seen, and there in nearly every case you will find the dairy cow is performing her mission, teaching men how to farm better, how to plan better, and how to live better. Let the boys and girls grow up with some pure-bred, well-kept, finely-developed cattle, and will they not unconsciously absorb some of the good qualities of those sons and daughters and mothers of the bovine race in their cleanliness, gentleness and kindly relations to each other?

How many of you can look at a herd of well-kept, blooded cattle, I care not what breed, and not feel the pulse thrilling, and your thoughts quickened to recognize the beauty, and the great possibilities that are before you, in the ownership of such a prize as that? It has been my privilege at times to visit a few of the best herds of cattle in this country, and when I see before me, royally-bred dairy cows, every one a prize in itself, cared for as you would care for a wife or mother, can you wonder that I get more and more enthusiastic, and hold the dairy cow in such high esteem as I do to-day?

Contrast this care and keeping of these better dairymen, with some of the stables and cattle we see on some farms, where the owner has not awakened to the possibilities that might be his, if he could get the right idea of these matters in his mind and, oh! doesn't it make your heart ache with sorrow for these poor, helpless creatures, and pity, that the owner does not seem to realize the horror of it all? Cows kept in filthy, damp, dark stables, where the sunlight that is so free and so helpful, if only it could be let in, to do the healthy, blessed work the great Creator intended it should do.

Would you care to have me tell you a little personal history? Twenty-three years ago, I and my brother came into possession of one of those rugged farms for which Connecticut is noted. The stables at that time contained only four cows, a pair of oxen and one horse. Those stables were built away back under the basement of a rather large barn, where no sunlight ever entered. The mangers were that old style arrangement, where the cows reached over a 20-inch to two feet siding, straining after her food of bog hay and cornstalks; no tight floor to this manger, because no grain was ever fed, and it was not considered necessary.

The cattle when laying down were obliged to back up and lay down in their own soiling. When they went to pasture in the early spring, thin and weak from their winter keeping, their sides all covered with the accumulation of this system of stabling, do you wonder I can vividly see the contrast between those old-time practices and the condition of the herd to-day?

I beg you will not think me egotistical if I say that on that same old farm where so few a number of cattle were so poorly kept in those early days, to-day there are nearly 100 head, and when they go out to pasture in the spring, it is our joy and pride to have them go out with sides glistening with the pure white and black with which nature has endowed them. It is no disparagement to the former owner of this farm and his herd. He did as well as he knew with the limited opportunity to study these matters that were at his command, but how much more is our responsibility to-day to do the very best we can, when we have so much encouragement and the opportunity to learn the best methods if we only make an effort to do so.

A few years ago we constructed a new stable to contain a large herd of milching cows. This stable was arranged so that sunlight could enter from numerous windows (56 of them) on the east, south and west sides, making a warm, sunny winter home for our herd. What do you suppose I learned

one day as regards this stable? Why one of my neighbors, whom I had advised to cut some more windows into his stable did so, and the transformation was so great that when I went home into our stable it seemed as if it was not as light as his, even though we have a good many more windows, and when I came to look into the matter, what do you think I found? Why, every blessed one of those windows were covered with dust, not realized by us, and I made up my mind to get them out and wash them at the first opportunity. When we had done this we found the sunlight streaming in again, and we have been very careful to keep them clean from that day to this. We have our windows arranged to drop over at the top when we need more air in our stables than the intake ventilators give, and it is a very easy matter to slip them out to wash. Do you ask, what has this matter of washing windows to do with the dairy cow as an educator? Why, when we put these cows into the new stable and made them more comfortable than they ever were before, they showed they appreciated our work and responded by looking brighter and more happy, and by giving more milk, creating an incentive for us to take better care of them.

Another lesson the dairy cow has taught us is that certain cows can make greater returns with her food than other cows, yet we hardly realized how great was the difference until we began to weigh the milk and keep a careful record. We found some cows barely paid for their keeping, other cows paid good market rates for the farm-grown crops and the purchased grain and the labor, while still other cows not only paid for all these things, but also paid a substantial profit as well. We found a few cows in our herd netted us a clear seventy or eighty dollars profit after paying for her food and labor for caring for her. Was there a lesson to be learned here? Yes, I think there was, as we began to weigh and record every milking of our dairy twelve years ago, and have not missed keeping a complete record every day since that time. I have records of the last seven years in our herd-books, and when I came to compare one year with another, I found that for several years, or all the time we were purchasing our cows, we made scarcely any progress.

The records show that for four years the average of the herd ranges from 5,820 to 6,000 pounds, while in the past three years we have gone forward at the rate of 400 to 500 pounds increase each year until the herd aveages beter than 7,200 pounds for the last two years. Does this teach us anything? I think the lesson is that we must raise our own cows, and we must furnish these young cows with a good-blooded sire if we hope to make any progress. During the year 1909 I found nineteen 2 and 3-year-old heifers averaged better than 7,000 pounds of milk each, and this past year, 1910, the same heifers, with the exception of one that met with an accident, gave even more than in 1909. Could I go out and buy nineteen cows even for $100 each and be sure of getting an average of 7,000 pounds of milk from them? I think not. If you care to go with me a little further in this comparison of cows, I found we averaged to keep sixty-four cows for the past seven years, and that some one cow stood out better than all the rest each year, while there was one or two far inferior to the herd. Now, I was interested to see how much more money we might have had in these seven years if all of the cows had produced as much milk as the best ones, comparing them with the result if all had been as small producers as the poorest and I found this remarkable result. If we had sold all this milk for four cents per quart, wholesale, we would have had nearly $50,000 more money if all had been as productive as the best, compared with the poorest, and yet the poorest cows in our herd were as productive according to the last census as the average cows of the United States, while the best ones were about equal to the average cows of Holland. Surely here is food for thought if we Americans, who pride ourselves as being among the most skilled artisans of the world, have room for much improvement in the dairy herds of our country.

Are you keeping a record of your cows? If not, can I say any better thing to you than this: Start to-day, or to-morrow, or at least at the beginning of next month, get you a spring balance and a dozen record sheets, one for each month in the year, and begin to weigh each cow's milk and record the same, then take a sample of four milkings sometime in the month and test out this sample for butter fat, if you are selling your dairy out, put on the basis of butter fat, add up every cow's record each month, and when you have done this work for a year I will warrant you will be surprised at some of the results. Then cull out the unprofitable cows.

We hear a great deal these days of cow-testing associations, that make for our advancement in dairying. These things are all right and are doing splendid work, yet you can do just as effective work if you care to better your condition by keeping the records yourself. I have stated several times. I would not dispense with the keeping of our herd records for $5.00 per cow per year. This would amount to quite a tidy little sum for a year with the herd of milching cows we keep, yet I know we could waste far more value than this in the mis-applied grain given, and in the lessened amount of milk produced, in not keeping the cows up to a profitable milk production. When one only feeds just about a maintenance ration, he can hardly expect to get much profit, and the lesson that has been taught us is to provide, not for four or five months, but every month and every day in the year, for we have found it to be just as essential, yea, more so, to have a full supply of ensilage and hay in the summer months as it is in the winter, if we expect to help the dairy cow to make a good yearly record.

It is our ambition to own a herd of 50 cows that will produce an average of 8,600 pounds of milk each every year. We have improved our herd until we have 26 or half of the number doing this work. Can we hope to win our goal? I think the possibilities are coming nearer to us each year because we are trying to improve our herd by breeding and better feeding, proving the things we are taught are best and holding fast to those that make good. And now, in closing, I want to leave this thought with you.

If you are a dairyman and are keeping cows for a commercial business, if you are not already studying the individual members of your herd and placing every cow on her own merit, I beg of you to do so, for I know there is no more certain and sure way for you to lose money, and time and ambition than to keep a lot of cows and not know what each one is doing, and again there is such a splendid possibility and opportunity for you in these days to keep the better cow and the best.

If you have not already considered the advisability of owning a good sire to breed up your herd, take your pencil and paper and figure up how much profit you might have if you could increase the average production of your herd 1,000 pounds, 2,000 pounds or 3,000 pounds of milk if you are selling your product as milk or how much net profit might result if you increase the output of butter 100 pounds per cow if you are selling as butter or butter fat, and I warrant if you purchase a sire capable of doing this to your future herd, which is not altogether impossible, you will find it the best paying investment of your time and money you can make. Do we all realize the fact that if a cow produces 5,000 pounds of milk, and we sell this milk at four or four and one-half cents per quart at the door of our milk room, we are just about making the wheels of our machinery turn over, while if we have the cow that produces 10,000 pounds of milk in our dairy, the net profit from that cow, if we sell the milk at the same price, is not only twice as much as the 5,000-pound cow, but actual figures show is sixty times as profitable. Isn't there a great opportunity for us if we study this cow problem in the right way? If you have a boy on the farm with you growing up with some interest in your work and your herd, and he desires to help you raise these better cows, if you appreciate your opportunity, you will surely do all you can to encourage him, treating his oncoming thought with courtesy and attention until you and he, co-operating together, will exert such an influence in the community in which you live, that the old farm with all its possibilities will

become such an object lesson for those about you, and the splendid herd of dairy cattle that is sure to follow, will become one of the greatest educators of modern times because these superior dairy cows will help to solve the problem of how to keep some of these brightest and most needed boys on the farm and in the agricultural service of our nation to-day.

A vote of thanks was tendered Mr. Daniels.

The Chairman—This is the last number on the program for this afternoon. I would say, as announced this morning, that the meeting to-night will be in the auditorium of the State Normal School, an illustrated lecture by—

Secretary Dye—The program says an illustrated lecture on "The Improvement of Plants and Animals by Breeding," by Professor Spillman, of Washington. The day before yesterday afternoon I got a letter from Washington, stating that Prof. Spillman was sick and cannot leave Wasington. Since that time we have been keeping the wires hot and the telephone going in order to fill his place, and we finally got another lecturer from Washington, a Mr. Lamon, who is going to give us a talk on the comparatively new and important subject, "Poultry." So you will have a lecture on poultry, and if Mr. Lamon does not fill the bill to our satisfaction Mr. Lewis will probably do so. So we hope that our Normal School girls will learn more about poultry than they ever knew before. We have done the best we could and have been disappointed for the first time in twenty-five years.

The Chairman—I desire to announce that I have been in communication, over the telephone, with the new President. Owing to an engagement it is impossible for him to get here this evening, but he will be here to-morrow morning to take charge of the meeting and deliver his opening address. I hope that every member present will make an effort to be here when the new President arrives at ten o'clock to-morrow morning from New York. He will be here to take charge of the meeting at ten o'clock. (Applause.)

I am exceedingly anxious that we have a good turnout at that time. If there is nothing further we will take a recess until eight o'clock, to meet in the auditorium of the State Normal School.

SECOND DAY—THIRD SESSION.

The meeting was called to order at 8:00 P. M., in the auditorium of the State Normal School, by Chairman Gaunt.

Dr. Spillman, who was to have addressed the Normal School pupils, was prevented by sickness from doing so. Mr. Lamon, of the Department of Agriculture, at Washington, made an address on the subject of "Poultry," which was illustrated with lantern slides.

Improvement of Plants and Animals by Breeding and Selection.

PROF. W. J. SPILLMAN.

In the year 1899 Hugo de Vries, of Holland, announced a very important discovery in heredity. Early in 1900 Professor Correns, of Germany, announced the same discovery, and about a month later Dr. Von Tschernack, of Austria, did the same. About this time Professor Correns made the interesting discovery that in the year 1865 Gregor Mendel, a priest in an Austrian monastery, had published this whole matter in very complete form. The discovery is now known as "Mendel's Law." It consists of three principles. The first is known as the Principle of Dominance. We may illustrate this principle by the cross between polled and horned cattle. Calves bred in this manner never have perfect horns, and usually have no horns at all. Occasionally one has a piece of a horn which never becomes firmly attached to the skull, that is, it has no bony core. These calves inherit the poll character from one parent and the horn character from the other. The poll character shows and the horn character does not, or at least only partially so. In such cases the character which shows in the hybrid is said to be dominant and its opposite, which does not show, is said to be recessive. Numerous instances of this principle of dominance could be given. For instance, in human beings, when an albino marries a person who has no albino blood none of the children will be albinos, because non-albinism is dominant over albinism, but these children will transmit albinism to a portion of their offspring. Similarly, brown eyes are dominant over blue eyes. In wheat, velvet chaff is dominant over non-velvet chaff. Baldness in wheat is dominant over beards. Black color in cattle is dominant over red. In hogs, white color is dominant over black and red. Many hundreds of cases of dominance have been made out.

The second principle is known as the Law of Segregation. A plant or an animal which has inherited a character from one parent and the opposite of that character from the other parent will transmit the form of character inherited from the sire to about half of its offspring, and the form of the character inherited from the dam to the other half of its offspring, that is, in the hybrid this pair of characters separates and the two members of the pair cannot be transmitted by the hybrid to the same individual offspring. Thus, a calf which is a cross between polled and horned will transmit the poll character to about half of its offspring, and the horn character to the remainder. If such calf is mated with a lot of horned cows, about half of the progeny will be pure horned and the other half will be hybrid polls.

The third and most important principle discovered by Mendel is known as the Law of Recombination. This law comes about from the fact that

when parents of a hybrid differ in two or more particulars, each pair of opposed characters is transmitted independently of every other pair. Thus, in the cross between the Hereford and Polled Durham cattle, one parent has a white face, the other a red face; one parent has horns, the other is polled. Now, the hybrid between these breeds cannot transmit both white face and red face to the same individual progeny, nor can it transmit both the poll and the horn character to the same individual, but it can transmit the white face with the poll character or the red face with the horn character. Because of this, if we secure quite a number of first generation hybrids of this kind and mate them together amongst their progeny, we can find, in the next generation, if the progeny is sufficiently numerous, every possible combination of the original characters of the two breeds crossed. Thus, we can get individuals with white faces and no horns, white faces with horns, red faces with no horns, and red faces with horns. It is easily seen that this principle of recombination is highly important. It enables us to produce practically any type of animal or plant we want, provided we can find the characters wanted scattered amongst breeds or varieties closely enough related to permit of crossing.

These important principles have had quite a number of important applications in agriculture, although the principles are yet very new. It is true that they were discovered a long time ago by Mendel, but he was ahead of his generation, and his valuable paper was forgotten by scientific men until re-discovered recently. We have thus had about ten years in which to make application of these principles. The first direct application of them in this country was the work which the writer did in producing new varieties of wheat while connected with the Washington State Experiment Station at Pullman, Washington. The only satisfactory variety of wheat the farmers in that locality had ever found up to about ten years ago was a variety known as "Little Club." It was the only variety that would stand up and not shatter its grain in unfavorable seasons. Unfortunately, it was a spring wheat. Nevertheless, it was almost universally sown in the fall because of the much larger yield from fall seeding in seasons when the winters were not so severe as to kill the wheat. There was incessant demand on the part of the farmers for a winter wheat adapted to that section. The writer tried hundred of varieties of winter wheat, but found none of them that were entirely satisfactory. Some of them yielded enormously in favorable seasons, but a rain storm after the wheat had headed out would easily blow them down, and when they got ripe they would shatter out their grain badly before and during harvest. The effort was therefore made to cross the Little Club spring wheat with the best of these winter varieties, in the hope that the good characters of both could be combined in one variety. This work was undertaken before the work of de Vries, Correns and Von Tschernack was known in this country, in fact before they were published. When the second generation of the hybrid wheats began to head out, the writer discovered the law of re-combination. He saw that in every plat there was represented every possible re-combination of the original parent varieties. He at once recognized the law of of re-combination and the fact that the attempt to combine the good characters of the two varieties crossed was a success. Several good varieties of wheat came out of these crosses, and these varieties are now being grown on a large scale by the farmers of Eastern Washington. They yield from five to ten bushels more than the original Little Club. Not only that, but the quality of the grain is better, so that they sell for about three cents a bushel more than Little Club wheat.

The cross between the Polled Durham and Hereford has already been mentioned. We now have a breed of Polled Hereford cattle produced in this way. We also have Polled Herefords that we produced by hunting up the few polled animals in the Hereford breed and mating them judiciously, so as to take advantage of the law of re-combination. These cattle are known as "Double Standard Polled Herefords." They are not only regis-

tered as Polled Herefords, but they are also registered as pure Hereford cattle.

The demand for the bulls of these Polled Herefords is very strong in the West, and the breeders are unable to fill their orders. When a young bull has been tested by breeding him to several horned cows to see whether or not he is pure poll or only half poll, and it has been shown that he is pure poll, the owner can then sell him with a guarantee that none of his calves will ever have perfect horns, no matter what the dam may be. Young bulls thus tested easily sell for twice as much as those that cannot be thus guaranteed.

Breeders, both of plants and animals, have unconsciously made application of the principles here enunciated many times. These principles also enable us to understand a lot of things that formerly were puzzling. For instance, we now understand why it is that no two seedling apples are alike. Bees and other insects carry pollen from one apple tree to another, so that practically every apple tree is a hybrid. Hence the law of segregation causes it to produce different kinds of seed, and the number of varieties which a single apple tree can produce runs well up toward a hundred thousand. By getting enough seedling apples we can find amongst them almost any type of apple that is wanted.

In recent years Mendel's law has been used in producing many varieties of field peas, and some of these new varieties are very promising.

It has recently been discovered by Dr. Pearl, at the Maine Experiment Station, that high egg laying quality in hens is transmitted as a Mendelian character, that is, it obeys Mendel's law of segregation. There is this curious difference, however, between this character and most other Mendelian characters; hens transmit this quality only to their male offspring. On the other hand, the males transmit it to both sexes. From this it follows that the female offspring of a hen of high egg laying quality does not inherit this quality of the mother, but her male offspring do, and they will transmit it to their female offspring.

Many other illustrations of Mendel's law might be given, but the illustrations cited will serve to show its great importance to the breeder.

THIRD DAY, FIRST SESSION.

Meeting called to order at 9:30 A. M. by Chairman Gaunt.

The Chairman—You remember on the first day of the session it was expected to have a paper on the culture of bees, but on account of the time being fully occupied it was postponed until this morning; and we now have with us the gentleman who was to speak on the culture of bees or the diseases pertaining thereto; and it gives me pleasure to present Mr. Silzer, who will now address you.

Bee Culture.

BY WM. A. SILZER.

As chairman of the Committee of the New Jersey State Bee Keepers' Association, I have been appointed to bring the importance of our industry and the necessity for closer affiliation of our State Association with the State Board of Agriculture of this State to your attention.

Taking up but a few moments of your time, I shall only bring before you some of the important points for your consideration regarding this important industry, which, in the absence of our secretary, I will be unable to give you statistics to show you how many farmers in our State are already bee-keepers, and what the amount in dollars and cents of our industry is, but would say that it amounts up to many thousands of dollars.

There should be a close relationship between the agriculturist and bee-keeper, as is well known to all of those who keep bees on the farm.

1. Because bee-keeping is most successful when kept by the agriculturist, for the nature and the pursuit of the farmer places him in a position to handle bees in connection with his other work on the farm, as the little attention bees require can be done at almost any time during the day.

2. Because bee-keeping by the agriculturist or horticulturist will add thousands of dollars to his receipts of both fruits and seeds by the fertilization of the bees.

I have in my possession testimonials to this effect, which I can show to any of your honorable body, from Joseph H. Black, Hightstown, N. J.; J. H. Repp, Glassboro, N. J.; Chas. B. Horner, Mt. Holly, and others.

3. Because, unknown to the average agriculturist, thousands of dollars' worth of honey is going to waste, right within bee-flying distance of the average farmer throughout the State. One party, keeping from 75 to 100 colonies of bees near Mt. Holly, has gathered for a number of years on the average of $1,000 worth of honey every year, and these bees do not cover a territory on the average of over three miles from their located point, showing conclusively that this, as well as many other instances that I could cite, that if bees could be placed in very many counties of this State in good-sized apiaries, seven miles apart, millions of dollars that are now going to waste could be saved to the agriculturist.

And now, with these few statements hastily given, you can readily appreciate the fact that our State Bee Keepers' Association is exceedingly anxious that this new dreaded disease, called foul brood, which is making serious trouble in our valuable industry and spreading rapidly all over the State, should be held in check, in fact, eradicated, if possible.

Will also cite an instance in Salem, N. J., where the speaker kept 500 colonies of bees five years ago, having the bees scattered in some eight different apiaries. This disease broke out and spread from some neighbor's box hives the first year, and gradually grew until to-day there are only fifty colonies left of the whole 500, showing how rapidly and destructive this disease becomes, until at the last State convention, held in December, where we appointed two members as delegates to this Board, we drew up a bill, which if enacted and passed by the Legislature, would be a boon to every bee-keeper in the State and further this important industry on a sound basis, and make it an addition to the agriculturist's interests of the State.

This was so framed that it would become a supplement to an act already in force, which now prevents the introduction and spreading of injurious insects in this State, with inspectors already at work to this end. The State Board, by adding a little to their scope, and also an addition to their force of inspectors, would accomplish the object we seek and make it easy by working along lines already laid down by the State Board, and on which, by having your indorsement, there will be no question but what this will become a part of the existing law.

We, therefore, in conclusion ask that you might endose this matter by referring our bill to your Legislative Committee with instructions to work for the passage of the bill, and thus benefit the agriculturist and horticulturist, as well as the bee-keeper.

Mr. Silzer—I have a bill here and simply present it for your consideration and reference to your legislative committee, with power to act and work for its passage.

The paper was made a part of the record.

The Chairman—As I understand it, the recommendation was that the bill they have prepared be referred to the Committee on Legislation of the State Board of Agriculture and that they would present it to the Legislature. You all understand it, I presume.

Dr. Smith—The matter came before the Legislature last year and was favorably acted upon by both the House and the Senate, but the bill was vetoed by the Governor for a matter of informality, some things that he objected to in the penalty clause. He expressly commended the purpose of the bill, but nevertheless vetoed it. This bill has been put into quite different shape. It throws the burden of the enforcement of the bill practically upon the State Entomologist, who is an officer of this Board. As it stands now, it seems to me it will serve a good purpose. There is no question as to the value of bees, and if we are going to have bees at all they ought to be protected from foul brood; and without that the bee industry as such might as well be abandoned in this State. Similar laws are enforced in other States, and there is a bureau in the United States Department of Agriculture that concerns itself with bees and bee diseases, so that this is in line with the legislation that has been enacted by the United States Government and also by the other State governments. In drawing the bill, in which the association consulted with me, we have tried to avoid all the difficulties that have been found in the other States and to incorporate what good points they had, so that I think this Board will make no mistake in endorsing the bill or at least referring it to the Legislative Committee.

Mr. Rider—It struck me in hearing this paper on the bee industry, that the situation of the bee business in New Jersey

is very much as the cranberry business was twenty-five years ago; and it seems to me that less capital is involved in the bee culture than there was in cranberry culture in New Jersey. And it struck me as though with the help which is already given by the Government and by the State in the way of certain suggestions by the State Entomologist and their specialists, that if the bee-keepers would exercise the same interest in their own welfare that the cranberry growers did, they would work out their own problems without the assistance of special legislation. That is what the cranberry growers did, they fought their own battles; they didn't go to the State and ask for help, but got the assistance of the State and the Government through its regular channels.

It seems to me that in starting this special appropriation and special effort for some particular department we are setting an example which probably will not be a good one to set up as a precedent.

I have inquired of men who are very much interested in bee culture to know what the statistics were; what amount of honey was produced in New Jersey, and they said they didn't know; they had no statistics.

I have had some experience in the bee business myself. I have heard it stated here, from statistics, that the bees were very beneficial to fruit growing, etc., but my experience is quite different. I thought the bees might be a benefit to cranberry growers, so I installed a colony of bees and increased the quantity of them until I got some fifty colonies. And I noticed as my bees increased my cranberries decreased; and I noticed, furthermore, that when I produced a lot of honey I didn't know what to do with it. I had to give it away to my friends. And I pretty soon discovered that I was making my friends presents of something to poison them. My bees made poisoned honey, and people who ate my honey that I gave to them were made sick, and I abandoned the bee business. I disposed of the bees, and my cranberry crops have since increased.

Possibly the bees were not responsible for short crop, but circumstances all pointed that way. When the bees increased the crops decreased and when the bees decreased crops increased,

and they have increased ever since I got rid of the bees. I question the policy of a special appropriation to the bee industry.

Dr. Smith—Mr. Rider is undoubtedly correct in what he says in regard to the relation of the bees to the cranberries. His experience is not at all unique in regard to that. The honey bee is absolutely of no use to the cranberry, but I can hardly understand in what way it is a detriment, except that it prevents the real occurrence of the pollenization of the cranberry. But you are entirely right in your statement that the bee is not a benefit to the cranberry.

However, that is not true of a great many other plants that are absolutely dependent upon the bees for pollenation. It is true in that one instance. And so far as the duty of the bee-keepers to special interests is concerned, it seems to me that that is just exactly what the other agricultural interests are asking. We are asking for legislation that will help the dairy stock; we are asking for legislation that will improve the livestock; legislation is being asked for the poultry interests, and the tendency is all for the asking of special aid or aid for special branches of agriculture.

Furthermore, there is this difference in the cranberry interest. I realize, perfectly, all Mr. Rider has said, that some of the cranberry growers fought until they won the fight. They had somebody from whom they could get the information. Now, Mr. Rider knows, and will bear me out, that from the beginning the experiment station at New Brunswick, and before that, the United States government, had co-operated with the cranberry growers in the work of assisting them to control their cranberry insects and diseases; but one of the first pieces of work I did for the United State Department of Agriculture, before I came to New Jersey, was on the cranberry bogs, and in particular, on the cranberry bogs in the State of New Jersey; and in this State the cranberry insect and cranberry diseases were among the first that were studied in the experiment station after the United States government first took it up, and the work in New Jersey at the present time is the standard work put out. Without undue praising of the Entomological Department, you take the annual

bulletins on cranberry insects of the United States that they are putting out; their knowledge is a bulletin that was written by myself. So that the work done here, so far as the insect pests are concerned, is work that is a standard in the country at the present day; the work started by Prof. Holder, but not carried to a conclusion. Mr. Shirley stepped in later and he carried to a practical conclusion the work that was done by Dr. Holder.

Now, the beekeepers stand in a different position. They know the character of the disease, just as the cranberry growers knew the character of the disease; but the cranberry grower could help himself, the beekeeper cannot. The cranberry grower has got his stock right there on his own bogs, and it stays there, doesn't go wandering anywhere else to catch diseases. But the beekeeper cannot control his stock. His bees fly off into other territories and they come in contact with bees from diseased hives. Under those circumstances it is impossible for the beekeeper, no matter how much he wants to help himself, to keep his own colonies clear of diseased bees kept by some careless farmer, which may affect the honey production of the entire locality. With all due regard to Mr. Rider, I think he has been wrong in his conclusions. (Applause.)

Mr. Rider—I may be right and I may be wrong. There are two sides to this question. What prompted me to make my remarks was the fact that I believe, and I guess Professor Smith must admit, that the same avenues are open to the beekeepers as were open to the cranberry growers. Now, if application is made to the Agricultural Department at Washington, as we made in the cranberry business, why cannot the same results be secured for them as for us?

Dr. Smith—Simply because the Department of Agriculture experts have no authority in this State to compel compliance with a rule to make healthy bees. It is almost altogether a matter of police.

Mr. Rider—A matter of police protection?

Dr. Smith—Yes.

Mr. Rider—That belongs to the State, I acknowledge that. But one more word in regard to what the professor said about

the bee being beneficial or injurious to cranberries. It is a fact that I have observed in the last thirty years, that it is a rare thing for us on the best cranberry bogs to see a honeybee. There seem to be no honeybees in the neighborhood of a cranberry bog. And so far as the contamination is concerned I think that our disease in the cranberry is as contagious almost as the honeybee disease, the foul brood. A diseased cranberry bog will affect others. It is carried by the water just the same as by the air; not the same, of course, as the bees carry the foul brood, but it is distributed.

Secretary Dye—Mr. President, to "Bee or not to Bee," that is the question. I would like to ask if there is an appropriation for this work, just where it is to go. Is it to go to the Board of Agriculture for the bee purposes or to the Entomological Department?

Dr. Smith—It goes to the State Board of Agriculture, and it will disburse it just the same as the other appropriations that come to the State Board of Agriculture for the benefit of special purposes. That is, it will be an appropriation made to the State Board of Agriculture for that special purpose, for the use of the State Entomologist. All expenditures come to the Executive Committee of the State Board of Agriculture.

Mr. Gillingham—Mr. Rider says that the bees do not do any good in the cranberry crop. We have thousands and thousands of acres of fruit in this State that would be very much reduced in health if we did not have this little honeybee. One of our people has sold this year from his farm $15,000 worth of peaches. Now, the bee is a big item in that crop, and pears, apples, plums and strawberries are largely dependent on the honeybee. If this bee is to become wiped out from our orchards, can the department put on any insect that will do the same work for us that the bee does?

Now, while the cranberry crop is an important one, we have other just as important crops, and more so. And is there any use of working for the benefit of one crop and not protecting the insect that is a benefit to the others? The value of the honey bee is not only the value of the product in honey that that bee

produces a year, but it is to the advantage of the agriculturist and horticulturist all the season through; and further than that, we have passed a resolution to establish a chair of poultry in the agricultural college. We also passed a resolution here, without reference, in regard to potash for the benefit of farmers. Now, I say this little insect is a benefit to the farmers and fruit growers, and we will find it a mistake if it is wiped out of the State. I hope this resolution will prevail, notwithstanding Mr. Rider's cranberry bog. (Applause.)

The motion was carried.

Secretary Dye—There has been reference made to the Legislative Committee of this Board two or three times. Last year the understanding was, I think, that the Executive Committee should be the Legislative Committee. That may be wise and it may not; and it seems to me the Board ought to settle that matter now.

Furthermore, we have a Committee on Transportation and Freight Rates, of which Mr. E. R. Collins is chairman. As the Executive Committee is now constituted, two of the members of the Executive Committee are on that Freight Rates Committee. It would seem as though there is enough material in the Board to form such committees without putting all those things in the hands of the Executive Committee.

I move that a Committee on Freight Rates be appointed by the chair of two members, with Mr. Collins as chairman, as usual, of the committee.

The motion was carried.

Secretary Dye—Now, do the Executive Committee want to become the Legislative Committee?

The Chairman—Unless we hear a motion to the contrary, that is what we consider the Board wants. That seems to be the desire that you want the Executive Committee to perform the duties.

Is the Committee on Resolutions ready to report?

Mr. Allison—The committee recommend the passage of this resolution on establishing a chair on Poultry Husbandry at the

State Agricultural College with the addition that the Secretary write the County Boards of Agriculture, and also the Pomona and subordinate granges of this State.

The Chairman—The report of the Committee on Resolutions is favorable to the resolution, and it is before you for your consideration.

Mr. Gillingham moved that the report be concurred in.

The motion was seconded, put to a vote and carried.

The Chairman—Is there any other business to come before the Board at this time?

Mr. Collins—I spoke to the Chairman regarding an exposition that is to be held in New York this year, and I think that it ought to attract some attention here. The first American Land and Irrigation Exposition ever held in New York City will be held in Madison Square Garden, from November 3d to 12th, inclusive, this year, and I will give you, briefly, what that exposition proposes to do. (Reads.)

Now, the great states of the west are all going to take space in this exposition; they are all going to bring to New York City the very best products of the western states, and I do not think it would be advisable for us of New Jersey, who have the very best State in the Union, to go without representation at this exposition. We do not want them to show what the west can do without our showing what we can do in New Jersey.

The Chairman—You have heard the suggestion of Mr. Collins. Do you desire to take any action on it at this time?

Mr. Rider—I move that it is the sense of this Board that New Jersey should be represented in that exposition.

Mr. Rogers—I think it is necessary to take some steps, and we ought to take every step that is possible. We have taken precedence at almost every State exposition, except it be St. Louis. I guess Dr. Smith was the only one out there. We ought to have sufficient money to represent our State in good form. We have as good fruit and as good opportunity to put it on the market to as good advantage as any other State in the Union.

You draw a circle of a hundred miles from where you are standing—part of that will be in the ocean—and you will find one-eighth of the population of the United States lives in that circle, and that population has to be fed every day, and we want newcomers to know that we have a market right here at our door.

Dr. Smith—Reference has been made to my drawing a prize in St. Louis. I did that because I exhibited one of the greatest industries of the State of New Jersey, and that is the mosquito and its breeding possibilities.

I endorse what Mr. Rogers has said, and only add one thing to it—if anything is going to be done it has got to be done right away. You cannot make an exhibit that is going to represent New Jersey and its possibilities, and get it up in a month or two months. It will take the whole growing season, from now to the time of the exposition, to get anything like a reasonable amount of material for the exposition, anything that is going to be really representative.

The Chairman—I might say, members of the Board, that I have had some little experience in getting ready for an exhibition of New Jersey's farm products. As all of you, perhaps, remember, a year ago we succeeded in bringing the National Grange to Jersey, as we did five years ago. We succeeded in getting, five years ago, a very creditable exhibit of farm products. Last November, those who were at Atlantic City will recollect that we had a very creditable display of farm products. That was started a year ago. We had to start in January to create the interest which was necessary and get our farmers busy. A man of thirty years' experience in the exhibit of farm products in every state, almost, from Maine to California, had this to say about our exhibit of products at Atlantic City, that he had never yet, in the thirty years, witnessed such an exhibit of products as was there on exhibition. It was the best that he had ever seen.

It will require earnest effort on the part of somebody, and several somebodies, if we expect to get a display that will be in any way a credit to us in November. Therefore I think it is very important that this State Board, if they expect to attempt it, they do not simply want to endorse the proposition, they want

to authorize some steps to be taken whereby it can be carried to a successful conclusion.

Secretary Dye—I did not hear the reading. Does that provide for legislation?

The Chairman—No, it is just simply a recommendation that New Jersey be represented.

Secretary Dye—It seems to me that we would have to have legislation to provide the means, because we could not take our money for the purpose.

Mr. Rogers—I move that this question be referred to the Legislative Committee, with power to ask the Legislature to give them such money as in their wisdom they may deem right and proper, so we may have a perfect exhibition.

The motion was seconded.

Mr. Rider—I do not know that you have disposed of the original motion.

The Chairman—Perhaps this may have been an amendment to it. The motion was to adopt the suggestion. This may be an amendment if the mover will accept it.

Mr. Rider—We will accept the amendment. I wanted to say something in addition to Prof. Smith. It is necessary to get busy right away.

The motion was carried.

The Chairman—Members of the Board, as you all are aware who were present when the Nomination Committee yesterday performed its labors and brought before this Board the names of the officers who were to serve the State Board for the ensuing year, in the selection of these officials, in their judgment they presented the name of a man who, for the past six years, has been laboring for the agricultural interests of our State. He has been always faithful in the work that he has attempted to do, and has done it well; being born on a farm, he loves the farm, and the country love has still been clinging to him; and at the present time he is endeavoring to demonstrate to the farmers

of the State and the dairying interests of the State that it can be a profitable proposition to maintain a dairy and run it on scientific lines, and I think that is commendatory. And I want to assure you that it is, at this time, a great pleasure for me to have the honor of presenting to you the President of the State Board of Agriculture, Honorable Joseph Sherman Frelinghuysen.

Address of Senator Jos. S. Frelinghuysen, President of the State Board of Agriculture.

MR. PRESIDENT PRO TEM, LADIES AND GENTLEMEN—The notification that you had chosen me to head your Board came to me as a surprise yesterday morning.

During the last few years my duties have so increased that I have been trying to rid myself of more responsibility, but my interest in agriculture and its progress in this State is such that I consider it a great honor as well as a call to duty to head an organization of tillers of the soil, the men whom I consider as part of the backbone of our citizenship. (Applause.)

I thank you for your confidence and shall try and work in co-operation with you so as to merit your approbation.

I regret the necessity that compels you to replace the man who has done so much for the cause—who in the vigor of manhood has been stricken down while laboring for the public weal. Cannot we attribute the overtaking weakness to his unselfish devotion to duty and his indefatigable labors in behalf of the State?

The public cannot fail to realize what Dr. Voorhees has done for New Jersey. Those of us, his close friends, who have been warmed by his friendship and been benefited by his sage advice, born of long experience, realize the great loss to the State, to the farmer and to the cause of agriculture through his enforced inactivity. (Applause.) His place can never be filled. God grant that he may be free from suffering and restored to health to enjoy for many years yet the fruits of his labors and the affection of his friends. (Applause.) With *his* devotion to the cause as an example, and with your help, I shall try and do my duty to you and the State. All of you are practical men, and, if at first I may seem to lack experience, I ask your indulgence and assistance. Perhaps I can bring something of business and legislative thought together with my slight knowledge of farming, which, mixed with energy, enthusiasm and your co-operated friendship, I may be found useful, for there is a great field before us in this State, and the work so well begun by you and Dr. Voorhees and the noble men who are devoting their time to it must be carried on. We must, therefore, be business-like and practical.

I have been called an agriculturist, and although I have other business than farming, it may interest you to know that the same acres that my father and grandfather tilled, and upon which they subsisted, also raised and sustained me, and it is still farmed in the old-fashioned way by me with a few cover crops and alfalfa variations; this, together with other acres since added, are farmed for a profit and as a business and not as a faddish amusement. I count this my most valuable heritage.

But, gentlemen, it is not what I say here that will count, but what I do in the year before us, with your co-operation. Suddenly called before you, I have not had time to compile any thoughts or suggestions.

There are one or two subjects in connection with the work that suggest themselves, together with many others that time will not permit me to mention. I have put them together quite crudely and present them for your consideration.

It is generally considered that the future of our State and Country depends upon those who produce from the soil. It is, therefore, the most honorable of all occupations.

We must insist that the rural districts of this State be not neglected. Legislation to them is as important to them as it is to the more populous districts. Upon this equality in laws depends the welfare of our Commonwealth. Therefore the country must have all the opportunity and advantage that can be properly given them under the law. We approach this question, not in a narrow-minded way, but in a spirit of unselfishness born with a desire to do the greatest good to the greatest number.

In this connection the question of education arises. Our State must endeavor to improve these facilities without increasing the burden of taxation. (Applause.)

Improved transportation and fair rates for the transportation—an effort to improve them must be the mission of this organization.

More and better highways. Equality of taxation in their maintenance, a square deal for the citizen taxpayer—with strenuous opposition to imposition or encroachment against the demands of those who neither contribute or produce, is another problem. (Applause.)

I might mention laws needed to protect the health of our live stock. I speak with knowledge, for I have had bitter and expensive experience in this direction.

While all may not believe in the tests of cattle, yet all will agree there can be no reason why our laws should not be framed to protect the farmers of this State against stock dealers who ship droves of diseased cattle to our unprotected buyers. (Applause.) New York and Pennsylvania protect their farmers, why should not New Jersey protect hers?

There are many other questions that crowd upon my mind, but their discussion must be postponed.

We have a great work before us. Our attitude must be non-partisan. Upon the prosperity of our farms depends the progress of our State. In union there is strength, and in unity there will be power to maintain our rights and demand equal justice for all.

What constitutes a State?
Not high raised battlement or labored mound,
Thick wall or moated gate,
Not broad armed ports when laughing
At the storm rich navies ride.
No, MEN, high-minded MEN—
MEN who their duties know,
But know their rights, and, knowing, dare maintain—
This constitutes a State.

(Applause.)

Secretary Dye then offered the following:

In view of the fact that much farm and garden seed is adulterated with impure and noxious seed, to the great injury to our farms, entailing great loss to the farmers and gardeners, and further, that old seed that has lost the power of germination is mixed with ordinarily good seed; therefore

Resolved, That this State Board of Agriculture, through its Executive Committee, or otherwise, have a bill prepared and presented to the present legislature for enactment that shall pre-

vent the sale of foul and adulterated seeds in this State, under penalties.

I offer that, Mr. Chairman, because I think there is great need for something in that direction.

This resolution was adopted.

Report of Commission on Bovine Tuberculosis.

For the year beginning with November 1st, 1909, and closing with October 31st, 1910, the Commission has carried out the work committed to it as fully as the limitations of the law constituting it would allow. It does not seem to be known to all stock owners and some others, even yet, that the law does not permit the Commission on its own volition to examine any herd of cattle, no matter how badly such animals may be affected—they can only inspect when requested to do so by the owner or by the State Board of Health. Hence, there are herds in which somebody believes tuberculosis exists, and possibly they are right, and they wonder why the Commission does not examine and clean up such dairies. The reason why they do not is stated above. But this much can be said, notwithstanding the limitations of the law:

The work of the Commission during the year has given more satisfactory results than in any one year since its formation. The visits of the Commission to the numerous dairies throughout the State from time to time have been educational, and farmers desiring to improve both stock and premises, have acted on the suggestions made. Realizing the danger of having diseased animals in their herds, they are more cautious about the cows they purchase, and, as they become better acquainted with its symptoms, they call a veterinarian before the disease reaches the advanced stage, and by so doing, the animal is destroyed, thus preventing the infection from spreading to other members of the herd.

Another marked improvement is in dairy stables. In this particular, much efficient work is being done by the different Boards of Health, and the Dairy Inspector of our own State, with whom the Commission have worked in a very harmonious manner for the good of both producer and consumer.

In the earlier years of our work, dairymen feared an investigation of their herds, lest that fact should advertise their stock as being suspicious, at least—but progress has been made, and the dairyman who can show a clean herd and well-kept stables has an advertisement to be desired. With this sentiment gaining, there has been a steady increase in the number of applications for the tuberculin test. Dairymen are appreciating more than ever before the importance of thorough work in determining the healthfulness of their herds. They find that the removal of a bad case occasionally, and the purchase of others that are not tested to increase their milkers, is not satisfactory; it doesn't pay.

In 1908, the Commission desired to conduct a series of tests for three years of the same herds, to ascertain if it were possible to secure and maintain a clean herd where tuberculosis was once prevalent, provided proper precautions were used. Several prominent dairymen consented to avail themselves of the offer to have their herds put under the care of the Commission for this purpose. A partial statement of the work was made in last year's report, and the results are here given in full for the period named.

No. 1.

43 tested October 4, 1905, ...16 condemned.
65 tested December 20, 1907, ... 4 condemned.
65 tested October 15, 1909, ... 1 condemned.
49 tested October, 1910, ... 1 condemned.

History—When test was made in 1905, cows were kept in an old building. Said to have had several cases that died before purchase by present owner. New stables were built and occupied soon after first test.

No. 2.

24 tested October, 1909, ... 2 condemned.
32 tested October, 1910, ... 2 condemned.

History—Stables in good average condition.

62 tested October, 1905, ... 2 condemned.
retest May, 1906, ... 2 condemned.
retest April, 1907, ... 1 condemned.
retest October, 1909, ... 1 condemned.
retest October, 1910, ... None condemned.

History—Sanitary conditions very good.

No. 4.

23 tested October, 1908, ... None condemned.
Retested October, 1909, ... None condemned.
Retested October, 1910, ... None condemned.

No. 5.

38 tested November, 1908, ...14 condemned.
31 tested October, 1909, ... 2 condemned.
26 tested October, 1910, ...None condemned.

History—A previous test made February, 1905, 11 condemned. Disease traced to a cow bought some years before.

No. 6.

39 tested May, 1908, ...17 condemned.
36 tested October, 1909, ... 4 condemned.
29 tested October, 1910, ... 1 condemned.

History—5 cows had been slaughtered July, 1904; stables kept clean, but deficient in sunlight and ventilation.

No. 7.

32 tested October, 1908, ... 5 condemned.
31 tested October, 1909, ... 7 condemned.
Retested October, 1910, ... None condemned.

History—6 of the 7 cows condemned in 1909 had been purchased since first slaughter, without test.

No. 8.

32 tested October, 1908, ... 4 condemned.
54 tested October, 1909, ... 4 condemned.
63 tested October, 1910, ... 2 condemned.

It will be noticed this herd has been increased each year. Most of the reactors were from the recent additions. None but tested cows are now admitted to the herd.

No. 9.

26 tested October, 1908, ... 5 condemned.
42 tested October, 1909, ... 6 condemned.
32 tested October, 1910, ... 1 condemned.

In this herd, the test of 1909 included 14 young animals that were not tested in 1908, and the reactors were mostly from this lot.

No. 10.

30 tested October, 1908, ... 6 condemned.
24 tested October, 1909, ... 3 condemned.
20 tested October, 1910, ... None condemned.

No. 11.

96 tested October, 1908, ...18 condemned.
198 tested October, 1909, ...*7 condemned.
210 tested October, 1910, ...12 condemned.

Some of these reactors in No. 11 had been in previous test. Conditions here, a large cellar barn. Sunlight on but few of the cows. Stable floors poor, dirt and worn-out plank. The owner now convinced the place was a source of infection; has rebuilt interior with concrete on more sanitary principles.

Analysis of the foregoing tests shows that one test is not sufficient to prove a herd absolutely free from the disease. Tuberculin does not produce reaction during the period of incubation, which varies from a few days to as many months, but the percentage of loss from this cause is quite small. Another cause for continuance of disease is lack of thorough cleaning and disinfection of stables. This is being urged more than ever before, that the farmer and dairyman must do this for his own protection, otherwise, serious loss may occur in the future.

During the year, 246 herds, comprising 4,026 dairy animals have been inspected; of these, 1,320 were tuberculin tested and 411 condemned. Every application received by the Commission, whether made by the owner or coming from the Secretary of the State Board of Health, has received proper attention as required by the law, and due effort made to treat all in a fair, and impartial manner.

The following statement shows a detail of the above work each month:

SUMMARY FOR YEAR 1909-1910.

COMMISSION ON TUBERCULOSIS IN ANIMALS.

1909–1910.	*No. of Herds.*	*Total No. of Cows Examined.*	*Total No. of Cows Condemned.*	*Total Appraisement.*	*Total Amt. Paid.*
November, ...	32	274	58	$1,898 00	$1,423 50
December, ...	20	397	33	1,046 00	784 50
January, ...	19	341	31	922 00	691 50
February, ...	25	374	36	1,136 00	852 00
March, ...	25	603	63	1,942 00	1,456 50
April, ...	12	140	23	772 00	579 00
May, ...	17	123	16	348 00	261 00
June, ...	19	312	19	564 00	423 00
July, ...	5	38	18	664 00	498 00
August, ...	20	252	36	1,198 00	898 50
September, ...	13	123	17	576 00	432 00
October, ...	39	1,049	61	2,164 00	1,623 00
Total, ...	246	4,026	411	$13,230 00	$9,922 50

CATTLE IMPORTED.

Owing to a diversity of opinions as to the duties of the Commission under the importation law, and the obligations of transportation companies in the importation of cattle, the Commission requested the opinion of the Atorney-General on mooted points. With such points clearly stated, the Commission took up the matter of importation with the railroads, and an understanding was reached whereby the Commission is immediately informed of shipments without the proper permit or record of tests, thus preventing the importation and sale of untested cattle within this State by the railroads. Furthermore,

* Only 2 of these 7 had been tested in 1908.

the superintendent of the Buffalo Stock Yards informs us weekly of any shipments from there to New Jersey, their destination within the State, and the name of the consignee. We are thus enabled to keep in touch with each consignment from other States to this.

The Commission believes that this work is under as perfect control now as it is possible to have it under the (present) law.

The total number of cattle imported for the year as recorded in the books of the Commission is 8,862.

Report of the Treasurer, Charles Howell Cook.

Amount received from State Treasurer,		$15,800 03

EXPENSES OF COMMISSION.

Salaries—Secretary, assistant and stenographer,	$3,188 30	
Total sum paid for cows,	9,922 50	
Expenses of inspection, veterinarians,	1,756 97	
Traveling expenses of—		
Franklin Dye, Secretary,	51 73	
Samuel B. Ketcham, Assistant,	147 15	
Members of Commission,	80 30	
Tuberculin,	156 25	
Ear tags,	100 00	
Postage,	105 31	
Stationery and blanks,	198 50	
Office supplies,	60 60	
Express,	15 27	
Telegrams, etc.,	17 15	
		$15,800 03

Infectious Diseases of Animals Reported by the State Board of Health.

To the State Board of Agriculture, Trenton, N. J.:

GENTLEMEN—There have been no unusual outbreaks of contagious diseases among animals during the year ending October 31st, 1910. The following is a brief outline of the action which has been taken by the Board relative to the cases which have been reported:

ANTHRAX.

In former years cases of anthrax have occurred in Cumberland, Gloucester and Salem counties. Last year for the first time a few cases were reported in Camden county. On June 25th of the present year several animals died on a farm located near Gloucested City, Camden county. The cause of death in these cases was not determined, and the carcasses of two animals were sold to a nearby rendering establishment. As there were more deaths in the herd within a few days suspicions were aroused and a veterinarian was employed. As the symptoms indicated that the deaths might be due to anthrax specimens for bacteriological examination were forwarded to the State Laboratory of Hygiene at Trenton. The examinations resulted in the verification of the original suspicions as to the character of the disease. Thirteen cattle on the farm where the disease first appeared died, and following this twelve died on an adjacent farm. For a short interval of time no new cases occurred until six animals died on a farm well removed from the original foci of infection. When the fact that diseased animals had been sold from infected farms came to the knowledge of the State Board of Health an inspector was at once detailed to trace the hides and to have them destroyed. After two days of detective work the hides were located, identified and destroyed. Free vaccination with anthrax vaccine of all animals which had been exposed to the infection was offered to cattle owners.

BLACK LEG.

The farmers of Sussex county have within the last few years lost large numbers of animals from black leg. This region of the State is mountainous and cattle owners are accustomed to turn young stock out on extensive pastures lying on the mountain sides. The animals are only looked after infrequently. For a number of years cattle owners in going over the pastures would discover a dead animal, but forage poisoning was usually assigned as the cause of death. During the year 1909 there were so many deaths that a veterinarian was called, and suspecting that the deaths were caused by black leg specimens from dead animals were forwarded to the State Laboratory and the diagnosis was verified. When the character of the disease was established free vaccination of cattle with anti-black leg serum was offered, and many cattle owners availed themselves of the offer. A competent veterinarian was also instructed by the State Board of Health to visit the farmers in the infected district and inform them of the danger of leaving infected carcasses of animals on the surface of the ground and to insist on the proper burial of animals. We have reason to believe that with the knowledge which cattle owners in this section of the State have of preventive measures which should be adopted in dealing with the disease there will be fewer cases in the future, and that within a few years no cases will occur.

COW POX.

Some ten years ago a number of cattle in dairy herds in a section of Essex county were affected with cow pox. The disease was of a mild type and only two or three animals in a herd would develop it. The owners of dairy cows in this section employed veterinarians when the disease appeared and were advised to isolate the affected animals, and have persons employed to milk them who had nothing to do with the milking of animals showing no symptoms of the disease, and the milk from diseased animals was not distributed to consumers. As a result of this prompt action on the part of the dairymen the spread of the disease was limited, and although a number of herds were affected the outbreak was at no time serious. In October of the present year a veterinarian in Hudson county reported cases of cow pox in the herd of a dairyman supplying over 200 quarts of milk to consumers. The examination of the herd, which consisted of twenty-three cows, showed that the disease had existed for several weeks, but the owner had continued to sell milk. Eighteen cows in the herd were affected, but at the time when the veterinary inspection was made all but seven had recovered. The conditions on the dairy premises were so unsanitary that the local board of health was advised to immediately discontinue the sale of milk, and the animals which showed symptoms of the disease in the acute stage were quarantined. The releasing of these animals from quarantine was left to the judgment of the attending veterinarian. That this disease should have remained undiscovered for so long a time, and milk from cows having udders and teats covered with pocks should have been regularly sold to customers, indicates the necessity for more frequent and careful inspection of dairy cattle. Under the present conditions, with the small appropriations which are allowed local boards of health, such inspection is impossible. The time is not far distant when laws will be enacted extending the same supervision over the health of dairy animals as is now required in regard to the sanitary conditions on dairy premises.

MANGE.

Approximately thirty cases of this disease were reported as occurring in Somerset and Mercer counties, and quite a number of cases in Salem county. It has been the usual practice of the Board when cases of mange were reported to confer with the owner or owners of diseased animals, and to advise as to the treatment of the disease and methods to be adopted to prevent the

spreading of the infection to other animals. These directions included the forbidding of tying of horses having mange to public hitching posts; the use of public drinking troughs; the changing of harness or blankets from infected or uninfected animals and the disinfection of stables and infected materials. The failure of some owners to voluntarily comply with the orders of the Board necessitated the serving of absolute quarantine notices in several instances. When owners of well animals were informed of the existence of the disease in Somerset county they co-operated with the State and local health authorities in discovering cases, and in reporting any failure of owners of diseased animals to comply with restrictive regulations which had been ordered, with the result that the epidemic was of short duration.

Very respectfully,

BRUCE S. KEATOR,
Secretary.

The Chairman—You have heard the report of the Commission on Tuberculosis. What is your pleasure?

A Delegate—I move that the report be accepted and become a part of the record.

Dr. Lipman—The alarming increase of tuberculosis among hogs has been traced, in states like Wisconsin and elsewhere, to the distribution of skim milk from creameries; milk containing tubercular bacilli. It happens, of course, in New Jersey, but this State does not distribute much milk from creameries. The Borden Milk Company collect the milk in Sussex and Warren and ship the milk to New York. But it seems to me there is a danger of distributing tubercular bacilli among hogs, and the losses from tuberculosis of hogs has been so high as to raise a serious question at the Chicago stockyards and elsewhere. And here in New Jersey, while the danger may not be as serious as it is in other states, there is considerable danger of hogs contracting tuberculosis when they are allowed to roam in the fields. I find that most of the farmers who have a few hogs on the farm do not take this question as seriously as they might. A large proportion of the hogs that are condemned, now, in the stockyards is due to the tubercular bacilli from cattle.

The motion was carried.

Crop Rotation and Economical Dairy Feeding.

BY H. O. DANIELS, MIDDLETOWN, CONN.

I feel some hesitancy, coming from the State of Connecticut, where, in our own case, the fields of our farm are necessarily small and uneven, owing to the lay of land, in attempting to presume to tell the people of New Jersey, with broad acres and the garden soil of our country, something new or of benefit to you who are engaged in dairying. However, we sometimes stumble upon an idea or hear of some method in this great study of how to feed the dairy cow economically, that we may be able to adapt to our conditions, and it is with this thought in mind I am going to tell you of our method of providing good food and feeding the same to the dairy cows at Millbrook Farm, and if there is but one here that can get some help in his work, I shall not feel that my coming to you will be entirely in vain.

To begin with, we need to produce all the foodstuff we can on our farms for feeding our herds, and I believe we need to study a system of crop rotation to produce maximum crops, and keep our soil improving all the time. We have what we call a three-year rotation system on the tillable fields of our farm, which is working out wonders for us in the amount of food produced to the acre, compared with what we used to produce even up to three years ago.

Our system is to concentrate our efforts to raising ensilage crops on the fields that are adapted or can be made adapted by drainage, etc., and planting these fields to corn, oats and clover, while we keep those fields permanently in grass and hay that are more natural for this crop on account of the water content in the soil. When we have our fields divided up in this way, then after we get the system established, we have one-third of our tillable land in corn, one-third in oats and clover or rye and clover, and one-third in solid clover.

Now, in order to illustrate this system better, I would like to ask you to turn with me to this chart. We will suppose, for convenience, we have a fifty-acre farm, all conveniently situated near our buildings; although in my own case I regret to say we are not so fortunate, as some of our land is three-fourths of a mile, and some one mile from the home farm. In this fifty-acre farm we will suppose thirty acres will grow corn all right and the other twenty acres will grow only hay; I find nearly all farms in my own State at least have fields in about this proportion, except in our own case we have seventy-two acres under cultivation, but there are only thirty-five acres that we can grow corn readily. Now, to return to the illustration of a fifty-acre farm with thirty acres adapted to growing corn. Let us divide this thirty acres up into three fields—

CROP ROTATION FOR THE DAIRY FARM.

First Year, Corn.	*First Year,* Rye and Clover or Oats and Clover.	*First Year,* Clover.
Second Year, Rye and Clover or Oats and Clover.	*Second Year,* Clover.	*Second Year,* Corn.
Third Year, Clover.	*Third Year,* Corn.	*Third Year,* Rye and Clover or Oats and Clover.

—or if this is not just according to the lay of the land, make four or five fields, but use the thirty acres in a series of three crops. We will say we are just beginning our system of crop rotation, and if we need all the ensilage we can grow, let us plant as much of the thirty acres to corn as we can take care of this year, then this fall, after the corn is harvested, take the wheel or cutaway harrow and the spring tooth harrow and harrow over the corn stubble, fitting the soil to sow to rye.

Before sowing rye, if you have found that your soil needs lime (as most soils do, and as we have found to be very essential on our soil to the growing of clover), sow one-half ton of fresh-burned finely ground lime to the acre and harrow into the soil, then sow one bushel and one peck of rye to the acre, harrowing all in smoothly by going diagonally across the field. This puts the field in good shape for the winter, and conserves the soil fertility by preventing washing. In the spring take one-third of this rye field, if we have sown all of our corn field to rye, and scratch the soil over with a spike tooth harrow until a fine seed bed is formed about one inch deep and sow Medium Red clover seed at the rate of eight quarts per acre, harrow in and roll. Leave this field to grow and it will soon show wonders in the growth of rye and the fine stand of clover.

Take the other portion of our tillable land, spread on fifteen to eighteen loads of stable manure to the acre with a spreader, if you have one, and if not, I most certainly would advise the purchase of one, as I really believe from our experience that fifteen loads of manure spread with the spreader will give better results than twenty-five loads spread by hand.

The purchase of a manure spreader has revolutionized our farming operations and in making possible crop growing, not even thought of before the purchase. Let us plant the balance of our twenty acres to corn, and grow all we can this season. Now, in the month of early June (we presume you all have silos that are dairying for profit, if not, we consider the same very necessary in our system of crop rotation) we will cut this rye just as it is heading out and cart it to the silo, cutting all into one-half-inch lengths, and, if necessary, sprinkling with water as it goes into the silo.

This is essential if the rye gets at all dry before it is carted. The better way is to mow only as fast as can be cleaned up right after the mower or reaper. This will make very good summer feed for our dairy cows, but not as good as we will have next year, when we have clover from this field to put in with rye from the next portion of our fields. After this rye is cut we usually can cut one crop of fine clover rowen and sometimes two, if the season is favorable. When we harvest the corn crop we will again sow the field to rye, as last fall, and leave all O. K. for the winter. The next season we will sow another ten acres of this rye to clover, using (one-half ton lime) to acre the same as last year, and we will begin to have our fields in shape for our crop rotation.

The ten acres sowed to clover last year will show up fine this spring if the soil is right for it, and we will spread ten loads of manure to the acre with the spreader. The last ten acres of our system we will spread fifteen loads of manure to the acre and fit same in fine shape for corn and plant, preferable; at least we do at our farm, the large growing corn called Eureka. The ten acres of clover will come on strong and produce at the rate of ten tons of ensilage or green clover per acre, and the ten acres of rye will produce as much more green rye, or at the rate of ten tons per acre.

POSSIBILITIES OF A THREE-YEAR ROTATION.

10 Acres,	*10 Acres,*	*10 Acres,*
Corn.	Rye and Clover.	Clover.
Will yield 250 tons Ensilage. Fifteen loads manure per acre for Corn.	Will yield 50 tons Rye Ensilage from 5 acres; 15 tons Rye Hay from 5 acres; 5 tons Clover Hay, Rowen Crop; ½ ton Lime per acre for Rye and Clover.	Will yield 100 tons Ensilage; 5 to 10 tons Clover Rowen. *2d Crop,* Ten loads Manure per acre for Clover.

We now have about 200 tons of rye and clover to put in our silos again in early June, and, if the season is favorable, one or two cuts of clover rowen on these twenty acres. With a good season, and a well cared for crop of Eureka corn, we can hope for twenty-five tons of ensilage per acre, so you see on the thirty acres this season we can reasonably expect 400 to 450 tons of ensilage, and ten to fifteen tons of clover rowen on our thirty acres of tillable land.

The next year we have a clover sod, where our clover ensilage grew last year, to grow our corn crop; and the other clover and rye fields come along in their rotation, and every three years we make a complete rotation. We have found after three or four years' experience of filling silos with rye and clover for a summer feed that the ensilage is better to put in only half as much rye as clover, or, in other words, put two loads of clover to one of rye.

Another splendid summer silage crop is to sow oats in the spring with clover seed, similar as we sow the rye and clover, using lime before sowing the oats and putting the oats and clover into the silo, as the clover grows twelve to fifteen inches high if the oats are not sown too thickly, not over two bushels to acre, and it is safer to sow one and one-half bushels in order to give the clover all the chance we can. We cut with mower and load with hay loader, thus making easy work in loading.

Now, a word in regard to growing our hay on these other twenty acres of hay land. We spread with manure spreader in the fall or winter just as it is the most convenient, ten loads of manure to the acre on these grass fields, and early in April we take our cutaway harrows and go over these grass fields with the harrow set at a good angle, going in half lap lengthwise of the field, and then diagonal once or twice until the field shows some little new dirt; then we sow, if the sod is getting thin, three or four quarts of alsike or red clover and one or two quarts of red top, and scratch in with a sulky twelve feet weeder and roll. You would be surprised if you had never tried this treatment for a grass sod, what a wonderful change will take place. The lifting action of the cutaway harrow opens up the sod, lets the manure down to the roots of the grass, and also lets in sunlight and air and germinates this new seed, and where one or two blades of grass would grow without this treatment five or six will spring up, and with the fine new grass at the bottom a splendid fine hay is produced that, supplemented with our fine ensilage, keeps the cows busy all through the winter and spring season just as well as on June pasture, and furnishes a full feed for all the year round. By sowing part of our grass fields alternate years with clover, it is possible to have a fine stand of clover mixed hay on all our grass fields each year, and also helps to make the very best rowen or second crop.

CROPS FROM A FIFTY-ACRE DAIRY FARM.

30 acres in rotation—
400 tons ensilage.
15 tons rye hay.
10 tons clover hay.

20 acres in meadow—
60 tons hay, first crop.
15 tons hay, second crop.

400 tons ensilage, 100 tons hay, will feed—
50 cows, 365 days.
20 young stock, 200 days.
6 horses, 365 days.

A fifty-acre farm treated as I have outlined, after it is all in good productive state, will supply food enough as roughage to feed 50 cows all the year, 20 head of young stock the six or seven winter months and six horses all the year. I know this is no fairy dream, as we are producing even at the disadvantage we labor under of having our farm so scattered, enough roughage to feed 100 head of cattle, of which 75 are mature stock, and 10 horses on 72 acres, and the soil and fields promise better the coming year than ever before, and the best part of it all is that the large number of stock make stable manure enough to feed all these crops without the cash outlay for any fertilizer except the small amount of lime needed to grow the clover. Of course, we have to buy grain to balance up the ration and also for our horses. We find for the winter feeding of our dairy a mixture of 100 pounds wheat bran, 100 pounds middlings or mixed feed and 100 pounds cottonseed meal makes a very good economical mixture, analyzing about 21 per cent. digestible protein, and by using from 6 to 12 pounds per day for cows milking from 20 to 45 pounds, we can keep up the milk flow reasonably economically.

If we could get alfalfa to grow in place of our native grasses on our grass fields we would think we had reached the ideal rotation for a dairy farm. We are experimenting with alfalfa, having two acres at present, and the past year on this two-year-old field we cut four good crops, the total growth of which would average over 100 inches or over 8 feet. We are now planning to extend the alfalfa crop and are cleaning up a 10-acre wood lot of stumps, rocks, etc., at a cost of nearly $100 per acre, on which we hope in two or three years to grow some good crops of this truly wonderful plant. In the summer, when we are feeding the clover and rye silage or clover and oat silage we change our grain ration to conform to this crop and use a mixture containing about 17 or 18 per cent. protein, as the clover silage is rich in protein and needs more carbohydrates to balance the ration, and this we get very effectively by mixing 100 pounds bran, 100 pounds middlings, 100 pounds cottonseed meal and 100 pounds hominy or corn meal.

Now, let us look for a moment at the possibilities of this system of crop rotation and the benefits.

First. After we have the system all established we only have to plow but ten acres of these thirty acres of tillable land each year, thus reducing the labor question to a minimum.

Second. We have a good sod to drive the manure spreader over, making light work for these machines.

Third. The work is spread over nearly every month in the year in seasonable time to do the work easily.

Fourth. The tillable fields are covered nearly all the year with a growing crop, thus preventing soil washing and loss of fertility.

Fifth. The soil is constantly becoming richer in nitrogen, phosphoric acid and potash.

Sixth. The cash outlay for fertilizer is only for the half ton of lime per acre used on each successive field each year, which amounts to about $3.50 per acre or $35 for 10 acres. We may find it necessary to use 200 pounds of potash to balance up the stable manure and clover sod for growing the future crops of corn and clover, but thus far we have not found it necessary.

Seventh. There is no opportunity for weeds to go to seed and make trouble in the corn field, as the two and sometimes three cuttings of the clover prevent all that, and finally the soil is in the very best possible condition for growing the corn crop, as a clover sod makes an ideal condition of soil. This system can be applied on a larger or lesser number of acres if one wishes.

Then with the treatment I have outlined for the grass field I believe a good maximum crop of hay can be grown for a good many years without plowing up and reseeding, certainly for ten or more years, as we have fields at home that proves this can be done. These fields are naturally moist grass land, and perhaps could be continued longer than a drier field could do, but if one had these drier fields, and alfalfa can be made to grow as I believe it can, the problem would certainly be solved for an economical dairy feeding.

These grass fields ought, and do at our farm, produce at least three tons of hay first crop, and nearly a ton, oftener more of rowen at the second crop, if this is cut early enough so as to give a chance for good second crop. If we consider the manurial value of the purchased grain we feed our cows, and are careful to save all the manure, and apply to the land in its best condition, as we ought to do if we are going to be good dairymen; I think the possibilities in an acre of soil are not yet reached, but are ours to attain if we study the soil and supply its needs.

There is one other matter that ought to be mentioned in connection with feeding a dairy herd economically, and that is to provide a good clean, warm, well-lighted and ventilated stable for them to do their work. It means a question of profit or loss with the owner how he cares for his herd, as a healthy herd is certainly more profitable than an unhealthy one, and to be kept so we need well-ventilated stables, that the air can all change at least once an hour, and this can be done with a good system of ventilation known as the King system, that lets the fresh air in at the top of the room through air shafts that are open at the bottom and empty in at the ceiling, and the foul air is taken out at the bottom with one or more large air shafts constructed on the plan of an old-fashioned open fireplace.

This keeps the room dry at all times, and with numerous windows to let in sunlight, and extra air when necessary by tipping the sash back from the top, a splendid warm, dry stable can be kept, and the cows will do good work and appreciate the food given them. Finally, furnish pure water at all times preferably with the individual water basin, feed regularly and study the individuality of each cow when feeding, weigh every cow's milk at each milking, recording the same on suitable milk record sheet, which will tell us in a short time to feed our valuable farm grown crops to only such cows as we absolutely know are paying us a profit, and, if we are earnest to do these things, I believe we will receive our reward here as faithful stewards, and in the great hereafter we will hear the welcome, "Well done, thou hast been faithful over a few things, I will make thee ruler over many."

Mr. Daniels was tendered a vote of thanks.

Secretary Dye—I want to offer a motion. The members of the Board know the circumstances under which we met day before yesterday. They knew the prostration of our President Voorhees, and they, furthermore, got information of the sickness of Vice-President Cox. In our extreme need our worthy brother, Senator Gaunt, came to our aid and has acted as Chairman during all this meeting. I move a rising vote of thanks to Senator Gaunt for his kindness in this emergency.

The motion was carried by a rising vote.

Report of the E. B. Voorhees Agricultural Society.

READ BY MR. SHUTE.

The Short Courses in Agriculture were established five years ago, in order that those interested in obtaining a more thorough knowledge of practical and scientific agriculture, especially farmers and their sons, could devote twelve weeks of their time during the winter months, when they can best be spared from their homes, and spend this time in obtaining such knowledge as will enable them to cope more successfully with the many perplexing problems that confront the up-to-date farmer of to-day. The record of attendance is increasing every year, there being at present 83 students enrolled, and pursuing the specified work in the different courses. It is impossible, however, in so short a space of time as twelve weeks, to get more than the rudimentary facts and principles, leaving many questions that are liable to arise when the students get back on the farm engaged in practical work. Owing to this fact, the idea was conceived to band the graduates of the Short Courses together into one agricultural organization, which was appropriately named the "E. B. Voorhees Agricultural Society," the object of this association being to keep them in close contact with the work of the Experiment Station, and the Short Courses, and enable them to take part in experiments along various lines toward the furthering the various interests of agriculture in the State.

These experiments are suggested by different members of the Society, or perhaps by different members of the Experiment Station staff, and a list is made out and read at the March meeting usually, and different members volunteer to take up and carry out different experiments, usually those which come under their particular line of farming, the material often times being furnished in part by the Experiment Station or by the Society. It has been found, however, that a man is needed to give some time and attention to this work; to get around among the members occasionally; visit those carrying on experiments and to encourage them, and see that planting, spraying, etc., are done at the proper time, such things being most important in experimental work. In order to do this, it has been decided by the members to increase the dues of the Society, which will make it possible to pay the expenses of a man to do a certain amount of this sort of work.

This Association now has a membership of over two hundred, outside of the present year's class, who do not become members until the close of the Short Courses. A small part of this number are not Short Course graduates, but men who are interested in the future welfare of the cause. Any resident of the State is eligible for membership who is interested in agriculture, and wishes to lend his influence toward promoting this line of work. Meetings are held at the College Farm, usually three times during the year, one at the close of the Short Courses in March, when plans are made for the work of the ensuing year. The second meeting is held in conjunction with the Annual Farmers' Day in August, when reports are made by members of the success or failure of various crops in their section, and often times these reports result in discussions which bring out facts that help many of the members to see their mistakes in the past, and enable them to so change their plan of campaign as to eliminate the same trouble another year. The third meeting is held during Farmers' Week, which meeting many of the students attend, and bring exhibits of farm products along—their particular line for competition for the various prizes offered by the Society. A prize of $10 is offered for the best ten ears of corn grown by a member of the Society. Another prize of $10 is offered for the best display of apples grown by a member, while other prizes varying in value are offered by the club for the best exhibits of other farm crops, and besides these the student devising the best plan for experimental work is recognized by the award of a medal.

Many things have been already accomplished by this Society toward furthering the interests of the farmers of New Jersey, our object being to work in conjunction and harmony with the State Board of Agriculture. and the various other organizations whose object is to place farming on a more profitable and businesslike basis.

The report was adopted.

The President—I will ask Mr. Gaunt, Chairman *pro tem.*, to appoint the committees.

Mr. Gaunt—A resolution was passed a few minutes ago authorizing the appointment of a committee on this matter of transportation. However, that committee has been in existence several years, and the committee is made up as follows: Mr. E. R. Collins, Mr. J. T. Allinson, Mr. J. Harvey Darnell.

Secretary Dye—I think it important that the Executive Committee of the Board should hold a meeting immediately after adjournment of this session, and if you will please call such a meeting you may meet in my office or here.

The President—The chair requests the Executive Committee to meet in the office of the Secretary of the Board of Agriculture.

Mr. Gaunt—Mr. Chairman, before closing I know the members of the Board are all quite anxious to meet their President, and if they will come forward I will attempt to introduce Senator Frelinghuysen to all of you.

The President—I can say that it will be a great pleasure to meet you all personally and know you better.

The Board then adjourned.

Officers of the State Grange of New Jersey, P. of H., 1911.

Master—GEORGE W. F. GAUNT, ...Mullica Hill, N. J.
Overseer—J. M. WOOLMAN, ...Elmer, N. J.
Lecturer—D. H. AGANS, ...Three Bridges, N. J.
Steward—FRANK O. WARE, ...Deerfield, N. J.
Assistant Steward—C. C. BASLEY, ...Farmingdale, N. J.
Chaplain—ELVI VANDRUFF, ...Sussex, N. J.
Treasurer—CHARLES COLLINS, ...Moorestown, N. J.
Secretary—JOHN T. COX, ...White House Station, N. J.
Gate Keeper—HOWARD JONES, ...Freehold, N. J.
Ceres—MRS. ELIZA PERRINE, ...Cranbury, N. J.
Pomona—MISS HESTER G. HILDRETH, ...Rio Grande, N. J.
Flora—MRS. I. E. MABIE, ...Westwood, N. J.
Lady Assistant Steward—MRS. H. H. HUTCHINSON, JR., ...Robbinsville, N. J.

Pomona Granges.

MASTERS AND SECRETARIES WITH P. O. ADDRESS.

Burlington, No. 1. Master, Geo. P. Lippincott, Marlton, N. J.
Secretary, Geo. L. Gillingham, Moorestown, N. J.
Meets fourth Tuesday in January.

Sussex, No. 2. Master, Thomas W. DeKay, New Milford, N. Y.
Secretary, George C. Smith, Hamburg, N. J.
Meets first Saturday in January and October; third in April and July.

Hunterdon, No. 3. Master, Joseph Bodine, Flemington, R. D., N. J.
Secretary, W. Y. Holt, Flemington, N. J.
Meets second Friday in January, April, August and October.

Cumberland, No. 4. Master, Wm. N. DuBois, Bridgeton, R. D. No. 4, N. J.
Secretary, L. F. Glaspey, Shiloh, N. J.
Meets second Tuesday in January, April, July and October.

Mercer, No. 5. Master, Wm. M. Cox, Cranbury, R. D. No. 3. N. J.
Secretary, J. T. Allinson, Yardville, N. J.
Meets March 6th with Pioneer at Cranbury; June 5th at Ewing; September 4th at Hamilton Square; November 20th at Hopewell.

Salem, No. 6. Master, John G. Borton, Woodstown, N. J.
Secretary, Minnie C. Wilkinson, Woodstown, N. J.
Meets at call of Executive Committee.

Camden and Atlantic, No. 7. Master, Amos G. Haines, Ashland, N. J.
Secretary, H. E. Horner, Merchantville, N. J.
Meets January, April, July, October, at Haddonfield, Blackwood, Berlin and Hammonton.

Gloucester, No. 8. Master, Elmer E. Clement, Thorofare, N. J.
Secretary, Lizzie B. Kirby, Mullica Hill, N. J.

Centre District, No. 9. Master, A. W. Fund, Chatham, N. J.
Secretary, Oscar De Camp, Roseland, N. J.
Meets fourth Wednesday in January, April and October.

Warren, No. 10. Master, N. Warne, Broadway, N. J.
Secretary, Nellie S. Albertson, East Stroudsburg, Pa.
Meets third Saturday in January, May and November; second Saturday in September.

Bergen, No. 11. Master, James D. Carlough, Allendale, R. D. No. 1, N. J.
Secretary, Leonard Pikaart, Midland Park, R. D. No. 1, N. J.

Monmouth, No. 12. Master, L. H. Stemler, Matawan, N. J.
Secretary, S. B. Wells, Marlboro, N. J.
Meets second Saturday in March, June, September and December.

Middlesex and Somerset, No. 13. Master, B. DeWitt Giles, New Market, N. J.
Secretary, H. W. Kline, New Brunswick, R. D. No. 6, N. J.
Meets third Thursday in January, April, August and October.

Cape May, No. 14. Master, W. L. Yerkes, Tuckahoe, N. J.
Secretary, Eli Townsend, Clermont, N. J.
Meets by appointment.

Subordinate Granges.

Pioneer, No. 1. Master, Walter H. Havens, Cranbury, Middlesex county.
Secretary, Edward Chamberlin, Cranbury, Middlesex county.
Lecturer, Wm. T. Campbell, Cranbury, Middlesex county.
Meets first and second Tuesday, 7:30 P. M. Members, 231.

Marl Ridge, No. 2. Master, G. Ulmer Foulks, New Egypt, Ocean county.
Secretary, Wm. H. Davis, Cream Ridge, Monmouth county.
Lecturer, Mrs. Reba C. Davis, Cream Ridge, Monmouth county.
Meets first Friday at 2 P. M. Members, 92.

Hammonton, No. 3. Master, Manley Austin, Hammonton, Atlantic county.
Secretary, Mrs. Thomas Creamer, Hammonton, Atlantic county.
Lecturer, Miss Adelia Dudley, Hammonton, Atlantic county.
Meets first and third Fridays. Members, 78.

Swedesboro, No. 5. Master, Alvin Gaventa, Repaupo, Gloucester county.
Secretary, Mrs. Caddie J. Gill, Swedesboro, Gloucester county.
Lecturer, Miss Minnie Young, Swedesboro, Gloucester county.
Meets every Wednesday evening, Black's Hall. Members, 286.

Somerset, No. 7. Master, H. W. Kline, New Brunswick, R. D. 6, Somerset county.
Secretary, L. R. McCracken, New Brunswick, R. D. 6, Somerset county.
Lecturer, James McCracken, New Brunswick, R. D. 6, Somerset county.
Meets second and fourth Wednesdays, Wyckoff's Hall, Middlebush. Members, 53.

Moorestown, No. 8. Master, J. Howard Lippincott, Moorestown, Burlington county.
Secretary, Sadie E. Collins, Moorestown, Burlington county.
Lecturer, Emily H. Lippincott, Riverton, Burlington county.
Meets Thursday afternoons from November 1 to April 1; balance of year first and third Thursday evenings. Members, 365.

Woodstown, No. 9. Master, Leonidas Pancoast, Woodstown, Salem county.
Secretary, Carrie R. Atkinson, Woodstown, Salem county.
Lecturer, Alice A. Borton, Woodstown, Salem county.
Meets every Wednesday evening, 7:30. Members, 224.

Vineland, No. 11. Master, Wm. C. Parsons, Vineland, R. D. No. 5, Cumberland county.
Secretary, Mrs. Marie E. Hendricks, South Vineland, Cumberland county.
Lecturer, Mrs. J. A. Vanaman, South Vineland, Cumberland county.
Meets every Saturday, 2:30 P. M., Mystic Chain Hall. Members, 313.

Ringoes, No. 12. Master, Howard C. Sutphin, Ringoes, R. D. No. 1, Hunterdon county.
Secretary, J. S. Williamson, Ringoes, R. D. No. 2, Hunterdon county.
Lecturer, Miss Jessie Fullerton, Ringoes, R. D. No. 1, Hunterdon county.
Meets second and fourth Saturday afternoons, other Saturday evenings. Members, 157.

Hopewell, No. 16. Master, Henry L. Davis, Shiloh, Cumberland county.
Secretary, Walton E. Davis, Shiloh, Cumberland county.
Lecturer, Robert G. Jones, Bridgeton, R. D. No. 1, Cumberland county.
Meets Wednesday nights in Grange Hall, Shiloh, N. J. Members, 304.

Cumberland, No. 18. Master, Samuel L. Watson, Greenwich, Cumberland county.
Secretary, Morris Goodwin, Greenwich, Cumberland county.
Lecturer, Anna T. Goodwin, Greenwich, Cumberland county.
Meets first and third Tuesdays. Members, ——.

Fenwick, No. 20.—Master, Norman Fogg, Hancock's Bridge, Salem county.
Secretary, Anna E. Harris, Harmersville, Salem county.
Lecturer, Susie Ridgeway, Hancock's Bridge, Salem county.
Meets every Thursday evening in Grange Hall, Harmersville. Members, 87.

Mannington, No. 25. Master, Linwood H. Patrick, Salem, Salem county.
Secretary, Samuel W. Ridgeway, Salem, Salem county.
Lecturer, Ida A. Patrick, Salem, Salem county.
Meets ————. Members, 88.

Harrisonville, No. 26. Master, Frank Horner, Woodstown, R. D. Gloucester county.
Secretary, Lizzie B. Kirby, Mullica Hill, Gloucester county.
Lecturer, Ella Lippincott, Mullica Hill, Gloucester county.
Meets Tuesday nights, Harrisonville. Members, 109.

Elmer, No. 29. Master, John Gantz, Jr., Monroeville, Salem county.
Secretary, Mary W. Gaunt, Monroeville, Salem county.
Lecturer, Laura Evans, Elmer, Salem county.
Meets every Wednesday evening in Garrison's Hall. Members, 260.

Bridgeport, No. 32. Master, Willard B. Kille, Swedesboro, Gloucester county.
Secretary, S. Lewis Kille, Swedesboro, Gloucester county.
Lecturer, Mary E. Hager, Swedesboro, Gloucester county.
Meets every Tuesday evening in hall at Bridgeport. Members, 123.

Cedarville, No. 34. Master, M. B. Husted, Cedarville, R. D. No. 1, Cumberland county.
Secretary, N. E. Diament, Cedarville, Cumberland county.
Lecturer, Mrs. E. W. Lanning, Fairton, Cumberland county.
Meets December to February, Thursday P. M.; March to April, Thursday evening; May to November, first and third Thursday evenings. Members, 100.

Medford, No. 36. Master, Francis A. Branin, Medford, Burlington county.
Secretary, May D. Hollinshead, Medford, Burlington county.
Lecturer, Hettie M. Allen, Medford, Burlington county.
Meets second and fourth Monday evenings from June 1st to October 1st; balance of year, Thursday afternoons. Members, 235.

Haddon, No. 38. Master, John M. Garwood, Ashland, Camden county.
Secretary, Wesley R. Stafford, Marlton, R. D. No. 3, Camden county.
Lecturer, Arabella Haines, Marlton, Camden county.
Meets Saturday evenings, April 1st to November 1st; Wednesday afternoons, November to April. Members, 340.

Mantua, No. 39. Master, Adam Knight, Sewell, R. D., Gloucester county.
Secretary, Harry Vierrick, Wenonah, Gloucester county.
Lecturer, Anna Sweeten, Wenonah, Gloucester county.
Meets Monday evenings in Noblits Hall, Wenonah. Members, 163.

Windsor, No. 40. Master, David D. Gordon, Robbinsville, R. D. No. 1, Mercer county.
Secretary, Runey D. Perrine, Windsor, Mercer county.
Lecturer, Phebe Hutchinson, Robbinsville, R. D. No. 3, Mercer county.
Meets second and fourth Tuesdays at Windsor. Members, 140.

Hope, No. 43. Master, Jos. R. Flanigan, Bridgeton, R. D. No. 4, Cumberland county.
Secretary, Mrs. Mary Miller, Bridgeton, R. D. No. 2, Cumberland county.
Lecturer, Mrs. Ruth Holmes, Bridgeton, R. D. No. 2, Cumberland county.
Meets first and third Tuesday evenings in Grange Hall. Members, 119.

Marlton, No. 45. Master, Henry S. Lippincott, Marlton, R. D. No. 2, Burlington county.
Secretary, Walter B. Winner, Marlton, Burlington county.
Lecturer, Caroline S. E. Willis, Marlton, Burlington county.
Meets second and fourth Tuesday afternoons, December 1st to April 1st; first and third Tuesday evenings, balance of year. Members, 133.

Pemberton, No. 50. Master, Owen Oatman, Mount Holly, R. D., Burlington county.
Secretary, Frank M. Hargrove, Vincentown, Burlington county.
Lecturer, Mrs. A. Rosback, Pemberton, Burlington county.
Meets Friday evenings in Town Hall. Members, 180.

Mullica Hill, No. 51. Master, Elbert Kirby, Mullica Hill, Gloucester county.
Secretary, P. Howard Avis, Mullica Hill, Gloucester county.
Lecturer, Alice Evans, Mullica Hill, Gloucester county.
Meets every Tuesday evening in Grange Hall. Members, 440.

Deerfield, No. 52. Master, A. Walter Padgett, Deerfield, Cumberland county.
Secretary, Wm. H. Van Lier, Jr., Deerfield, Cumberland county.
Lecturer, Mrs. Bessie Ackley, Deerfield, Cumberland county.
Meets every Wednesday evening in Davis' Hall. Members, 139.

Centre Grove, No. 57. Master, Charles F. Earle, Millville, R. D. No. 1, Cumberland county.
Secretary, Elizabeth Taylor, Millville, R. D. No. 1, Cumberland county.
Lecturer, Wm. H. Taylor, Millville, R. D. No. 1, Cumberland county.
Meets second and fourth Wednesdays in Centre Grove Schoolhouse. Members, 56.

Columbus, No. 58. Master, William R. Sharp, Columbus, Burlington county.
Secretary, Amor J. Gauntt, Jobstown, Burlington county.
Lecturer, Sara Lippincott, Columbus, Burlington county.
Meets every other Friday evening from April to December; balance of the year, alternate afternoon and evening. Members, 367.

Thorofare, No. 59. Master, T. Wood Wyne, Thorofare, Gloucester county.
Secretary, Charles H. Budd, Thorofare, Gloucester county.
Lecturer, Beulah Clement, Thorofare, Gloucester county.
Meets Monday evenings, Thorofare, N. J. Members, 216.

Courses Landing, No. 60. Master, Morris Purtell, Sharptown, Salem county.
Secretary, Gertrude Freas, Sharptown, Salem county.
Lecturer, Bertha Hackett, Woodstown, R. D. No. 2, Salem county.
Meets Tuesday evenings at Sharptown. Members, 78.

Crosswicks, No. 61. Master, L. F. Klein, Crosswicks, Burlington county.
Secretary, H. M. Rogers, Crosswicks, Burlington county.
Lecturer, Mrs. Carrie Bowers, Yardville, Burlington county.
Meets second and fourth Saturdays. Members, 150.

Pennington, No. 64. Master, John C. Errickson, Pennington, R. D. No. 1, Mercer county.
Secretary, Jos. R. Burroughs, Pennington, R. D. No. 1, Mercer county.
Lecturer, Mrs. Russell Drake, Harbourton, Mercer county.
Meets second Saturday afternoon, fourth Friday evening, in I. O. O. F. Hall. Members, 106.

Vincentown, No. 67. Master, M. W. Githens, Vincentown, Burlington county.
Secretary, Mrs. F. Githens, Vincentown, Burlington county.
Lecturer, Rebecca Scott, Vincentown, Burlington county.
Meets every Saturday evening in Irick's Hall. Members, 127.

Ewing, No. 73. Master, James H. Cox, Trenton, Mercer county.
Secretary, Wm. H. Cadwallader, Trenton, R. D. No. 1, Mercer county.
Lecturer, Eva Herbert, Trenton, R. D. No. 1, Mercer county.
Meets first and third Tuesday evenings at Ewing Church House Hall. Members, 81.

Mercer, No. 77. Master, Edgar L. Van Zandt, Blawenburg, Mercer county.
Secretary, J. M. Dalrymple, Hopewell, Box 116, Mercer county.
Lecturer, Mrs. Edward Jones, Jr., Pennington, Mercer county.
Meets first and third Saturday afternoons in Grange Hall, Hopewell. Members, 161.

Wantage, No. 78. Master, J. A. Wilson, Sussex, Sussex county.
Secretary, Frank Martin, Sussex, Sussex county.
Lecturer, S. M. Parcell, Sussex county.
Meets first and third Wednesday evenings in Grange Hall. Members, 105.

Hamilton, No. 79. Master, Walter S. Haines, Robbinsville, R. D. 2, Mercer county.
Secretary, Mrs. M. M. Nutt, Hamilton Square, Mercer county.
Lecturer, Mrs. Hattie Burke, Hamilton Square, Mercer county.
Meets first Tuesday evening, third afternoon. Members, 310.

Friesburg, No. 81. Master, George Hitchner, Elmer, R. D. 3, Salem county.
Secretary, Mrs. Anna Roork, Elmer, R. D. 3, Salem county.
Lecturer, Mrs. Kate Roork, Elmer, R. D. No. 3, Salem county.
Meets Tuesday evenings in Grange Hall. Members, 100.

Williamstown, No. 85. Master, R. Howell Tice, Williamstown, Gloucester county.
Secretary, James M. Tweed, Williamstown, Gloucester county.
Lecturer, H. S. Bateman, Franklinville, R. D., Gloucester county.
Meets Tuesday evenings from November first to April 30th; second and fourth, from May 1st to October 31st. Members, 246.

Locktown, No. 88. Master, John N. Smith, Flemington, R. D. No. 2, Hunterdon county.
Secretary, William Eick, Flemington, R. D. No. 2, Hunterdon county.
Lecturer, Manning F. Sherman, Flemington, R. D. No. 2, Hunterdon county.
Meets every Tuesday evening in Grange Hall. Members, 112.

Blackwood, No. 90. Master, A. J. Severns, Blackwood, R. D., Camden county.
Secretary, Martin Schubert, Laurel Springs, Camden county.
Lecturer, Ida Fox, Laurel Springs, Camden county.
Meets every Saturday evening, 7:30. Members, 225.

Monmouth, No. 92. Master, Geo. W. Blatchly, Freehold, R. D., Monmouth county.
Secretary, I. B. Van Derveer, Freehold, R. D., Monmouth county.
Lecturer, D. H. Jones, Freehold, R. D., Monmouth county.
Meets first and third Wednesday evenings, April to January; afternoons, January to April. Members, 157.

Hightstown, No. 96. Master, Harry R. Rogers, Cranbury, R. D., Middlesex county.
Secretary, Frank C. Danser, Cranbury, Middlesex county.
Lecturer, Frank Norcross, Hightstown, Middlesex county.
Meets Saturday afternoons, December to April; second and fourth Saturday evenings balance of year. Members, 293.

Allentown, No. 98. Master, G. H. Kirby, Allentown, Monmouth county.
Secretary, Miss Sarah G. Chamberlin, Cream Ridge, Monmouth county.
Lecturer, Mrs. Lizzie Hunt, Davis, Monmouth county.
Meets first, third and fifth Saturday evenings in Grange Hall. Members, 248.

Liberty, No. 99. Master, G. C. McDowell, Wickatunk, Monmouth county.
Secretary, S. B. Wells, Marlboro, Monmouth county.
Lecturer, Mary E. Conover, Holmdel, Monmouth county.
Meets every other Friday at Bradevelt. Members, 59

Sergeantsville, No. 101. Master, Egbert T. Bush, Stockton, Hunterdon county.
Secretary, W. O. Merrill, Sergeantsville, Hunterdon county.
Lecturer, N. B. Rittenhouse, Sergeantsville, Hunterdon county.
Meets every Saturday night. Members, 142.

Livingston, No. 104. Master, Henry B. Van Ness, Chatham, R. D., Essex county.
Secretary, A. W. Fund, Chatham, R. D., Essex county.
Lecturer, Miss Ella McChesney, Chatham, R. D., Essex county.
Meets second and fourth Thursday in Collins' Hall. Members, 111.

Morris, No. 105. Master, A. L. Reinmann, Hanover, Morris county.
Secretary, W. A. Howell, Florham Park, Morris county.
Lecturer, Miss Etta Osborn, Whippany, R. D., Morris county.
Meets second and fourth Tuesday evenings at Hanover. Members, 75.

Kingwood, No. 106. Master, A. L. Larason, Frenchtown, R. D. No. 1, Hunterdon county.
Secretary, E. B. Huffman, Frenchtown, R. D. No. 1, Hunterdon county.
Lecturer, Kate Thatcher, Frenchtown, R. D. No. 1, Hunterdon county.
Meets Saturday nights at Barbertown, N. J. Members, 28.

Caldwell, No. 107. Master, E. O. Watbyer, Cedar Grove, Essex county.
Secretary, Miss Mary V. Lindsley, Verona, Essex county.
Lecturer, R. C. Campbell, Caldwell, Essex county.
Meets second and fourth Friday evenings. Members, 35.

Roseland, No. 108. Master, Joseph C. Conover, Roseland, Essex county.
Secretary, Henry F. Harrison, Caldwell, Essex county.
Lecturer, Emma L. Campbell, Roseland, Essex county.
Meets second and fourth Tuesday evenings in Grange Hall, Roseland. Members, 63.

Warren, No. 110. Master, Frank Housel, Broadway, R. D. No. 1, Warren county.
Secretary, Mae Oberly, Broadway, R. D. No. 1, Warren county.
Lecturer, Henry J. Beers, Stewartsville, R. D., Warren county.
Meets every Friday at Broadway, N. J. Members, 94.

Mickleton, No. 111. Master, Willie C. Dawson, Paulsboro, Gloucester county.
Secretary, Walter Heritage, Swedesboro, Gloucester county.
Lecturer, Lulu C. Haines, Clarksboro, Gloucester county.
Meets every Thursday night at Mickleton, N. J. Members, 259.

Hurffville, No. 115. Master, Charles Turner, Sewell, R. D. No. 1, Gloucester county.
Secretary, Walton H. Chew, Pitman, Gloucester county.
Lecturer, Mrs. Howard Wick, Sewell, R. D. No. 1, Gloucester county.
Meets Saturday evenings in Davenport's Hall, Hurffville. Members, 274.

Rocksburg, No. 116. Master, Van Young, Phillipsburg, R. D., Warren county.
Secretary, Warren Herman, Phillipsburg, R. D., Warren county.
Lecturer, R. L. Irwin, Rocksburg, Warren county.
Meets first and third Thursdays at Rocksburg. Members, 29.

Washington, No. 117. Master, S. T. Bowman, Washington, R. D. No. 1, Warren county.
Secretary, Mrs. Joseph Bodine, Washington, Warren county.
Lecturer, M. L. Rush, Washington, Warren county.
Meets first and third Thursdays at residence of Master. Members, 161.

Oak Grove, No. 119. Master, Burris Snyder, Pittstown, R. D. No. 1, Hunterdon county.
Secretary, Frank E. Burd, Flemington, R. D. No. 1, Hunterdon county.
Lecturer, Mary E. Hampton, Pittstown, R. D. No. 1, Hunterdon county.
Meets every Tuesday evening in Grange Hall, near Pittstown. Members, 166.

Spring Mills, No. 120. Master, R. T. Crouse, Milford, Hunterdon county.
Secretary, Mary E. Woolf, Milford, Hunterdon county.
Lecturer, S. A. Carter, Bloomsbury, Hunterdon county.
Meets Tuesday evenings in Grange Hall, Spring Mills, Members, 93.

Stewartsville, No. 121. Master, J. Manning Smith, Stewartsville, Warren county.
Secretary, Mrs. Myrtle K. Frey, Stewartsville, Warren county.
Lecturer, Mrs. J. H. Hulshizer, Stewartsville, Warren county.
Meets first and third Thursdays in I. O. O. F. Hall. Members, 61.

Aura, No. 122. Master, John L. Miller, Clayton, Gloucester county.
Secretary, Joseph W. Guest, Aura, Gloucester county.
Lecturer, Carrie Newkirk, Clayton, Gloucester county.
Meets every Wednesday evening. Members, 139.

Cross Keys, No. 123. Master, W. H. Lawson, Cross Keys, Gloucester county.
Secretary, Elvin Tombleson, Cross Keys, Gloucester county.
Lecturer, Anna F. Watson, Sewell, R. D. No. 3, Gloucester county.
Meets every Saturday evening in Hurff's Hall. Members, 115.

Grand View, No. 124. Master, Thomas B. Hampton, Flemington, R. D. No. 1, Hunterdon county.
Secretary, Edward Nief, Flemington, R. D. No. 2, Hunterdon county.
Lecturer, Myrtle Holt, Flemington, Hunterdon county.
Meets every Saturday evening in Grange Hall. Members, 145.

Riverside, No. 125. Master, Wm. T. Hageman, Three Bridges, R. D. No. 1, Hunterdon county.
Secretary, W. W. Foster, Three Bridges, R. D. No. 1, Hunterdon county.
Lecturer, Mrs. Cora Agans, Three Bridges, Hunterdon county.
Meets every Saturday evening in Grange Hall, Three Bridges. Members, 162.

Delaware, No. 126. Master, Wm. F. Earye, Delaware, Warren county.
Secretary, J. H. Albertson, East Stroudsburg, Pa.
Lecturer,, Mrs. Martha Appleman, Columbia, Warren county.
Meets first and third Saturday afternoon from November to May. Members, 78.

Iona, No. 127. Master, George W. Karge, Monroeville, Gloucester county.
Secretary, Bertha Atkinson, Franklinville, Gloucester county.
Lecturer, I. H. Hinchman, Franklinville, Gloucester county.
Meets Saturday evenings. Members, 65.

Cape May, No. 128. Master, Truman Hickman, Green Creek, Cape May county.
Secretary, Edw. W. Tuttle, Dias Creek, Cape May county.
Lecturer, A. T. D. Howell, Dias Creek, Cape May county.
Meets every Tuesday evening in I. O. M. Hall, Dias Creek. Members, 193.

Bergen, No. 129. Master, August C. Ohle, Maywood, Bergen county.
Secretary, Arthur Lozier, Ridgewood, Bergen county.
Lecturer, Lillie Banta, Ridgewood, Bergen county.
Meets first and third Wednesdays in Grange Hall, Spring Valley. Members, 87.

Franklin, No. 130. Master, A. G. Smith, Wyckoff, Bergen county.
Secretary, Mrs. J. Vanderhoof, Wyckoff, Bergen county.
Lecturer, Edwin S. Maulsby, Midland Park, Bergen county.
Meets second and fourth Tuesday, June to August; balance of year every Thursday at Wyckoff. Members, 349.

Rancocas, No. 131. Master, Bloomfield B. Pew, Mt. Holly, R. D., Burlington county.
Secretary, Mrs. Nancy M. Leeds, Rancocas, Burlington county.
Lecturer, Mrs. Richard H. Hausell, Burlington, R. D. No. 1, Burlington county.
Meets Wendnesday afternoons from December to April; first and third Wednesdays balance of year at Rancocas. Members, 345.

Cold Spring, No. 132. Master, Frank E. Bate, Fishing Creek, Cape May county.
Secretary, Jennie McPherson, Erma, Cape May county.
Lecturer, Elwood Douglass, Erma, Cape May county.
Meets Monday evenings in Mechanics' Hall, Cold Spring. Members, 168.

Hickory, No. 133. Master, A. R. Johnson, Pattenburg, Hunterdon county.
Secretary, Sara E. McCrea, Pattenburg, Hunterdon county.
Lecturer, J. W. Duckworth, Pattenburg, Hunterdon county.
Meets Wednesday evening near the Hickory. Members, 38.

Vernon Valley, No. 134. Master, A. S. Drew, Vernon, Sussex county.
Secretary, Mrs. C. L. Giveans, Vernon, Sussex county.
Lecturer, Mrs. Della Predmore, Vernon, Sussex county.
Meets first and third Tuesdays at Burrows' Hall, Vernon. Members, 109.

Ramsey, No. 135. Master, Irving Fox, Allendale, Bergen county.
Secretary, Margaret J. Wilson, Allendale, Bergen county.
Lecturer, Ferdinand, Shilling, Ramsey, R. D. No. 1, Bergen county.
Meets Tuesday evening in I. O. O. F. Hall at Ramsey. Members, 195.

Lincoln, No. 136. Master, F. J. Ludwig, Westwood, R. D. No. 2, Bergen county.
Secretary, Miss Leona Bushfield, Westwood, Bergen county.
Lecturer, Mrs. Anna R. Ackerman, Westwood, Bergen county.
Meets second and fourth Wednesdays in I. O. O. F. Hall, Westewood. Members, 81.

Mt. View, No. 137. Master, Linford Kinney, Branchville, R. D. No. 2, Sussex county.
Secretary, Mrs. Dolson Ayers, Beemersville, Sussex county.
Lecturer, Thomas A. Conway, Beemersville, Sussex county.
Meets every two weeks at Beemersville. Members, 77.

Berlin, No. 138. Master, Wm. J. Raabe, Berlin, Camden county.
Secretary, X. F. Ottinger, Berlin, Camden county.
Lecturer, L. A. Raughley, Berlin, Camden county.
Meets every Tuesday in Grange Hall. Members, 135.

Upper Township, No. 139. Master, E. D. Burley, Tuckahoe, Cape May county.
Secretary, Z. A. Townsend, Tuckahoe, Cape May county.
Lecturer, Mrs. Emma Shaw, Tuckahoe, Cape May county.
Meets first Friday, April to October; first and third Fridays balance of year, in Mechanics, Hall. Members, 90.

Montague, No. 140. Master, Henry Schneider, Port Jervis, R. D. 1, N. Y.
Secretary, Rose A. Reinhardt, Port Jervis, R. D. No. 1, N. Y.
Lecturer, John H. Scheets, Port Jervis, R. D. No. 1, N. Y.
Meets second and fourth Saturdays in Grange Hall, Milville, Sussex county. Members, 52.

Pascack, No. 141. Master, G. J. Wortendyke, Allendale, Bergen county.
Secretary, G. H. Osborne, Woodcliff Lake, Bergen county.
Lecturer, Mrs. I. E. Mabie, Westwood, Bergen county.
Meets second and fourth Saturday evenings in Borough Hall, Woodcliff Lake. Members, 141.

Olive Branch, No. 142. Master, C. H. Binks, Matawan, R. D. No. 2, Monmouth county.
Secretary, J. H. Douglass, Matawan, R. D. No. 1, Monmouth county.
Lecturer, J. S. Crawford, Sr., Matawan, R. D. No. 2, Monmouth county.
Meets every Thursday evening, October to April, every two weeks, April to October. Members, 166.

Delaware Valley, No. 143. Master, Ira Stoll, Layton, Sussex county.
Secretary, George E. Hursh, Normanock, Sussex county.
Lecturer, Frank Stoll, Layton, Sussex county.
Meets first and third Saturday nights in Grange Hall at Layton. Members, 99.

Saddle River, No. 144. Master, J. N. Carlock, Westwood, R. D. No. 2, Bergen county.
Secretary, J. Fred Koopman, Waldwick, Bergen county.
Lecturer, A. Van Nostrand, Westwood, R. D. No. 2, Bergen county.
Meets first and third Wednesdays at Saddle River, N. J. Members, 140.

Wayne Township, No. 145. Master, David F. Duncan, Paterson, R. D. No. 1, Passaic county.
Secretary, H. M. Berdan, Paterson, R. D. No. 1, Passaic county.
Lecturer, Mrs. H. M. Berdan, Paterson, R. D. No. 1, Passaic county.
Meets first and third Thursday evenings in Grange Hall, Preakness, N. J. Members, 198.

Egg Harbor, No. 146. Master, Henry Tapken, Egg Harbor, R. D., Atlantic county.
Secretary, Carl Shirmer, Egg Harbor, R. D., Atlantic county.
Lecturer, Henry Pfeiffer, Cologne, Atlantic county.
Meets first and third Saturdays in Krein's Hall, Egg Harbor. Members, 36.

Wrightstown, No. 147. Master, A. C. Buck, Jacobstown, Burlington county.
Secretary, Samuel S. Fort, Wrightstown, Burlington county.
Lecturer, Mary A. Meany, Wrightstown, Burlington county.
Meets second and fourth Wednesday evenings in Mechanics' Hall. Members, 157.

Stanton, No. 148. Master, Watson Anderson, Lebanon, R. D., Hunterdon county.
Secretary, J. B. Anderson, Lebanon, R. D., Hunterdon county.
Lecturer, Carrie C. Painter, Lebanon, R. D., Hunterdon county.
Meets Thursday evenings in Grange Hall, Stanton Station. Members, 157.

North Arlington, No. 149. Master, Wm. A. Brandenburg, North Arlington, Bergen county.
Secretary, Mrs. Effie G. M. Stenp, North Arlington, Bergen county.
Lecturer, M. B. Millar, North Arlington, Bergen county.
Meets second and fourth Tuesdays, November to April; then first Saturday. Members, 41.

Burlington, No. 150. Master, Clarence Adams, Burlington, R. D. 1, Burlington county.
Secretary, Grace T. Gilbert, Burlington, R. D. No. 2, Burlington county.
Lecturer, Mary Deacon, Burlington, R. D. No. 2, Burlington county.
Meets November to April, Saturday 2:00 P. M.; balance of year evenings, every two weeks. Members, 228.

Milltown, No. 151. Master, Geo. Redshaw, New Brunswick, R. D. No. 3, Middlesex county.
Secretary, Frank H. Smith, South River, Box 18, Middlesex county.
Lecturer, Earle J. Owen, New Brunswick, Middlesex county.
Meets second and fourth Wednesdays in Mechanics' Hall, Milltown. Members, 75.

New Market, No. 152. Master, B. DeWitt Giles, Dunellen, Middlesex county.
Secretary, W. B. Kurtz, Bound Brook, R. D. No. 1, Middlesex county.
Lecturer, Emma D. Hillyer, Dunellen, Middlesex county.
Meets second and fourth Thursdays in Friendship Hall, New Market. Members, 181.

Raritan Valley, No. 153. Master, Charles S. Hamilton, Somerville, R. D., Somerset county.
Secretary, Mrs. C. S. Phillips, South Branch, Somerset county.
Lecturer, Mrs. C. S. Hamilton, Somerville, R. D., Somerset county.
Meets Monday evenings, September to July; every two weeks during July and August. Members, 101.

Union, No. 154. Master, S. S. Doughty, Leesburg, Cumberland county.
Secretary, Mrs. S. Anna Sharp, Leesburg, Cumberland county.
Lecturer, Mrs. Eunice Camp, Leesburg, Cumberland county.
Meets second and fourth Tuesday nights in I. O. O. F. Hall. Members, 106.

Fair lawn, No. 155. Master, A. I. Ackerman, Ridgewood, R. D. No. 2, Bergen county.
Secretary, W. A. Bogart, Fair Lawn, Bergen county.
Lecturer, Mrs. A. Courter, Fair Lawn, Bergen county.
Meets first and third Mondays in Grange Hall, Fair Lawn. Members, 138.

Raritan, No. 156. Master, James C. Hendrickson, Keyport, R. D. No. 1, Monmouth county.
Secretary, Harry M. Aumack, Keyport, R. D. No. 2, Monmouth county.
Lecturer, J. L. T. Webster, Hazlet, Monmouth county.
Meets first and third Wednesday afternoons; second and fourth Wednesday evenings in I. O. O. F. Hall. Members, 169.

Farmingdale, No. 157. Master, Jos. Conrow, Farmingdale, Monmouth county.
Secretary, Cora J. Thompson, Allenwood, Monmouth county.
Lecturer, Mattie Craig, Farmingdale, Monmouth county.
Meets first and third Friday. Members, 83.

Lafayette, No. 158. Master, Robert L. Everett, Lafayette, Sussex county.
Secretary, Anna Everett, Lafayette, Sussex county.
Lecturer, Mrs. C. V. Runion, Lafayette, Sussex county.
Meets first and third Tuesdays of each month. Members, 73.

Whitehouse, No. 159. Master, W. H. Opie, Whitehouse Sta., R. D. No. 2, Hunterdon county.
Secretary, H. M. Messler, Whitehouse Sta., R. D. No. 1, Hunterdon county.
Meets ———. Members, 72.

Frankford, No. 160. Master, Robert O. Bale, Augusta, Sussex county.
Secretary, S. M. Case, Branchville, Sussex county.
Lecturer, Mrs. W. R. Bale, Augusta, Sussex county.
Meets first and third Saturdays, 2:00 P. M., in Cook's Hall, Branchville. Members, 82.

Shrewsbury, No. 161. Master, Jos. W. Thompson, Red Bank, Monmouth county.
Secretary, F. A. Bloodgood, Red Bank, Monmouth county.
Lecturer, A. C. McLean, Red Bank, Monmouth county.
Meets first and third Tuesday evenings at Red Bank. Members, 114.

South Seaville, No. 162. Master, Hattie Fidler, South Dennis, Cape May county.
Secretary, Clara Townsend, South Seaville, Cape May county.
Lecturer, Henry W. Geller, Woodbine, Cape May county.
Meets second and fourth Tuesday nights. Members, 122.

Titusville, No. 163. Master, J. Warren Fleming, Titusville, Mercer county.
Secretary, Theo. B. Hunt, Titusville, Mercer county.
Lecturer, Mrs. J. B. Scudder, Titusville, Mercer county.
Meets first and third Saturday afternoons in Hunt's Hall. Members, 64.

Hardyston, No. 164. Master, Evi S. Drew, Hamburg, Sussex county.
Secretary, Mrs. M. L. Smith, Hamburg, Sussex county.
Lecturer, Harry E. Watt, Hamburg, Sussex county.
Meets first and third Monday nights in Mechanics' Hall, Hamburg. Members, 36.

Farmers' Enterprise, No. 165. Master, W. R. Morris, Newton, R. D. No. 2, Sussex county.
Secretary, Charlie M. Crawn, Newton, R. D. No. 2, Sussex county.
Lecturer, Mrs. S. J. Crawn, Newton, R. D. No. 2, Sussex county.
Meets second and fourth Saturdays in Mechanics' Hall, Newton, N. J. Members, 71.

Blue Anchor, No. 166. Master, James Russell, Cedar Brook, Camden county.
Secretary, Wm. H. Marvin, Blue Anchor, Camden county.
Lecturer, Mrs. S. Gardiner, Winslow, Camden county.
Meets Saturday nights at Blue Anchor. Members, 89.

Palermo, No. 167. Master, Enoch E. Madara, Palermo, Cape May county.
Secretary, Jesse T. Young, Busby's Point, Cape May county.
Lecturer, Sallie Young, Palermo, Cape May county.
Meets every Saturday evening, November to April; second and fourth balance of year. Members, 65.

Glendola, No. 168. Master, Wm. S. Willett, Belmar, R. D. No. 2, Monmouth county.
Secretary, E. C. White, Belmar, R. D. No. 1, Monmouth county.
Lecturer, Mary Slocum, Belmar, R. D. No. 1, Monmouth county.
Meets second and fourth Fridays in Mechanics' Hall, Glendola. Members, 118.

Millstone Valley, No. 169. Master, Geo. B. Randolph, Bound Brook, R. D. No. 2, Somerset county.
Secretary, P. N. Williamson, Millstone, Somerset county.
Lecturer, Mrs. H. S. VanNuys, Jr., Millstone, R. D. No. 1, Somerset county.
Meets first and second Tuesdays at Millstone. Members, 51.

Lawrenceville, No. 170. Master, Richard W. Cook, Lawrenceville, Mercer county.
Secretary, Mrs. Frank Applegate, Trenton, Mercer county.
Lecturer, Mrs. A. J. Hendrickson, Lawrenceville, Mercer county.
Meets second and fourth Friday evenings. Members, 106.

Washington Valley, No. 171. Master, H. D. Opdyke, Martinsville, Somerset county.
Secretary, Lincoln Wallace, Martinsville, Somerset county.
Lecturer, Wm. F. Way, Martinsville, Somerset county.
Meets first Thursday in each month. Members, 16.

Salem, No. 172. Master, Collins B. Allen, Salem, R. D., Salem county.
Secretary, Anna L. Reeves, Salem, R. D., Salem county.
Lecturer, Emma R. Ayres, Salem, R. D., Salem county.
Meets Thursday evenings in Dunn buildings. Members, 206.

Anchor, No. 173. Master, J. W. Jamison, Cassville, Ocean county.
Secretary, C. M. Rorer, Cassville, Ocean county.
Lecturer, Emory M. Lane, Cassville, Ocean county.
Meets last Saturday afternoon, November to May; third Wednesday

evening from May to November, Cassville. Members, 17.

Pleasantville, No. 174. Master, Franklin Taylor, Atlantic City, 615 Oriental avenue, Atlantic county.
Secretary, Townsend Showell, Absecon, Atlantic county.
Lecturer, Mrs. Charlotte Adams, Pleasantville, Atlantic county.
Meets Thursday evenings in Adams' Hall. Members, 27.

Pompton Valley, No. 175. Master, A. J. N. Lockwood, Pompton Lakes, Passaic county.
Secretary, L. R. Lines, Pompton Lakes, Passaic county.
Lecturer, J. L. Coursen, Haskell, Passaic county.
Meets every other Tuesday in Durling's Hall. Members, 94

Swartswood Lake, No. 176. Master, Mrs. Anna V. Hendershot, Swartswood, Sussex county.
Secretary, A. W. Huff, Swartswood, Sussex county.
Lecturer, B. T. Hill, Swartswood, Sussex county.
Meets ————. Members, 46.

Stillwater, No. 177. Master, John W. Earl, Stillwater, Sussex county.
Secretary, Wm. C. Earl, Stillwater, Sussex county.
Lecturer, O. Van Horn, Stillwater, Sussex county.
Meets first and third Saturday nights. Members, 63.

Pequest, No. 178. Master, Peter M. Martin, Tranquility, Sussex county.
Secretary, Clarence Cooke, Newton, R. D. No. 1, Sussex county.
Lecturer, Charles E. Drake, Tranquility, Sussex county.
Meets first and third Thursday evening. Members, 63.

Clayton, No. 179. Master, Oliver W. Zane, Clayton, Gloucester county.
Secretary, J. F. Blakeborough, Clayton, Gloucester county.
Lecturer, Emma Woodruff, Clayton, Gloucester county.
Meets Saturday nights in Doun's Hall, Clayton, N. J. Members, 112.

Pedricktown, No. 180. Master, George Gaventa, Pedricktown, Salem county.
Secretary, C. B. Green, Pedricktown, Salem county.
Lecturer, Mrs. Albert Sailor, Pedricktown, Salem county.
Meets Wednesday evenings at Pedricktown. Members, 119.

Pennsgrove, No. 181. Master, Wilbert Sailor, Pennsgrove, Salem county.
Secretary, Charles G. Turner, Pennsgrove, Salem county.
Lecturer, Mrs. J. B. Summerill, Pennsgrove, Salem county.
Meets Wednesday evenings in I. O. O. F. Hall. Members, 147.

Westville, No. 182. Master, Benjamin Haines, Westville, R. D., Gloucester county.
Secretary, Theodore Fleetwood, Westville, R. D., Gloucester county.
Lecturer, Francis Goldy, Westville, R. D., Gloucester county.
Meets Saturday evenings. Members, 93.

Acquackanonk, No. 183. Master, Henry Isleib, Paterson, R. D. No. 2, Passaic county.
Secretary, Herman Rubins, Paterson, R. D. No. 2, Passaic county.
Lecturer, Mrs. Caroline Shuit, Paterson, R. D. No. 2, Passaic county.
Meets second and fourth Tuesdays in Firemen's Hall, Albion Place. Members, 91.

Plainsboro, No. 184. Master, J. V. B. Wicoff, Plainsboro, Middlesex county.
Lecturer, Mrs. Howard Jemison, Princeton, R. D. No. 2, Middlesex county.
Meets first and third Monday evenings at Plainsboro. Members, 139.

English Creek, No. 185. Master, Andrew R. English, Mays Landing, R. D., Atlantic county.
Secretary, Eunice E. Hickman, Mays Landing, R. D., Atlantic county.
Lecturer, J. Warren Gifford, Cologne, Atlantic county.
Meets every second Saturday at home of Secretary, English Creek. Members, 24.

Rio Grande, No. 186. Master, Walter D. Hand, Rio Grande, Cape May county.
Secretary, Mrs. Edna Endicott, Rio Grande, Cape May county.
Lecturer, Mrs. Emma Fisher, Rio Grande, Cape May county.
Meets first and third Tuesdays of each month. Members, 65.

Moravian, No. 187. Master, James I. Cook, Delaware, R. D. No. 2, Warren county.
Secretary, V. R. Loller, Delaware, Warren county.
Lecturer, Mrs. Rachel Addis, Hope, Warren county.
Meets every other Saturday night at Hope, N. J. Members, 70.

Passaic Township, No. 188. Master, Edwin Bebout, Millington, R. D., Morris county.
Secretary, Ralph B. Spencer, Millington, R. D., Morris county.
Lecturer, Charles A. Cornish, Gillette, R. D., Morris county.
Meets at Myersville, N. J. Members, 74.

Johnsonburg, No. 189. Master, J. Clinton Kerr, Johnsonburg.
Secretary, L. E. Savacool, Newton, R. D. No. 1, Sussex county.
Lecturer, Wm. A. Durling, Jr., Newton, R. D. No. 1, Sussex county.
Meets second and last Saturday nights in Grange Hall, Johnsonburg. Members, 63.

Manalapan, No. 190. Master, S. C. Stillwell, Englishtown, R. D. No. 1, Monmouth county.
Secretary, C. V. Aumack, Englishtown, Monmouth county.
Lecturer, L. V. Dey, Main St., Englishtown, Monmouth county.
Meets every other Monday night beginning January 2, Columbia Hall. Members, 70.

Cologne, No. 191. Master, J. L. Purzner, Egg Harbor City, R. D., Atlantic county.
Secretary, Wm. Hohneisen, Jr., Egg Harbor City, R. D., Atlantic county.
Lecturer, Mrs. Max Mauroff, Egg Harbor City, R. D., Atlantic county.
Meets first and third Saturday evenings in Liederkranz Hall, Cologne. Members, 99.

Sparta, No. 192. Master, Eugene Cory, Sparta, Sussex county.
Secretary, Mrs. S. Pullis, Sparta, Sussex county.
Lecturer, Henry Folk, Sr., Sparta, Sussex county.
Meets Saturdays in Earl's Hall, Sparta, N. J.

Allenwood, No. 193. Master, S. J. Allen, Allenwood, Monmouth county.
Secretary, Peter Tilton, Allenwood, Monmouth county.
Lecturer, L. J. Allen, Allenwood, Monmouth county.
Meets first and third Thursday evenings. Members, 94.

Towaco, No. 194. Master, Frank L. Jacobus, Towaco, Morris county.
Secretary, Geo. S. Pentz, Towaco, Morris county.
Lecturer, Wm. H. Hewlett, Towaco, Morris county.
Meets first Tuesday evening in Country Club House. Members, 83.

North Haledon, No. 195. Master, F. A. Thornley, North Haledon, Passaic county.
Secretary, W. J. Maynard, Box 177, North Haledon, Passaic county.
Lecturer, Emil Miller, North Haledon, Passaic county.
Meets every Wednesday evening in Borough Hall.

STATISTICAL TABLE OF FARM CROPS AS REPORTED BY SECRETARIES OF THE COUNTY BOARDS.

COUNTIES.	CORN.			WHEAT.			RYE.			OATS.		
	Product compared with last year—per cent.	Average yield per acre—bushels.	Average price.	Product compared with last year—per cent.	Average yield per acre—bushels.	Average price.	Product compared with last year—per cent.	Average yield per acre—bushels.	Average price.	Product compared with last year—per cent.	Average yield per acre—bushels.	Average price.
Atlantic,	80	20	$0 70	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bergen,	50	35	80	100	25	$0 90	90	25	$0 65	.....	.....	.....
Burlington,	125	60	60	110	30	95	110	27	70	250	40	$0 38
Camden,	100	35	65	100	20	1 00	100	16	.....	.....	.....	.....
Cape May,	100	35	70	.....	.....	.....	.....	.....	.....	110	20	50
Cumberland,	100	40	65	90	18	90	.....	.....	.....	65	35	40
Essex,	100	75	70	100	35	95	100	40	80	.....	.....	.....
Gloucester,	110	40	65	100	25	1 00	85	15	70	80	40	40
Hunterdon,	105	36	54	97	17½	95	99	18	78	130	40	40
Mercer,	92	38	65	99	21	96	100	18	66	80	38	40
Middlesex,	75	30	55	100	18	90	100	18	70	300	40	40
Monmouth,	90	54	65	100	25	1 00	100	18	65	.....	.....	.....
Morris,	75	.....	90	100	.....	1 00	100	.....	70	125	.....	45
Ocean,	92	28	70	.....	.....	.....	.....	12	70	.....	.....	.....
Passaic,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Salem,	150	50	50	110	30	90	.....	.....	.....	.....	.....	.....
Somerset,	80	28	65	100	14	1 02	100	18	85	120	35	38
Sussex,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Union,	80	35	75	.....	.....	.....	60	12	80	.....	.....	.....
Warren,	70	35	55	95	20	90	25	15	70	100	35	36

STATISTICAL TABLE OF FARM CROPS AS REPORTED BY SECRETARIES OF THE COUNTY BOARDS.

COUNTIES.	BUCKWHEAT.			HAY.			WHITE POTATOES.			SWEET POTATOES.		
	Product compared with last year—per cent.	Average yield per acre—bushels.	Average price.	Product compared with last year—per cent.	Average yield per acre—tons.	Average price per ton.	Product compared with last year—per cent.	Average yield per acre—bushels.	Average price per bushel.	Product compared with last year—per cent.	Average yield per acre—bushels.	Average price per bushel.
Atlantic,	.....	.....	.....	85	2	$18 00	80	110	$0 73	100	137½	$0 83
Bergen,	.....	.....	.....	100	1½	20 00	90	75	82	.....	.....	.....
Burlington,	.....	.....	.....	130	2	18 00	150	175	55	110	130	54
Camden,	.....	.....	.....	100	1¾	18 00	100	65	.....	100	80	62
Cape May,	.....	.....	.....	100	1½	18 00	105	102	65	100	109	54
Cumberland,	.....	.....	.....	95	1	16 00	50	33	53	100	110	54
Essex,	.....	.....	.....	100	1½	17 00	45	56	1 00	.....	.....	.....
Gloucester,	.....	.....	.....	100	2	18 00	75	201	52	100	230	52
Hunterdon,	96	21	67	105	1⅔	18 00	102	110	70	101	120	70
Mercer,	.....	.....	.....	95	1¾	18 00	100	115	55	100	120	60
Middlesex,	.....	.....	.....	110	1¼	20 00	150	220	73	.....	.....	.....
Monmouth,	.....	.....	.....	100	2	20 00	110	220	45	100	137½	73
Morris,	.....	.....	.....	80	.....	20 00	50	.....	80	.....	.....	.....
Ocean,	.....	.....	.....	.....	1½	17 00	.....	100	60	.....	144	50
Passaic,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Salem,	.....	.....	.....	120	1½	18 00	100	158	48	.....	.....	.....
Somerset,	.....	.....	.....	85	1¼	18 00	100	110	70	.....	.....	.....
Sussex,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Union,	.....	.....	.....	90	1	23 00	.....	.....	.....	.....	.....	.....
Warren,	.....	.....	.....	100	1¾	16 00	80	65	50	.....	.....	.....

STATISTICAL TABLE OF FARM CROPS AS REPORTED BY SECRETARIES OF THE COUNTY BOARDS.

COUNTIES.	APPLES.			PEARS.			PEACHES.			GRAPES.		
	Product compared with last year—per cent.	Average yield per acre—barrels.	Average price per barrel.	Product compared with last year—per cent.	Average yield per acre—barrels.	Average price per barrel.	Product compared with last year—per cent.	Average yield per acre—baskets.	Average price.	Product compared with last year—per cent.	Average yield per acre—pounds.	Average price per pound.
Atlantic,	100	50	$3 00	75	40	$2 00	200	100	$0 75	25	500	$0 03½
Bergen,	.....	40	3 00	100	.....	2 00	50	.....	1 25	.....	.....	.....
Burlington,	.....	.....	.....	.....	100	1 75	150	450	60	.....	.....	.....
Camden,	50	.....	3 00	100	75	1 50	.....	.....	.....	25	1000	02½
Cape May,	75	38	1 75	100	100	1 00	100	400	50	.....	.....	.....
Cumberland,	50	25	2 00	80	35	1 25	100	300	55	.....	.....	.....
Essex,	20	.....	1 00	100	.....	1 00	100	.....	1 25	.....	.....	.....
Gloucester,	60	.....	.....	100	.....	.....	100	.....	.....	85	.....	.....
Hunterdon,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mercer,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Middlesex,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Monmouth,	25	.....	.....	.....	.....	.....	100	.....	.....	100	.....	.....
Morris,	.....	.....	.....	100	.....	.....	100	.....	.....	20	.....	.....
Ocean,	.....	.....	2 50	.....	.....	.....	.....	.....	.....	.....	.....	.....
Passaic,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Salem,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Somerset,	110	.....	.....	120	.....	.....	100	.....	45	50	.....	04
Sussex,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Union,	.....	.....	.....	50	100	1 50	90	200	1 00	.....	.....	.....
Warren,	50	20	1 80	90	20	1 20	100	100	50	.....	.....	.....

STATISTICAL TABLE OF FARM STOCK AS REPORTED BY SECRETARIES OF THE COUNTY BOARDS.

COUNTIES.	HORSES.		MULES.		COWS.	
	Total number compared with December 1st, last year, per cent.	Average price between 3 and 7 years old.	Total number compared with December 1st, last year, per cent.	Average price between 3 and 7 years old.	Total number compared with December 1st, last year, per cent.	Average price between 3 and 7 years old.
Atlantic,	.....	.....	.....	.....	.....	.....
Bergen,	100	$150 00	.....	.....	100	$60 00
Burlington,	100	225 00	100	250 00	90	50 00
Camden,	.....	.....	.....	.....	.....	.....
Cape May,	100	150 00	100	160 00	90	45 00
Cumberland,	100	175 00	100	200 00	100	50 00
Essex,	100	150 00	.....	.....	90	75 00
Gloucester,	100	175 00	100	180 00	75	75 00
Hunterdon,	99	160 00	95	165 00	102	45 00
Mercer,	100	200 00	100	225 00	95	55 00
Middlesex,	100	250 00	100	225 00	75	80 00
Monmouth,	100	250 00	100	260 00	100	55 00
Morris,	100	175 00	110	.....	100	50 00
Ocean,	100	200 00	.....	.....	98	60 00
Passaic	.....	.....	.....	.....	.....	.....
Salem,	100	200 00	100	225 00	100	75 00
Somerset,	100	175 00	100	160 00	115	45 00
Sussex,	.....	.....	.....	.....	.....	.....
Union,	100	175 00	.....	.....	75	60 00
Warren,	100	175 00	25	150 00	75	60 00

STATISTICAL TABLE OF FARM STOCK AS REPORTED BY SECRETARIES OF THE COUNTY BOARDS.

COUNTIES.	VEAL CALVES.		SHEEP.		LAMBS.		SWINE.		TURKEYS.		CHICKENS.		WINTER WHEAT. WINTER RYE.			
	Total number compared with December 1st, last year, per cent.	Average price per pound for season.	Total number compared with December 1st, last year, per cent.	Average price per head for store sheep.	Total number compared with December 1st, last year, per cent.	Average price per head for spring lambs.	Total number compared with December 1st, last year, per cent.	Average price per pound December.	Total number compared with December 1st, last year, per cent.	Average price per pound November and December.	Total number compared with December 1st, last year, per cent.	Average price per pound November and December.	Area sown compared with last year—per cent.	Average condition December 1st.	Area sown compared with last year—per cent.	Average condition December 1st.
Atlantic,	100	$0 08½	.....	.....	.....	.....	20	$0 11	.....	.....	100	$0 16	.....	.....	100	100
Bergen,	100	10	.....	.....	.....	.....	125	12	.....	.....	100	16	100	80	100	100
Burlington,	100	08	100	$8 00	100	$6 00	100	10½	100	$0 25	100	20	100	100	100	100
Camden,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cape May,	100	08	.....	.....	.....	.....	100	12	100	30	100	16	.....	.....	.....	.....
Cumberland,	80	09	100	.....	100	7 00	75	11½	80	24	85	21	100	.....	.....	.....
Essex,	100	08	.....	.....	.....	.....	100	11	.....	.....	110	13	.....	.....	.....	.....
Gloucester,	90	15	75	4 50	75	6 00	100	.....	100	.....	100	.....	100	100	100	100
Hunterdon,	100	.....	100	5 25	.....	.....	97	.....	.....	.....	100	14	100	92	102	93
Mercer,	75	09	.....	.....	.....	.....	110	12	.....	.....	100	18	100	100	100	100
Middlesex,	75	09	.....	.....	.....	.....	110	12	.....	.....	100	18	100	100	100	100
Monmouth,	100	09	100	5 50	100	6 00	100	11	80	26	100	18	100	100	100	100
Morris,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100	125	100	125
Ocean,	100	08½	.....	.....	.....	.....	90	11	100	14½	.....	.....	100	90	.....	.....
Passaic,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Salem,	100	08½	.....	.....	.....	.....	100	11	.....	.....	100	20	110	100	.....	.....
Somerset,	100	09	90	6 50	100	6 00	80	10½	50	22	110	18	110	80	100	75
Sussex,	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Union,	60	10	.....	.....	.....	.....	.....	.....	.....	.....	100	15	100	25	50	10
Warren,	80	09	50	5 00	50	5 00	50	14	25	19	70	17	100	90	50	90

Reports of County Boards of Agriculture.

Reports of County Boards of Agriculture.

ATLANTIC COUNTY.

OFFICERS FOR 1911.

President, JOHN HUENKE, ...Egg Harbor City, R. F. D. No. 1
Vice-President, A. J. RIDER, ...Hammonton
Secretary, VALENTINE P. HOFFMAN, ...Egg Harbor City
Treasurer, WILLIAM LIEPE, ...Cologne

In reviewing the year 1910, I find we had a cool and late spring with several late frosts, that committed considerable damage to orchards and vineyards, whilst the latest killing frosts did not occur until October 29th and 30th.

Compared with 1909, increases in the following crops were reported: Hay, peaches and tomatoes.

Decreases: Corn, white and sweet potatoes, pears, grapes, strawberries, raspberries, blackberries.

The prices realized on the various crops showed in general no increase compared with 1909.

The State Board of Agriculture favored us in 1909 with two Farmers' Institutes with very attractive programs. The first was held at Germania, on November 2d, and the next at Hammonton, on the following day.

The annual meeting of Board and election of officers was held at Egg Harbor City, on December 3d. The question was propounded: "Would it be well for the Board to meet oftener with the Granges?" It was answered affirmatively, and then decided that the next quarterly meeting be held at Cologne, on March 3d, 1911.

V. P. HOFFMANN,
Secretary.

BERGEN COUNTY.

OFFICERS FOR 1911.

President, WM. BRANDENBURG, JR., ...North Arlington.
Vice-President, F. M. CURTIS, ...Harrington Park.
Secretary, JOHN M. MYERS, ...Westwood, R. F. D. No. 2.
Treasurer, F. V. STROHSAHL, ...Park Ridge.

The farmers of Bergen county passed through a trying summer, suffering badly from lack of rain. The men who are regularly seen at the Institute meetings could be picked out this summer by the way they handled their farms and produced a crop in spite of the rainless months. The manner of handling the soil in a season like the past one seems more important than the kind or quantity of manure or fertilizer used.

The farmers and their families enjoyed a field meeting at the farm of Isaac A. Hopper, of Fair Lawn, who is leading the county in the production of hay and melons. He also showed us what can be done with corn and potatoes in a dry year. A feast of muskmelons, after a thorough inspection of his farm, stamped the day on our memories and warmed our hearts for the man who has not lost the secret of growing good melons.

The Board is growing in membership and interest. During the past year we secured the privilege of meeting in the Court House at Hackensack.

Large sections of the eastern part of the county have been cut up into town lots, but the farming land of the county at large is being carefully looked after by men who have faith in the soil and the future of agriculture.

BURLINGTON COUNTY.

OFFICERS FOR 1911.

President, ALBERT HAINES, ... Masonville
Vice-President, CRAIG TALLMAN, ... Columbus
Secretary, H. H. ALBERTSON, ... Burlington

The County Board held its annual meeting in January, 1910, and since then the directors have met once to arrange for the annual meeting this year. For several years there has been but little interest taken by the farmers in the County Board meetings, at which the speakers furnished by the State Board have spoken to a small group of men. It is hoped that these meetings will become of more interest and value, both from the talks on the program and by a discussion of matters of local agricultural interest.

The Farmers' Exchange has passed its first year, in which it did a large amount of business, especially in selling strawberries and potatoes. It sold about 1,050 car loads of potatoes and did a total business of $600,000. In some lines, such as selling seed potatoes, the Farmers' Exchange and the Grange are competitors.

There has been some criticism of the county fair in abolishing the live-stock exhibits. There is a growing feeling that the fair does not efficiently represent the agricultural interests of the county. The same can doubtless be said of many county fairs.

In an address to the students, Professor Liberty H. Bailey, Dean of the Agricultural College at Cornell University, and chairman of President Roosevelt's Country Life Commission, has said:

"The county fair has not changed its general basis of operation in recent years, and yet the basis of country life is changing rapidly. There are many county fairs that are doing excellent work and are worth to the people all that they cost in effort and money; but the method or system as a whole is inadequate to the present-day conditions. The whole basis of the county fair is insufficient for the epoch that we are now entering. I should not discontinue the local fairs. I should make them over.

"The fairs have been invaded by gambling, and numberless catch-penny and amusement and entertainment features, many of them of very questionable order, until they often become great country medleys of acrobats, trained bears and high divers and gew-gaws, and balloon ascensions and side shows and professional traveling exhibitors and advertising devices for all kinds of goods. The receipts are often measured by the number of cheap vaudeville and other 'attractions' that the fair is able to secure. And as these things have increased, the local agricultural interest has tended to drop out.

* * * * * * * * * *

"I assume that the fact that a person lives in a community, places on him responsibilities for the welfare of that community. We should make the county fair one of the organized means of developing this general welfare. Therefore, I should assume that every citizen in the county, by virtue of his citizenship, is a member of the county fair and owes to it an allegiance.

* * * * * * * * * *

"In other words, I should like to see a complete transfer from the commercial and 'amusement' phase to the educational and recreation phase. I

should like to see the country fair made the real meeting place for the country folk. I should make a special effort to get the children. The best part of the fair would be the folks, and not the machines or the cattle, although these also would be very important. I should make the fair one great picnic and gathering place and field day, and bring together the very best elements that are concerned in the development of country life.

* * * * * * * * * *

"I should have every person bring and exhibit what he considers to be his best contribution to the development of a good country life. One man would exhibit his bushel of potatoes; another his Holstein bull; another his pumpkin or plate of apples; another a picture and plans of his modern barn.

* * * * * * * * * *

"I should give much attention to the organization of good games and sports. I think it would not be difficult to organize a pageant, or something of the kind, at a country fair, that would make the ordinary vaudeville or side-show or gim-crack look cheap and ridiculous and not worth one's while.

* * * * * * * * * *

"The present basis is wrong for this twentieth century in which we live. The old needs are passing; new needs are coming in. I would have the fair represent the real substantial progress of rural civilization, and I would also have it help to make that progress. It should be a power in its community, not a phenomenon that passes as a matter of course, like the phases of the moon."

On the whole, the past year has been a prosperous one to Burlington county farmers.

In spite of the statement that "dairying does not pay," cows are selling for high prices, while the price of milk has not increased proportionately to the exactions of the consumer.

A great many orchards are being planted, and several growers are buying farms to plant with fruit trees. Our farms have great natural advantages of soil and markets, and compare very favorably with the much advertised western orchard lands for profitable fruit growing.

H. H. ALBERTSON,
Secretary.

CAMDEN COUNTY.

OFFICERS FOR 1911.

President, LEON COLLINS, ...Merchantville
Vice-President, A. CLINTON CLEMENTS, ...Westville
Secretary and Treasurer, JOSEPH BARTON, ...Marlton

The twenty-seventh annual meeting of the Camden County Board of Agriculture was held in Grange Hall, Blackwood, December 17th. President Brewer extended to an appreciative and zealous gathering the usual welcome. The program for the day was an intensely practical one, embracing a variety of subjects in keeping with the advanced thought of the age, and the interest manifested by the large gathering showed that it was completely up-to-date in its eagerness to avail itself of modern appliances for the better prosecution of the farmers' business.

The subject, "Fattening Cattle in the East," was treated in a masterful manner by Mr. Harry Brick, of Medford, N. J., who entered exhaustively into details concerning varieties, feeds, markets, etc., showing that, in spite of apparently favorable conditions, the business was full of risks. Benj. Barrett, of Blue Anchor, a small fruit specialist, gave an unusually interesting talk on small fruits for 1910. Mr. Barrett was obliged to answer a

great many questions relating to the subject. The afternoon session opened with the newly-elected President in the Chair, who asked that the attention of the meeting be given to L. F. Johnson, of the Packard Motor Car Company, of Philadelphia, who spoke of the "Adaptability of the Motor Truck to Farm Uses." Mr. Johnson was listened to with interest, and laid great stress upon two essentials, viz., good roads and first-class machines—he hardly thought that with but three months use, or at least a short season, the farmer would be justified, except in extreme cases, in purchasing a motor truck, unless use of it could be made the rest of the year.

Horace Roberts, a progressive farmer connected with the Moorestown Farmers' Telephone Co., gave a very thorough talk on the great advantages of the telephone in the management of the farm, and in disposing of farm produce. The talk was well received, Mr. Roberts being plied with many questions relating to the organization of a company.

The Burlington County Farmers' Exchange, how it works, etc. This subject that is exciting so much interest in enterprising agricultural communities was treated in an intensely interesting way by Aaron Collins, of Moorestown, N. J. Mr. Collins gave a startling account of the immense quantities of produce that had been shipped to different parts of the country in car lots during the past year, thereby keeping the same from the Philadelphia markets and getting it to the consumers in a fresh and wholesome condition. At the conclusion of Mr. Collins' address, by request of the meeting, a committee was appointed to take the necessary steps towards the formation of a Branch Exchange in and around Blackwood.

"The High Cost of Living" was treated by Mrs. Timothy Fox, who laid considerable stress upon the exactions of the different trusts that control the food supply; the different methods of living now as compared with the days of our fathers; the luxuries that the people demand in their homes; the great aversion to muscular labor or drudgery; all of which tended to increase the expense of maintaining a household.

DANIEL W. HORNER,
Secretary.

CAPE MAY COUNTY.

OFFICERS FOR 1911.

President, RICHARD LLOYD, ...Dias Creek
Vice-President, H. W. GELLER, ...Woodbine
Secretary, RALPH SCHELLINGER, ...Green Creek
Treasurer, VOLNEY VAN GILDER, ...Ocean View

The Cape May County Board of Agriculture had a short meeting February 25th, 1910, previous to an Institute by the State officers, which was well attended. The program enclosed was carried out and was appreciated by those in attendance.

November 19th, 1910, County Board had a two-session day. Cape May Court House, A. M. and P. M., with a good attendance.

Regular routine of business; minutes of last meeting read and approved; election of officers for year; making up county crop report; two or three good talks by C. S. Cresse on peaches, Prof. H. R. Lewis on poultry. Discussions on the different subjects. We consider the interest in Agriculture on the increase in Cape May county.

RALPH SCHELLINGER,
Secretary.

CUMBERLAND COUNTY.

OFFICERS FOR 1911.

President, WALTON E. DAVIS, ...Shiloh
Vice-President, EDWARD E. DIAMENT, ...
Secretar-Treasurer, CHAS. H. DUNSAFE, ...Cedarville

The Cumberland County Board of Agriculture held its annual meeting March 7th, 1911, when the officers were elected for the ensuing year. A very complete report of the State board meeting was given by Mr. N. E. Diament. Mr. Evans Lore, of Newport, gave a very interesting and instructive talk on "Pigeons for Profit." Commencing ten years ago with fifty pairs of birds, he increased his number to 2,500 pairs. Mr. Lore is very methodical in his business of raising squabs for market; he had his methods carried out to the minutest detail, hence his success marketing every week this winter a killing of squabs that gave him $286.41. Mr. Lore presented squabs to his audience, showing how a squab's color can be governed by feeding the right kind of feed. Great stress was laid on having a regular time to feed; be systematic.

Mr. Charles Seabrook gave a profitable talk to the farmers present on irrigation, giving statistics in regard to the watering plant, and profits in growing certain kinds of truck by irrigating. Progressive farmers asked Mr. Seabrook many questions; those that will depend on natural irrigation shook their heads.

Mr. Billings, of Washington, tried to impress upon the farmers the importance of keeping records of all experiments made on the farm, as it would be useful to them, and to their brother farmer, and promised to help them any way that he possibly could.

Mr. Jacob Zimmerman gave a good talk on "Co-operation;" full of good, sound advice on co-operation in all things; be brothers, all pull on the same rope to buy as cheap as possible—for cash.

Last year was not as prosperous a year to the Cumberland county farmers as the year of 1909; yet, quite a few bought themselves automobiles and much labor-saving machinery.

CHARLES H. DUNSAFE,
Secretary.

ESSEX COUNTY.

OFFICERS FOR 1911.

President, J. B. WARD, M.D., ...Lyons Farms
Vice-President, A. E. HEDDEN, ...Verona
Secretary, GEO. P. F. MILLAR, ...Chatham, R. F. D. No. 2
Treasurer, GEO. E. DECAMP, ...Roseland

The Essex County Board of Agriculture, though small in number of members, is doing good work; held meetings regularly during the last year, with a goodly attendance of agriculturists who are willing to tell of their failures and successes, and hail with gladness any improvement in machinery that their labors may be lightened, or of a new mixture or spray that they may more successfully combat the pests and blights.

The Institute held under the direction of State Secretary Dye, although not attended by large audiences, are looked forward to as their only school, where they can question the speaker in direct relation to their farm needs. Although all appreciate the station at New Brunswick, which has so greatly

aided our farmers, to be answered at once by the learned speakers, is a rare treat appreciated by the best of Essex county agriculturists, and all go with the expectation of receiving helpful instruction.

The farmers of Essex are doing a large share of the producing of the State, the markets being so close a great deal of the produce is sold direct to the retailer without going through the commission house. Hundreds of market gardeners and fruit growers sell their own produce, and there is no way of telling what is produced, and in every part of the county one will find up-to-date farms run on lines laid down by the master hand and by methods taught at the institutes.

The cow is not forgotten in Essex. There are cows on every farm of any size, and some of the largest dairies in the country are on the Orange Mountain slopes. The cow is recognized by the best managers as the part of farming that will return to the soil that which is taken out by vegetable production.

Poultry is also one of the paying departments of the farms; eggs and fowls of all classes are produced in large quantities; one of the striking features of the Essex county farm is the well-bred poultry. Although the farmers do not agree upon the same breeds, each one sticks to the one that suits him best. This has been recommended by the speakers for a long time, and now practiced by most of our farmers.

GEORGE P. F. MILLER,
Secretary.

GLOUCESTER COUNTY.

OFFICERS FOR 1911.

President, DAVID T. BROWN, ... Swedesboro
Vice-President, CLAYTON KIRBY, ... Mullica Hill
Secretary, WM. R. SKINNER, ... Richwood
Treasurer, WM. H. BORDEN, ... Mickleton

The Gloucester County Board of Agriculture held four meetings during the year 1910, one at Harrisonville, one at Mickleton and two at Mullica Hill.

As heretofore, the Executive Committee prepared a full program for each meeting, which was well rendered, making the meetings full of life and interest, the average number in attendance being 81.

Three Institutes have been held during the year, one at Mullica Hill (two days), at Clayton and Williamstown one day each. They were fairly well attended. Much interest was manifested in the various subjects presented by local as well as by speakers from a distance. Many ladies attend our County Board and also the Institutes.

The Grange's annual picnic at Alcyon Park was held August 10th, 11th and 12th. Several thousand people were in attendance. The exhibits of fruits and vegetables of various kinds were very fine. There were products of the kitchen as well as a great variety of fancy needlework. The machinery embraced almost every conceivable form ever found on the farm. The autos must not be overlooked, for they were there not a few in number.

The hay and corn crop was very good. Several farmers are raising alfalfa very successfully.

Early white potatoes are a leading crop in portions of the county; yield good, prices fair.

The following is a report from the South Jersey Farmers' Exchange which many farmers are interested in:

Amount of sales, 1910,	$445,992 86
Amount of sales, 1909,	363,249 95
Net profit, 1910,	4,438 64

Have handled the following commodities:

Fertilizer,	2,783 tons,	182½ cars
Coal,		14 "
Lime,		5 "
Baskets and hampers,		5 "
Grass seed,	1,000 bu.,	
Seed potatoes,	7,480 bbls.,	34 "
Feed,	1,800 tons,	90 "
Potatoes,		1,057 "
Pears,		5 "
623 members holding	5,265 shares	

This Exchange is believed to be a great benefit to the farmer.

ESTHER L. RULON,
Secretary.

HUNTERDON COUNTY.

OFFICERS FOR 1911.

President, JAMES LANE, ... Readington
Vice-President, W. H. OPIE, ... White House Station, R. F. D. No. 2
Secretary, ROSCOE DE MOTT, ... Three Bridges, R. F. D. No. 1
Treasurer, F. J. TOMLINSON, ... Pittstown

The Board held a meeting at the Stanton Grange Hall on November 30th for the purpose of electing officers for the ensuing year and delegates to the State Board. The Treasurer's annual report was read and adopted.

The crops this year were fully up to the average. The corn crop was good excepting on heavy clay soils lacking in humus, where the excessive rains at planting time caused a very poor stand.

The oats crop was the best in years. The yield of straw was enormous, and the grain well filled, weighing about thirty-five pounds per bushel.

Wheat and hay were both fair. The exceptionally fine stand of clover in the wheat and rye stubble afforded abundance of fall pasture.

The peach industry is reviving. Orchards are being planted each year, and by the use of lime and sulphur sprays growers are able to control the scale.

The raising of pork for market is again claiming the attention of farmers. The prices paid for pork this year by sausage manufacturers and shippers at the opening of the season was from 10 to 12 cents per pound.

With the encouraging prices and the drop in the cost of feed the hog industry is likely to increase.

Horses are still bringing good prices. Carloads of Western horses find ready market at $250 per head.

The raising of colts of the heavy type is claiming the attention of horsemen and farmers.

The poultry business is still on the climb. Prices for poultry, both alive and dressed, are good. The prices for eggs through November and December exceeded that of last year by three cents per dozen.

The dairy is still firm. Good-grade cows are bringing on an average about $65.00. The price of milk is a little better than last year. The annual report of the Locktown creamery shows an advance of nearly one cent per pound for butter fat, also that 162,279 pounds more milk was received this year than last.

REPORT OF LOCKTOWN CREAMERY FOR THE YEAR ENDING DECEMBER 31ST, 1910, AS COMPILED BY ELLIS COMPTON, FOREMAN.

	Number of Pounds of Milk Received.	Number Pounds of Butter Made.	Butter Sold.	Skimmed Milk Sold.	Average Test of Milk Received.	Price per Pound for Butter-fat.
1910.						
January,	107,715	5,509	$2,049 15	$50 23	4.26	$0 40
February,	102,660	5,281	1,731 59	51 47	4.17	37
March,	114,497	5,540	1,963 32	56 18	4.05	40
April,	119,794	5,269	1,852 51	61 08	3.97	37
May,	140,393	6,679	2,070 00	66 84	4.00	34
June,	152,993	7,710	2,364 39	81 18	4.02	34
July,	140,032	6,623	2,083 40	77 67	4.03	34
August,	148,047	7,082	2,320 07	81 07	4.00	37
September,	144,170	7,096	2,368 86	81 33	4.12	37
October,	131,687	6,455	2,167 27	73 70	4.23	37
November,	103,104	5,181	1,787 53	56 31	4.30	37
December,	95,775	5,362	1,794 95	52 72	4.35	37
Total,	1,500,867	73,787	$24,553 04	$789 78	.....	.....
Average,	.....	.....	.....	.....	4.10+	$0 36¾

The bee industry this year was discouraging. Bees were in fine condition at the first of June, but June weather was very unfavorable. There was but a light run of honey through the summer, and in September a little from astors, while buckwheat honey was a total failure. Brood disease is still prevalent, but not as widespread as last year.

ROSCOE DE MOTT, *Secretary.*

MERCER COUNTY.

OFFICERS FOR 1911.

President, J. T. ALLINSON, ... Yardville
Vice-President, H. H. HUTCHINSON, ... Robbinsville
Treasurer, R. ELLSWORTH HAINES, ... Robbinsville
Secretary, FRANKLIN DYE, ... Trenton

The Mercer County Board of Agriculture is adding to its membership and increasing its efficiency from year to year. More farmers and from a wider section of county are taking interest in its meetings and work. This is as it

should be, and it is largely due to the active interest taken in the purpose and work of the Board by the President and the Board of Directors.

The regular meetings of the Board are well attended and the field meetings are very successful. The third summer field meeting was held near Ewingville, August 5th, with an attendance of over two hundred. The twenty-sixth annual meeting of the Board was held in the Court House, Trenton, N. J., March 23d. President J. T. Allinson delivered his annual address, from which a few sentences are herewith given:

"Brother farmers, we meet again in our annual session to help one another, to again pledge our good will and brotherly love, to compare notes and tell our experiences, that each may profit by the success or failure of the other.

"We find as a rule where careful, intelligent work, with advanced methods of cultivation were pursued, the prices received for the produce of our farms netted fairly satisfactory results.

"I know of a number of instances where haphazard methods of farming, inferior tools and poor judgement were employed, cultivated crops were a failure.

"Let me urge upon you the necessity of a community producing enough of one kind of crop to make a name for itself, so that buyers would know where they could procure in quantities that particular article.

"I would also suggest specializing on the part of the individual. Devote your attention to only one or two main crops. You will surely have better success. First learn what crops are adapted to your soil, then learn how to raise banner crops every year.

"If you have any fear of glutting the markets, let me quote you a few figures purporting to be an approximate estimate of the farm products consumed every day in New York City: 2,060,000 quarts of milk, 2,900 head of cattle, 11,900 sheep and lambs, 5,800 hogs, 1,300 calves, 11,300 barrels of flour, 4,400,000 eggs, 5,000 barrels of apples, 200,000 bushels of potatoes, etc.

"New York's population is about 4,000,000. In the United States there are about 90,000,000 or 22½ times more people than in New York city. Multiply the figures I have given you by 22½ and you have a fair idea of the daily consumption in the United States. Just imagine ninety-nine million eggs a day.

"It seems to me it is not a question of abandoning farms, but knowing how to raise bigger and better crops. Our ability to raise big crops is not the only vital question that confronts us. Every day I realize the importance of every farmer taking a deeper, broader, unselfish interest in public affairs. Know what your county and township officers are doing for the betterment of municipal conditions. Look into some of the State and national legislation and see if we, the producers of the raw material, are getting just and equitable treatment. I ask you if the government can spend thousands of dollars in opening a ship channel up the Delaware, should not the same government spend an equal number of dollars on the public roads leading from the steamship docks in Trenton to the farms, the source of supply. Again, our stone roads are costing from three to fifteen thousand dollars to build, per mile. The cost of repair runs from three to fifteen hundred dollars a year.

"Conditions have changed since most of these roads were built. Following the heavily loaded broad tread wagon, which crushed down and packed the road, making it better, comes the swiftly moving cushioned-tired auto, which sucks up the loose road dressing and stones and soon damages it beyond repair. This is a condition which confronts us and it seems to me a question, if we want any more stone roads, except to finish a main artery road leading to some important centre. For the connecting roads I would suggest the same State and national aid, but instead of using stone, I would improve our dirt roads by intelligent draining, rounding up, frequent light scraping, and where necessary, top dressing with a good gravel. Reorganize our present road district system and arrange a district large enough to keep a man and horse and cart busy all the year.

ments. There are but few dairymen, in comparison with the many, in our State who supply the public with milk who would willfully adulterate or who would produce milk on their farms which is unsanitary or unwholesome. Many of them have done more than they have been paid for by the dealers or the public, either in money or appreciation, for the betterment of their conditions, their cattle and their methods in handling milk, and they have succeeded in the face of obstacles that consumers can scarcely know or appreciate.

"The men engaged in dairying must work every day in the year, Sundays and holidayh included, and for the most part are hardy, industrious, honest and God-fearing men.

"Many of them have made an earnest effort to improve conditions so as to meet the modern requirements in the handling of milk, but as cheapness is the one consideration of many wholesale dealers in milk, regardless of the sanitary conditions under which it is produced and handled, it is not to be wondered at that some farmers fail to meet the demands for a cleaner milk, involving, as it does, on account of its delicate and perishable nature, the most scrupulous care in its handling. Little discrimination in point of price has been made between the milk of the one-time swill-fed dairy in certain counties of this State, and the carefully prepared milk of the farmer, where proper food and care are given to the cows and to the handling of the milk. This statement, however, does not mean that there has been no advance in the price paid for a high-grade milk, as I have stated that some progressive dealers have undertaken to inform their customers of the difference in the quality of the milk, viz., those dairymen who have contracted with medical milk commissions and are producing milk under the name of 'certified milk' which they are selling at the advanced price, and, of course, they have provided better equipment and cleaner methods in the handling of milk than the ordinary dairyman.

"In fact, there has been a gradual improvement in market milk from the time of the enactment of the first milk law.

"There is, however, a type of dairy in existence, operated by the farmer, who does the best he can under conditions which he finds difficult to change, but it is hard for him to produce a clean milk until he provides better facilities. The stables of this type of dairy are built of three sides, enclosing the barnyard. Into this yard the manure is thrown, and it is usually dug out so that everything, including sewage, drains into its hollows, and, in consequence, it becomes a mass of sewage and manure. Through this yard the cows must wade, the farm hands walk and work, and, in consequence, the cows, the milkers and their clothing are covered with excremental dirt. In the summer time this mass attracts flies and insects; from here they hatch and swarm about the cows and drop into the milk. Many people imagine that the odor and flavor of the barnyard when present in milk is an indication of its purity. It is really an indication of manure. Clean milk has no odor or taste of the barnyard.

"The cow stable is often stood in the basement of the barn without light, and no ventilation except when the door is open. Dampness, mould and manure cover the floor and ceiling. From the ceiling, which is quite commonly the mowpole type, the suspended cobwebs, moulds, etc., which continually fall on the animals, the milkers and into the milk.

"Musty and dirty litter, mixed with the excretions of the animals, are everywhere and all add their specks to the milk. In such a place the flanks and udders are covered with filth from the barnyard and the stable, to be dislodged in the process of milking, and finally fall into the pail. The coarse dirt that may fall into the milk may be strained, but the most part of it is microscopic, and no amount of straining will remove it. It will require the expenditure of some money to make the stable here described sanitary in all its aspects, but at the same time, the man who fails to recognize that under such environment his cows will become unthrifty and more than likely develop tuberculosis, may eventually lose his entire herd from that dread disease.

"It is well known that bovine tuberculosis, and, in fact, the human species, is fostered and develops faster in dark, unventilated buildings than where plenty of sunlight and ventilation are provided. This type of dairy is going to disappear, and in many sections of the country where inspections have been going on and health board standards insisted upon, they are not to be found. They are the exception and not the rule.

"In the production of milk, the same standard of efficiency should be upheld that is given to any commercial food production."

PROF. HARRY LEWIS' ADDRESS.

Prof. Lewis said Mercer county is one of the best for poultry business, as we have the best markets. Production of eggs: These should be produced in October and November for the best profit.

1. Character of Stock.
2. House.
3. Food.
4. Marketing.

Breeds—Barred Rocks, R. I. Reds and White Leghorns all are good. Select the variety you like best and suited to your market. New York prefers white eggs; a week ago it paid seven cents per dozen for white eggs more than for brown eggs.

Better see the stock from which you get your eggs before you buy. Hatching production should begin about this date. Incubators are best for hatching when rightly managed. When first hatched, raise the chicks with care, feed fine seeds, separate males from females as soon as possible. The good strong pullets are to become our winter layers. Put them on free range as soon as possible. Don't confine in sunlight. About the 1st of September they can be put into laying quarters. Care from 1st of October to November. We bring the birds to maturity and prevent early moulting. To do this don't hatch too early, say in March. Hatch 1st to middle of April. The house should be the open front, 8½ ft. front posts, 4½ ft. back, 16 ft. deep. Burlap curtains front, dropping board 3 ft. deep in rear of house, roost enclosed with a curtain in front. Raise nesting boxes 1 ft. above the floor, hook on the sides so as to remove and clean. Concrete floor is preferable, 1 to 6 first coat, then two layers of building paper, then a coat of 1 to 6 about one inch thick to finish. Have house dry, do not locate on low, wet ground. Clean out twice a year all. Have good light, ventilation.

Feeding rations were given for winter and summer. Wheat and oats 5 pounds to 100 birds, fed in litter.

Cracked corn, 200; Wheat, 100; Oats, 100. Feed at 4 P. M.

The farmers of Mercer county are not losing their interest in agriculture; they are not leaving their farms. The abundant markets so close at hand throughout the county demand all our farms can produce, and in variety, so that a wide diversity in crop production may be followed as the farmer may elect, and the soils of our farms are diversified as to their adaptability to the various products. A good financial return has rewarded intelligent practice. The following table shows the approximate yield and value of the several crops grown in the county when delivered into the market:

Crop.	*Acreage.*	*Bu. Per Acre.*	*Total Bushels.*	*Price.*	*Total Value.*
Corn,	2,200	38	83,600	$0 65	$54,340
Wheat,	1,500	22	33,000	95	31,350
Rye,	4,000	18	72,000	72	51,840
Oats,	9,000	38	342,000	40	136,800
Hay,	23,000	1¾ tn.	40,250	18 00	724,500
White Potatoes,	2,000	115	230,000	55	126,500
Sweet Potatoes,	200	120	24,000	60	14,400

Miscellaneous vegetables and fruits at $30 per farm, on 1,573 farms,	$47,190
Milk of 13,700 cows at 2,044 qts. per cow, per year at 4½ cents per quart,	1,260,126
Poultry, eggs, veal calves, pork, etc., at $100 per farm,	157,300
Total for county.	$2,604,346

FRANKLIN DYE,
Secretary.

MIDDLESEX COUNTY.

OFFICERS FOR 1911.

President, GEORGE W. MOUNT, ...Monmouth Junction
Vice-President, J. B. PERRINE, ...Cranbury
Secretary and Treasurer, WM. H. CLARK, ...New Brunswick, R. F. D. No. 1

The annual meeting of the Board was held on November 20th, 1909. After the election of officers and appointing of delegates to the State meetings we listened to an address by Mr. J. H. Wolsieffer on "Winter Eggs and How to Get Them." He recommended a house with three sides tight and an open front facing the south, with muslin curtains to close in cold weather; feeding a balanced ration, one containing the protein and ash with the carborhydrates, and, lastly, he said any of the standard breeds, but let them be pure-bred stock, not mixed breed.

At the meeting in February the reports of the delegates to the State Board and horticultural meetings were heard. Mr. William Cox, one of our progressive farmers, told how he grew corn. He manures the ground in the fall and winter, plows deep and gives thorough preparation of the soil with the disc and spring-tooth harrow before planting, and then begins cultivating immediately after planting, first with weeder and then with the cultivators, running them deep while the corn is small. Mr. Herbert Runyon, another one of our successful farmers, told how he cared for his fowls during the past winter when they laid him lots of eggs.

On May 21st the last regular meeting was held. Professor J. G. Lipman, of the College Farm, spoke to us on the subject of "Soil Fertility." His talk was very comprehensive and instructive. He divided his subject into four heads as follows: Meaning of, maintenance of and transportation and distribution of the product.

In August the County Board joined with the Middlesex and Somerset Pomona Granges in an excursion to Coney Island, which was well patronized and a success both as to pleasure and finance.

The year with us has been marked by an unusually long drought following a wet spring. Wheat, oats and hay were good crops, but corn was badly hurt; in parts of the county it is not half a crop, while in other sections it is quite good, owing to the difference in the ability of the soil in those sections to hold moisture, and, perhaps, slightly more rainfall at a critical time in the growing period. Fewer cows are kept and milk is scarce, as also are veal calves. Prices are good for most all farm products.

LEWIS D. WALKER, JR.,
Secretary.

MONMOUTH COUNTY.

OFFICERS FOR 1911.

President, H. L. LEHR, ...Keyport, R. F. D. No. 1
Vice-President, C. D. B. FORMAN, ...Freehold
Secretary, D. AUGUSTUS VANDERVEER, ...Freehold
Treasurer, WILLIAM M. MOREAU, ...Freehold, R. F. D. No. 4

The Board has held two meetings since last report. First meeting held February 26th, 1910. The delegates, C. D. B. Forman and George F. Reid, read their reports of the annual meeting of the State Board of Agriculture, and Delegate C. C. Hulsart read his report of the annual meeting of the State Horticultural Society. James C. Hendrickson, of Keyport, gave an address on "Asparagus Growing." John H. Denise gave an address on "Special or General Crops for the Average Farmer as to Profit." The annual meeting of the Board was held November 23d, 1910; officers for the ensuing year were elected; reports from the officers and committees were read. Professor F. C. Minkler, of New Brunswick, gave an address on "Alfalfa and Cow Peas." Farmers' Institutes will be held during December by the State Board at Matawan, Red Bank, Freehold and Allentown. Weather conditions during December, 1909: Snow fall, ten inches deep, followed by cold weather; good sleighing for three weeks; ice gathered first and second week in January, eight to twelve inches thick; January 14th, snowfall of twelve inches; cold January and February; very warm during March and dry, no rain for three weeks; season from two to three weeks early; May and June cool, with plenty rain for crops; fine for potatoes, grain and grass; too cold for corn. The yield of clover hay very heavy; timothy good. There was a full average yield of wheat, rye, hay, sweet potatoes, peaches, grapes, strawberries, melons, tomatoes and cabbage. Corn, ten per cent. below the average. Apples, pears, raspberries, blackberries, early truck and early sweet corn very light yield. The potato crop was ten per cent. above the average yield, and extra fine quality prices for most crops were good. The year has been one of the most prosperous for the farmers. The Farmers' Exchange has a large increase in membership and has done a very large amount of business the past year. There is a good demand for farms, and several have changed hands the past year. Very little change in live stock conditions from last year. Milch cows, $5 per head higher; veal calves, one cent per pound; swine, two cents per pound; turkeys, one cent per pound higher. Horses, sheep, lambs and chickens same as last year.

D. AUGUSTUS VANDERVEER,
Secretary.

MORRIS COUNTY.

OFFICERS FOR 1911.

President, GEORGE E. FELCH, ...Florham Park
Secretary and Treasurer, WM. F. ELY, ...Madison

It was Resolved, That the secretary be authorized to have meetings held at any time an interest is shown for the farmers' benefit.

WM. F. ELY,
Secretary.

OCEAN COUNTY.

Officers for 1911.

President, C. Milton Rorer, ...Cassville
Vice-President, Patrick Davitt, ...Toms River
Secretary R. C. Graham, ...Holmeson
Treasurer, H. R. Wills, ...Toms River.

We find at the expiration of another year that it requires the strictest adherence to the scientific principles outlined by men of that capacity to combat with the climatic conditions of the seasons of late years, as it is quite an undertaking to raise crops under unfavorable conditions of the weather as we have had for some years past. Nevertheless, we are holding our own by the aid of the new appliances which we have learned to use, as the crops show. With fair prices the farm with an up-to-date farmer is to-day a good paying investment, while there is some owned and farmed by the inexperienced at a loss or just come out even year after year. The growth of our towns makes good market for all kinds of farm products. Good roads were never needed more than now; trolley roads to carry freight and parcel post not as an experiment, but as an established fact.

The late frost of April did considerable damage to the strawberries and huckleberries, causing a light crop in most of the county. Some early truck suffered also. Prices were good. Corn started slow, held out good during the drouth, with a fair yield on low land; just the kind if season crop is extra good. Hay crop was light; potatoes, fair; oats, a good yield; sweet potatoes, not more than sixty per cent. crop. Apples almost a failure. Some orchards of Keifer pears produced a good crop, some scracely a pear. Rye is a fair paying crop; hard to get estimate per acre as most goes to press unthrashed; as near as can get figures, sixteen bushels per acre. Very little wheat raised. Near the towns trucking and dairying is taking place of mixed farming.

Poultry raising is given more attention than heretofore; easier and more profitable than raising pork. The number of hogs and cows is on the decrease as population increases, so the high cost of living increases. The acreage of cranberries is increasing.

While the membership of our Board keeps about the same, it is hard work for the leaders to get the idea in their heads that a person must have a few days in a year for education. The ones that take the most days to hear lectures are making the best headway in farming. We need more help from the State in lectures in the remote places from railroads. Get an interest started, and then our boys will want to stay on the farms and live healthy and happy lives.

R. C. Graham,
Secretary.

PASSAIC COUNTY.

Officers for 1911.

D. F. Duncan, ...*President*
Ira Mitchell, ...*Vice-President*
F. T. Torbett, ...*Treasurer*
Aaron Laauwe, ...*Secretary.*

The Passaic County Board of Agriculture held three meetings during the year 1910. The first meeting was held on February 24th, when the report from the delegate to the State Board meeting was received, also the report

from the delegate to the Farmers' Week at New Brunswick. Said reports were very interesting. Several of our members had also attended these meetings, agreeing that these meetings were very interesting. It was the consensus of opinion that these addresses delivered at New Brunswick should be put in pamphlet or bulletin form and distributed among the farmers of New Jersey. We think it would do a lot of good. Many farmers who could not attend these meetings would be benefited thereby.

The second meeting of the Board was held on March 30th, at which meeting we had the pleasure to have with us Mr. C. C. Hulsart, of Matawan, N. J., who gave us a very fine address. His topic was "Practical Farm Managements," which was listened to by a large number of farmers. Mr. Hulsart is a very fine speaker, and it is needless to say that a great many of us went home with something new to think about.

The third meeting was held on December 14th, which was a business meeting, when the new officers and delegates for 1911 were elected. We had what we call a three-minute talk among our members. Topics had been given in advance to the different members. Topic No. 1 was on potato growing; No. 2 on potato diggers; No. 3 on selling milk at wholesale at the door; No. 4 on growing timothy hay; No. 5 on poultry house construction; No. 6 on parcel post. After three-minute talks on each topic we had a short discussion on the subject. We found this one of the most interesting meetings we had in a very long time. After the meeting refreshments were served by the ladies.

CROP REPORT.

The year 1910 was one of the dryest seasons ever known by the farmers of Passaic county, yet many of our best farmers claimed that they made more money than any previous year, being caused by the better prices received for their product, sweet corn bringing as high as three dollars per hundred ears in the Newark market. Tomatoes also bringing very high prices, and everything else being above the average price. Hay, wheat and rye were fairly good crops, prime timothy hay selling in Paterson city at twenty-two dollars per ton.

The dairy and poultry business seemed to hold their own; if anything, on the increase, caused by the better price received for their products and the slightly lower cost of concentrated feeding stuff.

AARON LAAUWE,
Secretary.

SALEM COUNTY.

OFFICERS FOR 1911.

President, JOHN G. BORTON, ...Woodstown, N. J.
Vice-President, MAXWELL W. BUZBY, ...Woodstown, N. J.
Secretary, GEORGIE A. DUELL, ...Woodstown, N. J.
Treasurer, J. GILBERT BORTON, ...Woodstown, N. J.

Salem County Board of Agriculture has held three meetings during the year 1910—two in Woodstown and one in Harmonsville. All have been fairly well attended, and much interest manifested. The subjects of discussion have been very good and of practical interest to all farmers, and the talk of Mr. Fred F. Smith, Bridgeton, N. J., president of Good Roads Association of Cumberland County, on "Road Building for Our County Roads," was one of the best and most practical. Papers on "Commercial Fertilizers," "Value of Co-operation and Glory in Growing Things," were of great interest. We hope to make the year 1911 even better than past years.

GEORGIE A. DUELL,
Secretary.

SOMERSET COUNTY.

OFFICERS FOR 1911.

President, LOUIS H. SCHENCK, ...Somerville, N. J.
Vice-President, ABRAM A. CORTELYOU, ...Somerville, N. J.
Secretary and Treasurer, ARTHUR P. SUTPHIN, ...Somerville, N. J.

Our statistical report for 1910, published elsewhere, shows a fairly prosperous year, for which our farmers should feel thankful to the Giver of Harvests. This Board has increased materially in numbers, having, now, eighty members.

Five meetings have been held.

At the annual meeting, held December 18th, 1909, the retiring president, Mr. A. A. Cortelyou, gave an admirable address upon the following questions: "What is the Present Status of the New Jersey Farmer, and What are His Prospects for the Future, and what Must He Do in the Future to Reap the Best Results from his Efforts?" His address was practical and interesting, and was published in the county newspapers.

The February 19th meeting was addressed by Mr. John H. Barclay, of Cranbury, N. J., on the subject "The Apple—How to Grow it and Care for the Tree,'—an instructive and valuable address.

On April 16th the third meeting was held, the members being favored by addresses from Prof. F. C. Minkler, upon the subject of "Corn Cultivation," and Mr. William M. Cox, of Cranbury, upon the subject of "Potato Growing," and Mrs. Cox, who proved a very interesting talker, gave members very good reasons why they should be identified with the Grange.

June 18th, Mr. Walter H. Shute addressed the members on the subject of "Forage Crops."

The fifth meeting was held August 26th, at which the members held an open discussion upon the subject of "Wheat Growing, Preparation of Soil, Etc." The members spoke freely at this meeting, making it an interesting and instructive one.

Mr. J. Harry Wolsieffer, of Vineland, also made an address upon "How to Get Winter Eggs."

The meetings were all well attended, interesting and instructive.

The betterment of farms in this county, and the thrift of farmers is indicated by the most numerous sale of farms ever known in a previous year, and the highest prices procured.

We believe the purchase of large estates a detriment to our county. The purchase of a number of adjacent farms by one person, and building thereon a mansion and farming the lands upon a large scale, or the laying the same out in a park and letting the houses upon said several farms stand idle and get out of repair depletes that neighborhood of many inhabitants that were useful to both church and county, causing, also, the depletion in the public schools in such neighborhoods, so that the schools are so small and expensive that many are consequently abandoned. Church supporters are also greatly diminished.

A few who do sell their farms move to the county seat, but the majority appear to leave the county.

SUSSEX COUNTY.

OFFICERS FOR 1911.

President, R. V. ARMSTRONG, ...Papakating
Vice-President, THEODORE M. ROE, ...Branchville, R. F. D. No. 2

UNION COUNTY.

OFFICERS FOR 1911.

President, E. R. COLLINS, ...Westfield
Vice-President, G. E. LANDOW,.....Cranford
Secretary, C. H. BREWER, ...Rahway
Treasurer, OGDEN WOODRUFF, ...Elizabeth

The annual meeting of the board was held December 1, and a review of the year shows a gain in membership of 10. Ten regular meetings were held during the season and some of the principal topics were: Soil Fertility; The Peach and Apple; Lime, etc., and a review of the year's work and crops by members of the board. The season of 1910, for Union county, showed a very unfavorable one for nearly all crops, except only grain. Wheat, rye and oats were very good, the cool spring season being in their favor, but very detrimental to the starting of all truck and field crops, seeds starting slow and then before plants could become established one of the most severe droughts ever known in this part of the State started in and continued until late in the fall. What promised to be great crops of small fruits early in the season turned out at the end of harvest less than half. Apples were an entire failure. Kieffer pears plenty, but lacked for moisture in their development. Peaches a good crop, specimens of large size and of fine quality. Grapes also fair crop, and good quaility. In the vegetable crops everything suffered to a greater or less degree. Potato crop again rated a failure throughout the county. Corn matured well and with few exceptions yielded well. Many crops usually put out for late fall growth did not get planted, and those that did the drought prevented anything like a profitable yield. Much grass, seeded, was burned out before a root system could be started to sustain the little plants. Winter grain, seeded on well prepared soil, came up well and made a fair growth before freezing weather came on. Dairying about holding its own, while the poultry business seems to be on the increase, the demand for fresh eggs and chickens in nearby towns being greater than the supply. The work of the board the past year has been quite thorough on the subjects taken up for discussion, and it is proposed to take up in the future bee keeping and poultry as special subjects, which can be carreied on to a greater or less extent in connection with fruit growing and farming, in most cases, to a great advantage.

C. H. BREWER,
Secretary.

WARREN COUNTY.

President, JAMES I. COOK, ...Delaware, R. F. D. No.1
Vice-President, NICODEMUS WARNE, ...Broadway
Secretary-Treasurer, CHARLES M. OBERLY, ...Phillipsburg

The Warren County Board of Agriculture held three meetings the past year.

Our annual meeting is always held at the Court House, Belvidere, the other meetings at different places, so that our members will be able to attend without inconvenience to them. At the annual meeting the scarcity of farm help was discussed, as a number of the young men of the farms have a desire for the city, and the farmer is obliged to pay first-class wages to inexperienced help. He learns that he had better do less and do it himself—that is one of the reasons the necessaries of life are so high. The farmer is making a good living but saving very little money. At the meeting at Stewartsville, June 1st, alfalfa, peach, apple and strawberry culture were

advised, as spraying was much better understood at the present time than formerly. This was an instructive meeting as the variety of well chosen and interesting subjects, both of a commercial and social character proved. Our next meeting was held at Belvidere. Liming the soil, where it is needed and when, and our game laws were discussed. The dairy farmer should receive from his milk one-half of what the consumer pays for it. Our State Forester gave us an interesting talk on the line of work he was doing throughout the State. He was very much interested in some of the forests under his control, which he outlined. He advised farmers who had possession of forests to be cautious about fires, and also to use the axe sparingly, as northern New Jersey is a resort for the city people. He advised cutting out the dead limbs, first. Farmers should plant tress and protect them from fire.

Our board consists of fifty-one members. We have some progressive farmers who are improving their land and producing good crops. Good horses are still high-priced, from $200 to $277 for western horses. There is a great demand for cheap horses.

Winter grain looks promising for the next crop.

One of the means that has proved of much value in developing agricultural organization, in addition to the County Board of Agriculture and several Granges in Warren county, is that we have the advantage of the annual meeting of the State board.

Notes on Some New Spraying Materials.

The spraying materials are really insecticides only, and there are very few of them that merit serious attention.

Among the stomach poisons nothing has developed that displaces arsenic from its leading position, but a very distinct advance has been made in the production of arsenate of lead in a dry or powder form. This is, in every respect, superior to the paste form in which it has been heretofore used, and experiments made with it at New Brunswick are so conclusive that hereafter only dry arsenate will be used in our shade-tree work.

The chief advantages are—less bulk and cheaper carriage; greater percentage of arsenic, 31-33 per cent. as against a normal of 15 per cent. for the paste; greater ease in mixing; equal or greater suspension in water; keeps indefinitely without care. It can be applied dry from a powder gun when properly diluted, and covers and sticks beautifully without endangering any foliage on which it has been tried. Up to the present time there are only three brands on the market so far as I know—the Electro, with which my experiments were made; the Grasselli, which has been used in the South, I believe, and the Hemingway, which I know by sample only.

Another material that promises well is arsenate of iron. Some co-operative tests were made with members of the E. B. Voorhees Agricultural Club, but no very definite results were obtained for one reason or another. The material is cheaper than either Paris green or arsenate of lead; seems to be equally effective, and is, aparently, harmless to foliage. It has the objection of requiring two solutions as at present made up, and its range can hardly be said to be at all fixed. It will require at least another year of careful experimental work before definite recommendations can be made.

A californian preparation—the Ortho-arsenate of Zinc—has been received for trial and has made somewhat of a record for itself on the Pacific Coast as a safe material where even arsenate of lead is more or less injurious. Whether its advantages in the east are as marked as they seem to be on the Pacific Coast is something yet to be worked out.

Other preparations of lead, containing no arsenic, have been suggested, but have not been tried out, so that only a mention need be made to show the character of the work now being done.

The lime and sulphur washes are being continually perfected and varied, but they are being more and more developed for safety as fungicides, rather than for effectiveness as insecticides. An effort has been made to place them on the market in the form of a dry powder, but this does not seem to have been well received. Nothing has been added to their effectiveness as an insecticide, but the best commercial brands are now equal in effectiveness as scale killers to the best home-made material.

A combination of arsenate of lead paste and sulphur has been put out by the Thomsen Chemical Company under the name of atomic sulphur, and this seems to promise very well as a combined insecticide and fungicide. I have used it safely and successfully on apple and peach, and Mr. Blake has used it in one of his peach orchards. Its effectiveness against the curculio seems to be equal to that of any other combination, but of its results as a fungicide I am not in as good a position to speak as Mr. Blake.

Among the strictly contact poisons a number of experiments have been made with Black Leaf 40, or, as it used to be called, "Nico Sul." This was also used in co-operation with members of the E. B. Voorhees Agricultural Club, and, while the tests were not as complete as planned, the results were uniformly good. We have here one of the most reliable contact poisons for use against plant lice of all kinds and for such insects as demand a contact poison.

The New Jersey results seem to have been similar to those obtained elsewhere in the country, as appeared from experiences reported at the meeting of the Association of Economic Entomologists at Minneapolis during the X-mas holidays recently past,

A variety of new petroleum preparations or miscible oils has been put upon the market, but nothing of greater effectiveness has been added.

A weird combination of wool-grease, petroleum, lime, sulphur and arsenic entitled "One for All" is advertised as a cure-all and has been tested as a scale-killer in a New Jersey orchard. The results hardly justify me in recommending the material, and, really, I see absolutely no reasonable field for such a combination. Reduced so as to be safe for summer work, there is not enough arsenic to kill leaf-feeders, and, used at winter strength against scale insects, the arsenic is useless, because there is nothing for it to kill. Separately the materials used are useful; in combination there is waste and lack of efficiency.

It will be noted that, on the whole, the effort has been toward the better development of materials already in use, rather than the originating of new things, and this aim has been materially aided by the national legislation passed at the previous session of the present Congress.

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